

The Political Economy of Sovereign Borrowing*

Explaining the Policy Choices of Highly Indebted Governments

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Abstract

Political economy theory expects politicians to use budget deficits to engineer an election-timed boom, known as the political business cycle. We challenge and contextualize this view by incorporating the financial constraints faced by governments into an electoral framework. Employing a formal model, we show theoretically that the extent of ownership dispersion among creditors has important effects for governments' policy autonomy. Based on our theoretical results, we argue when highly-indebted governments become more reliant on international bond markets – as opposed to traditional bank lending – politicians alter the way they respond to domestic constituents. In an econometric test of 16 Latin American countries from 1961 to 2011, we show that financial decentralization breeds austerity. More specifically, we find that politicians exhibit more fiscal discipline when they fund a greater share of their spending through decentralized bond markets. Furthermore, we find this disciplining effect to be particularly strong during election periods.

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1 Introduction

"The old saying holds. Owe your banker one thousand pounds and you are at his mercy; owe him 1 million pounds and the position is reversed." -John Maynard Keynes

In response to the 2008-2009 global financial crisis, some countries such as the United States attempted to stimulate their economies to protect jobs and wages. When facing financial crises, developing-country governments – and highly-indebted countries more generally – often face a more limited set of options. Narrow tax bases and shallow domestic financial markets can leave them dependent on foreign financing to fund their budgetary operations (Gavin and Perotti 1997). For example, in Latin America – a region known for its historically high indebtedness, external financing has accounted for more than three-quarters of total public debt over the last three decades (Inter-American Development Bank 2013).

In this environment, foreign creditors frequently impose austerity on their sovereign borrowers, expecting that such restrictive budgetary policies provide economic stability and ultimately make debt repayment more likely. However, the pursuit of such budget discipline can be problematic domestically. If politicians achieve discipline by shrinking welfare programs, their efforts to stabilize the economy could aggravate social tensions. For example, throughout Latin America, when austerity translated into lower public payrolls, pensions, and social benefits, fiscal overtures that were intended to appease creditors often catalyzed pot-banging popular protests, known as *cacerolazos*. In light of these tensions between international investors and domestic citizens, what determines whether or not debtor governments ultimately pursue fiscal restraint?

In this paper, we argue that the likelihood of observing economic discipline in highly indebted countries reflects the structure of government debt, or the extent to which government creditors are bondholders rather than bankers. In other words, we suspect that an increase in a government's reliance on international bond markets alters the way its politicians respond to domestic constituents. We anticipate observing both a general effect, and an electoral effect.

We develop a formal model of political behavior among incumbent politicians. Using this model, we derive results showing that the way a country finances its debt has implications for its pre-election public spending decisions. Specifically, we show that financial decentralization constrains incumbents from using public spending to signal competence to the electorate in managing the

economy. We then examine our theoretical predictions using a cross-national statistical analysis of Latin America over the past five decades.

Based on a combination of our theoretical and empirical findings, we claim that global financial securitization has changed the traditional political logic, making political business cycles less common. Budget deficits, intended to engineer economic booms and win votes, were once considered critical weapons of political survival in Latin America. However, after the 1980s debt crisis in Latin America, a shift in external funding from centralized bank lending to decentralized bond financing transformed creditor-debtor relations. Creditors interacting with these indebted countries have changed from a limited number of large institutions – typically large banks – to a substantial number of globally dispersed bond market investors. This shift toward securitization diluted the tight, financial linkage between creditors and their heavily-indebted borrowers, allowing them to escape the Keynesian paradox referenced above. Compared to vested bankers, bondholders can more readily exit their lending relationships, leaving governments with less room to manage the economy. Their constant threat of capital withdrawal compels sovereign debtors to pursue austerity with commitments to balanced budgets and low inflation.

These theoretical claims mark a notable departure from political business cycle theories that assert an electoral inflationary bias (Nordhaus 1975; Lindbeck 1976; Tufte 1978). Such cycles may at times occur, as evidenced by President Cristina Fernández Kirchner’s 2011 election-timed expansion in Argentina, but they are most likely to appear in countries that are less reliant on global capital markets. Argentina, for example, has been shut out of global capital markets since its 2002 debt default.

By comparison, we find that governments with high bond market indebtedness often pursue restrictive policies that yield electoral cycles marked by slowing rates of election-year inflation and growth. These findings are in line with recent research on context-conditional political business cycles by Canes-Wrone and Park (2012), which finds that domestic fixed investment in developed countries is conditional on the electoral cycle. We advance this burgeoning literature by explicitly considering the role of international investment in electoral cycles in developing countries. We examine the conditions under which external financing both fosters and constrains the traditional political business cycle by evaluating its effect on fiscal policy, economic growth, and inflation.¹

¹Our findings are also in line with the notion that elections can be a catalyst for economic reforms (Remmer 1993).

This analysis also gives us new insights into the political business cycle in developing countries, which scholars have recently and extensively analyzed using models of asymmetric information. In these fiscal policy models, voters are typically cognizant of politicians' motivations. However, they lack perfect information about their policy actions, which allows politicians to increase public spending to improve their re-election chances. This literature is based on a first generation of signaling models by Rogoff (1990) and a second generation of moral hazard models spurred by Brender and Drazen (2005) and Shi and Svensson (2006). Our formal theory builds on the latter. In our model, voters are rational but imperfectly informed about government actions. Politicians are also less than perfectly informed about the expected consequences of their policy decisions. Our results are consistent with empirical studies that find a political deficit cycle in developing economies, and with results that predict the pattern to be more common in new democracies (Barberia and Avelino 2011; Shi and Svensson 2006; Gonzalez 2002; Block 2001; Schuknecht 2000; Ames 1987; Brender and Drazen 2005). However, we make the novel contribution that such cycles are conditional on the structure of government debt. When a highly-indebted nation's external debt is comprised mostly of global bonds, politicians are constrained from using budget deficits to manage the economy before elections.

The arguments in the article also engage the important debate in international and comparative political economy about the relationship between modern financial globalization and democracy, as explored in Frieden (1991). On one side, some argue that contemporary global market integration represents a setback for democracy, finding that governments pursue policies that favor capitalists over other social groups (Frieden 1991; Andrews 1994; Helleiner 1994; Cerny 1995; Rodrik 1997). On the other side are those who have long argued that markets and democracy can live in harmony. This can be the case when governments intervene directly to offset globalization's dislocations (Cameron 1978; Garrett 1998). In addition, governments' efforts to boost investor confidence can improve living standards and help stabilize democracies (Przeworski and Wallerstein 1982; Przeworski et. al. 2000). Most recently, political economy scholars have sought to advance the globalization debate by exploring both the nature of the external constraint and the ability of governments to insulate their populace from global market pressures (McNamara 1998; Mosley 2000, 2003; Rudra 2002; Swank 2002; Bearce 2003; Wibbels 2006; Tomz 2007; Pepinsky 2008; Nooruddin and Simmons 2009). For example, recent research on financial market-government relations establishes that financial

integration constrains different types of governments (i.e. developing vs. developed; democracies vs. autocracies; crisis vs. non-crisis countries; manufacturing vs. commodity exporters; peer vs. non-peer sovereign risk categorizations) in distinct ways (Mosley 2003; Saiegh 2005; Wibbels 2006; Campello 2014; Brooks, Cunha, and Mosley 2014). Our analysis brings a new set of considerations to this work, arguing that different creditors – from bankers to bondholders – often behave quite uniquely, creating important differences in policy climates for sovereign borrowers. We show that creditors who fail to overcome their collective action problem are counterintuitively more likely to influence governments’ policy choices.

Finally, the analysis has implications for the study of partisan politics in developing democracies. In Latin America, for instance, scholars have identified broad ideological swings, where the left either tolerated or advanced neoliberal reforms in the 1990s (Roberts 1998; Stokes 2001; Murillo 2002; Weyland 2002; Levitsky 2003), only to later reverse these policies (Roberts 2013). In fact, scholars have found that a variety of factors facilitated this consensus, including a weak labor movement (Roberts 1998), party-brand dilution (Lupu 2015), strong business interests (Thacker 2000; Fairfield 2010), and reform-seeking politicians (Corrales 2000). In a region where government’s budget is key to addressing redistributive pressures, however, why would the left tolerate austerity? Baker (2008) and Baker and Greene (2011) suggest that these actions reflect the region’s attitudes, finding that Latin American citizens surprisingly hold centrist economic policy preferences. For example, Tomz (2001) finds that the majority of Argentine voters were against debt default in 1999, preferring that the government comply with its international financial commitments. Similarly, Hellwig (2014) shows that globalization has crowded out contestation over economic policy, increasing the importance of noneconomic issues to voters. Our analysis presents a supply-side explanation for this demand-side phenomena. We find that in Latin America – a region where bond financing continues to account for almost half of total public external debt – governments with a high exposure to global capital markets are more likely to adopt economic discipline to appease bondholders.

The article unfolds as follows. The next section contains the main theoretical contribution; here we explain how a government’s debt structure induces politicians to prioritize budget discipline and price stability over fiscal stimulus. In the subsequent section, we provide quantitative empirical support for this theory using data from Latin America – a region known for its high dependence on

external financing. We then use the insights derived from our theoretical and quantitative results to interpret a number of recent elections both within and beyond Latin America’s borders, including Southern Europe – a region that has also struggled lately with high bond indebtedness. Finally, we suggest some potentially fruitful research extensions.

2 Theoretical Framework

Why are politicians in highly indebted countries sometimes willing to impose austerity? In this section, we present a formal model of electoral politics and propose that the composition of sovereign debt is a key determinant of budgetary discipline. More specifically, our model shows that the extent of ownership dispersion among international creditors can have an important effect on a government’s policy autonomy. Our reasoning is based on a counterintuitive collective action logic. In the world of finance, we can think of a country’s solvency as a collective good for creditors. Steady debt repayment benefits all creditors, no matter their size or stake in the borrower’s financial affairs. However, when a borrower flirts with default, we argue that concentrated bank creditors are more likely to continue their lending to keep a country afloat than decentralized bondholders. We now make this reasoning more precise.

In our model, an incumbent political decision-maker interacts with a number of investors and the citizens (voters) of a country, over an infinite number of periods. In each period, the incumbent politician has to decide how much to borrow and spend on public goods. Voters care both about their private consumption and their access to public goods. Incumbent politicians share voters’ preferences, but also care about holding political office. By comparison, investors care only about maximizing their investment returns.

Formally, the players of the model are two parties or politicians, A and B, a group of M voters indexed by $i \in \{1, 2, 3, \dots, M\}$, and N political investors indexed by $j \in \{1, 2, \dots, N\}$. We will first specify the incentives of voters, politicians, and investors, before outlining the constraints they each confront. The utility function for an individual voter is:

$$U_i = \sum_{t=1}^{\infty} \beta^t [u(c_i^t) + g^t].$$

The first component of the voter's utility function, $u(c_i^t)$, is an increasing and concave function that represents the utility voter i receives from private consumption in time period t . We assume that it takes the following functional form: $u(c_i^t) = \log(c_i^t)$. All citizens have the same income, w , in every period. Their consumption in period t equals their income minus what they pay in taxes: $c_i^t = w - \tau^t$. The second component, g^t , is the utility received from the public goods provided by the government. Since the income and tax payment, as well as the utility from public spending, is the same for all voters within a period, we will leave out the subscript, so $u(c^t)$ and g^t will denote the utility from consumption and public spending for a *representative voter* in period t . These two utility components are then summed over all time periods, with later periods discounted by the factor $\beta \in (0, 1)$.

Like voters, politicians care about private consumption and public goods. However, they also have intrinsic preferences for holding political office. We are agnostic about the basis of this intrinsic value - it may be due to an inherent value placed on holding office or explicit financial benefits - and simply assume that a benefit E is received by any elected politician. If \mathbb{I}^t is an indicator that takes on the value of one if the politician is in office at time t , and zero otherwise, the utility of a politician is thus:

$$U_p = \sum_{t=1}^{\infty} \beta^t [u(c_i^t) + g^t + E\mathbb{I}^t].$$

We assume the value of holding political office, E , is greater when the number of investors is smaller (holding everything else fixed). Our reasoning behind this assumption, which will be important in the equilibrium analysis, is that a world with a smaller number of (large) investors is one where politicians and investors are more likely to know each other. It is therefore likely to be a more comfortable and stable world for the politicians, where they can readily exchange information with investors in boardroom negotiations.

Turning to the investors: they only care about maximizing their investment returns. At the beginning of the game, each investor has pre-existing investments in this country equal to $x = X/N$, where X is the total amount of capital already invested and N is the total number of investors. This ratio will be instrumental in our analysis; a larger (smaller) ratio represents a more (less) concentrated ownership structure which is meant to resemble a country where a small number of

banks (multitudes of bondholders) hold a large share of the country's debt. Furthermore, each investor has access to additional funds, which may be used to finance new government debt or placed in alternative forms of investments outside of this country. We let b_j^t denote the amount of new funding provided by investor j to the government in period t , and B^t the total amount of new funding by all investors with existing ties to the country.

The payoff to investor j from lending new funds is the return it receives from the government plus the return it receives on its current investments in the country. The former can be compared to the return the investor could get by placing the same amount of capital in alternative assets outside the country. We assume that an investor's best alternative investment is a risk-free asset that pays a time-invariant interest rate R between any two adjacent periods. We let r^t denote the *endogenously* determined interest rate the investors receive when providing new funds to the government. In what we call "normal times," this interest r^t multiplied by any new amount lent to the government, together with a time-invariant interest received at rate I on the pre-existing investments in this country, is the period- t payoff of investor j . There is, however, also a chance that the country will undergo an economic crisis. In such "times of turmoil," the values of the pre-existing investments are negatively affected. After having specified the timing of the game we will describe formally what happens if the country enters such a time of turmoil.

The formal timing within each period of the game is the following: any government debt accumulated in previous periods first has to be re-paid with interest, and the government has to tax its citizens to raise the funds necessary for this re-payment. The investors receive interest payments on their pre-existing investments in the country. Second, the incumbent politician chooses how much to spend on new public goods in this period. We denote this spending by G^t . Third, the politician attempts to borrow the funds necessary for the provision of public goods from its pre-existing investor base; formally, it does so by offering to pay an interest rate r^t on any new lending provided to the government in this period (for instance by issuing one-period fixed rate bonds). These investors simultaneously decide how much to lend to the government, with their total amount of lending denoted B^t . Fourth, if the new lending provided (in the third stage) is not sufficient to fund the spending on public goods (determined in the second stage), the government has to scramble for additional borrowing from international investors who lack pre-existing ties to the country. Fifth, the impact of the public good is felt by the citizens. The impact on each citizen

is the same, and we denote it g^t . This impact is determined by the amount of government spending on public goods and the incumbent politician's competence. Finally, if there is an election in this period, the voters decide whether to elect the candidate from party A or party B. Elections take place every other period.

Asymmetry in the information available to the players plays a key role in the model. The investors are assumed to be better informed than the voters; they observe both the amount of government borrowing and the amount of public goods eventually delivered. The voters are imperfectly informed about the behavior of the government. They perfectly observe the impact of the public goods in the fifth stage, but not the amount of government borrowing in the second stage. The idea is that voters are perfectly informed about the economic variables that directly affect their own lives, but not all the details of the financial decisions made by the government. Finally, no one in this model is perfectly informed about the intrinsic characteristics of politicians. It is common knowledge that the competence or "quality" Q_p of a politician is drawn from a uniform distribution with zero mean and density $1/2q$. This Q is a measure of how capable a politician is at delivering public services that have a positive impact on citizens' lives. The realization of this variable is *initially* unknown to everyone, including the politicians themselves.²

Politicians are limited to one term in office in our model. Hence, a party in control of political office has to change its candidate between elections. We assume this occurs in the middle of the electoral cycle, between a non-election period and an election period. In the beginning of any election period, the party in control appoints a new candidate. This candidate becomes the de-facto (though not necessarily the formal) leader of the party, makes the decisions about public spending and government borrowing, and is thought of as the "incumbent" in the upcoming election. If the party in power again wins the election, this incumbent stays and leads the party through the post-election period, then (de-facto) hands over control to its successor at the beginning of the next election period. If, instead, the challenger wins the election, it makes the spending and borrowing decisions in the post-election period; then, as it too is term limited and cannot run for election a second time, it hands over control of its party at the beginning of the next (election) period, and its successor runs as the incumbent in the election.

²This "moral hazard" assumption regarding the (lack of) information available about the politician's quality follows the seminal work of Holmstrom 1992 on career concerns, and more specifically the assumptions about information structure in electoral politics used by Lohmann 1998 and Shi and Svensson 2006.

These assumptions, regarding term limits and the handover of political leadership, may seem extreme. However, while the setup can be interpreted literally, as describing a system where a ruling party changes its leader between elections, it may also be thought of as a presidential system where (term-limited) presidents choose “anointed successors”, with the effect that these successors run as de facto incumbents.³ For our setup to be appropriate, it is (only) necessary that the voters credit the chosen successors with at least some of the responsibility for economic successes or failures.

To further specify the details of the model, we need the exact expression for the government’s budget constraint and voters’ constraints, establishing how taxes, borrowing and competence translates into consumption, public goods and utility levels. These constraints are:

$$\begin{aligned} c^t &= w - \tau^t \\ g^t &= G^t + Q_p \\ B^{t-1}r^{t-1} + (G^{t-1} - B^{t-1})I^{t-1} &= Mw\tau^t \end{aligned}$$

The first constraint shows that the consumption of a representative citizen in period t equals its income minus its taxes paid. The second constraint represents the utility the representative citizen receives from public goods, and is determined by the amount of public spending (G^t) and the quality (Q_p) of the incumbent politician. The third condition is the government’s budget constraint. The right hand side is the amount collected in taxes in period t . It has to equal the sum of the repayments for the borrowing in the previous period from the investors with pre-existing ties (repaid with interest r^{t-1}) and from the investors without such ties (repaid with interest I^{t-1}).

As mentioned above, economic turmoil can affect investment returns in the country. The probability of such turmoil is affected by public borrowing. One could imagine a number of different possible links between borrowing and the possibility of economic turmoil. We assume that the probability of turmoil increases if the government has to scramble for funds from lenders with *no* pre-existing ties to the country. This implies that, for a given level of public borrowing G , the probability of there *not* being a crisis increases relative to the amount of new funding B extended

³During much of the twentieth century, many Latin American countries constitutionally prohibited presidents from immediate re-election, lending credence to this party continuity assumption.

by vested investors. Formally, if we define this probability

$$p : [0, G] \rightarrow [0, 1]$$

as a function of the share of funding provided by pre-existing lenders to cover public spending G , we assume that $p' > 0$. We furthermore assume that this function is linear (so $p'' = 0$), and that there will be no crash if the government manages to borrow all of the money it needs for new spending from investors with standing financial ties ($p(G) = 1$).⁴

When it comes to the *consequences* of an economic crash/turmoil, we presuppose that it negatively affects the value of existing investments in the country. More specifically, we assume that no return is received on existing investments in the period following the crash. We also assume, however, that the government can repay its outstanding debt issued in the period preceding the turmoil, and that nothing else changes as a consequence of turmoil. One could imagine other factors, such as wages, changing as a result of the crisis, but we hold these factors constant to focus on the changes most relevant to our analysis.

2.1 Equilibrium Predictions

We now turn to describing the behavior of the players in equilibrium. With the term “equilibrium” we will refer to symmetric markov perfect equilibrium. Because of the stationary nature of much of the analysis, we will often drop the superscript indicating time.

As a first step, it is helpful to derive the equilibrium behavior of a politician in a world without elections or financing considerations (i.e. with the interest rate and the probability of turmoil fixed). In this case, the incumbent would not pay attention to the intrinsic benefit derived from holding office because s/he could not influence the probability of receiving this benefit. Hence, the politician would choose levels of borrowing and spending to maximize the utility of the citizens. If the incumbent decides to borrow and spend G , and its level of competence is Q , the government will be able to deliver public goods at a level $g = G + Q$. This delivers an immediate increase in citizens’ utility, but it comes with a cost in the form of higher taxes and lower consumption in the future.

⁴Although one could imagine further “endogenizing” this probability with an explicit theory of economic turmoil, in our view, the assumption that $p' > 0$ is one that any such theory would deliver. Moreover, it is a natural assumption that there will be no crash if the government manages to finance all of its needs with existing investors because this removes uncertainty. The linearity assumption is made for the purpose of analytical simplicity and transparency.

Raising G in one period will lead to private consumption $c = w(1 - \tau)$ in the following period, where τ is determined by the amount that has to be repaid: $M\tau w = Gr \Rightarrow c = w - (Gr)/M$. Since periods beyond the next one are not affected by this borrowing, the incumbent politician simply maximizes the expected sum of the utility from public goods and private consumption, with the latter discounted by β as it takes place in a later period:

$$\max_G E \left\{ G + Q + \beta u \left(w - \frac{Gr}{M} \right) \right\}.$$

Maximizing this with respect to G leads to the following condition:

$$\beta u' \left(w - \frac{Gr}{M} \right) = \frac{M}{r}. \quad (1)$$

We can see that a decrease in the interest rate r , or in the discount rate β , will lead the government to spend more on public goods. Both outcomes follow from a straight-forward trade-off between the present and the next period. We also observe a wealth effect: a representative citizen in a richer country (higher w) would prefer more spending on public goods.

Proposition 1 *If the government can borrow at a fixed interest rate, the probability of economic turmoil is zero and the incumbent politician is confident to remain in power from any period to the next, the equilibrium level of borrowing is given by condition (1). In this case, the borrowing and spending on public goods decreases with the interest rate (r) and the discount rate (β), while it increases with country's wealth (w).*

We now consider governments' financing constraints by endogenizing interest rates and adding the possibility of economic turmoil to our model. We begin by characterizing investor behavior. Suppose that in an arbitrary period, an investor purchases government bonds at a one-period interest rate r . This new lending benefits the creditor both through its investment return (the interest rate paid to an investor) and the new liquidity support it provides for the creditor's initial investment (which makes the government less likely to default, and an economic crisis less probable). The opportunity cost of this lending for the investor is the foregone interest it could have received by investing in alternative assets located outside of the country: $b_j R$. Formally, placing this amount b_j outside the country would deliver the following expected returns for investor j : $b_j R +$

$\frac{X}{N}Ip(0; B_{-j})$, where B_{-j} is the total amount of national lending done by the other investors with pre-existing ties. If the initial creditor decides to lend b_j to this country's government, it delivers the following expected returns: $b_j^t r^t + \frac{X}{N}Ip(b_j; B_{-j})$.

Comparing the marginal rates of return, keeping in mind the linearity of the function p , we see the lenders will invest exclusively outside the country if $R > r + \frac{X}{N}I$, while they will invest as much as they can inside the country (i.e. fully fund the new government debt) if this inequality is reversed. Under this constraint, optimal behavior for the government implies paying the lowest possible interest rate where vested creditors are still willing to fund the government. The interest rate is in part determined by creditors' ownership dispersion, which will ultimately play a vital role in deriving our final results. In our current equilibrium, it must be the case that $R = r + \frac{X}{N}I$. Hence, if we let r^E denote the equilibrium interest rate paid by the government, and a the slope of the function $p(\cdot)$,⁵ we have:

$$r^E \equiv R - a \frac{X}{N}I. \quad (2)$$

Having characterized the equilibrium behavior of the investors, we turn to the incumbent politicians. In non-election periods, their objective is again identical to that of the voters. The maximization problem for the politician is: $\max_{G,r} \{G + E(Q) + \beta u(w - Gr^t/M)\}$. Replacing the interest rate with r^E from (2) would give us the optimization problem for the incumbent. This expression would be useful as a comparison with the election-period optimization problem, but is of less interest in itself. Hence, we turn directly to election years, where we have to add the exogenous benefit of holding office to describe the incumbent's incentives. If we let e denote the incumbent's (endogenously determined) probability of winning the election, as perceived at the time when the choice of G is made, we have the following objective:

$$\max_G \left\{ G + E(Q) + \beta u \left(w - \frac{G(R - a[I(X/N)])}{M} \right) + eE \right\}.$$

To solve this maximization, we need to determine how the probability of winning, e , depends on the level of spending, G . Note that the voters in this model care about selecting the most

⁵Note that we assume a , the slope of $p(\cdot)$, to be independent of the amount the government has borrowed, B . An implication of this is that the intercept of $p(\cdot)$ depends on B , and that, for any given amount of lending extended by investors with pre-existing ties, the probability of turmoil is greater when total borrowing is larger.

competent politician. They are rational in the sense that they only take into account things that will affect their utility in the future; that is, they are not intrinsically “retrospective” in their voting behavior. They do, however, use the past to form expectations about the future competence of incumbent politicians. Furthermore, any differences in the intrinsic quality of competing politicians are unknown to everyone at the beginning of any election period, so the politicians cannot condition the level of spending on their own quality. Knowing this, the voters can, after having observed the level of public services provided to them, infer the competence of the incumbent politician. The citizens’ rational response is then to use a cutoff rule such that incumbent politicians are re-elected only if their competence exceeds a certain level, which is determined by the expected quality of the challenger. With this in mind, we can derive the incumbent’s probability of winning:

$$e = \frac{1}{2} + \frac{G - G^*}{2q}, \quad (3)$$

where G^* is the equilibrium value of public spending, and G is the level chosen by the incumbent. Using this expression, we can write the incumbent’s problem as:

$$\max_G \left\{ G + E(Q) + \beta u \left(w - \frac{Gr^*}{M} \right) + \left(\frac{1}{2} + \frac{G - G^*}{2q} \right) E \right\}.$$

Still assuming the incumbent perceives the interest rate as beyond its control, we can derive the following first-order condition:

$$\beta u' \left(w - \frac{Gr}{M} \right) = \left[1 + \frac{E}{2q} \right] \frac{M}{r}. \quad (4)$$

We can gain insights into the behavior of incumbent politicians by comparing this condition (4) with the base model condition (1). The left-hand side of these two expressions are identical, while the right-hand side of (4) is greater than the right-hand side of equation (1). From this we can infer that the equilibrium level of G is greater in (1). This result establishes the existence of political budget cycles in the baseline version of our model, and we summarize it in the following proposition:

Proposition 2 *If the incumbent politicians take the interest rate as given, the equilibrium level of public spending is greater in election years than in non-election years.*

Finally, in the full model with elections and financing constraints (i.e. endogenous interest rate and possibility of economic crash), we have the following objective for the politician:

$$\max_G \left\{ G + E(Q) + \beta u \left(w - \frac{G(R - a[I(X/N)])}{M} \right) + \left(\frac{1}{2} + \frac{G - G^*}{2q} \right) E \right\}.$$

Differentiating gives us the following first-order condition:

$$1 - \beta u' \left(w - \frac{G((R - axI))}{M} \right) \left[\frac{R - axI}{M} \right] + \frac{E}{2q} = 0.$$

Using the functional form for the utility, $u(c) = \log(c)$, we can solve for G :

$$\begin{aligned} \frac{G(R - axI)}{M} &= w - \beta \left[\frac{R - axI}{M} \right] \left[\frac{2q}{2q + E} \right] \\ \Rightarrow G &= \frac{wM}{R - axI} - \beta \left[\frac{2q}{2q + E} \right]. \end{aligned} \quad (5)$$

To analyze the implications of a country's debt structure, recall that greater creditor ownership concentration (an increase in x) is due to either an increase in the total pre-existing investments, X , or a decrease in the number of investors, N . Let $G^*(x)$ be the function that gives the equilibrium value of G as a function of x from expression (5). If we differentiate this function, we have:

$$\frac{dG^*(x)}{dx} = \left(\frac{wM}{R - axI} \right) aI + \beta \left(\frac{2q}{2q + E} \right) \frac{dE}{dx}.$$

Now, remember that dE/dx is assumed to be positive, which means that dG/dx is greater than zero. This means that an increase in x (a rise in ownership concentration) will lead to an increase in the amount of new public spending (and associated borrowing). Furthermore, note that this happens through a direct effect, captured by the first term in (5), and through an "election effect", captured by the second term. We summarize in the following proposition:

Proposition 3 *The public deficit is smaller in countries where creditor ownership dispersion is greater, meaning either the total number of vested creditors is greater, or the total stock of invested capital is smaller. This holds for both election and non-election years, but the effect is stronger in election years.*

This proposition highlights the impact of the investors' collective action problem, which comes from the fact that lenders with sizeable pre-existing investments will be more concerned about a country's potential economic problems, and thus more inclined to extend (new) loans to cover deficits in order to hold down the likelihood of turmoil. Strategically-minded incumbents understand this creditor predicament and are willing to run greater deficits when they interact with investors that have large, vested interests in the country.

2.2 Summarizing the Model: Debt Structure's Policy Implications

These theoretical results suggest that bankers are the types of creditors most likely to provide their debtors with a financial backstop. Bankers' willingness to inject new money into their debtors reflects the nature of commercial bank lending, which is characterized by a small, centralized pool of creditors with high concentrated exposures to their borrowers. As a result, the return of their money is directly linked to debtors' financial health. If they were to cut financing fully, it would accelerate their debtors' road to economic turmoil. By keeping borrowers afloat, these centralized creditors are safeguarding their own balance sheets from profitability shocks. One real-world interpretation of this result is that the promise of new funds allows debtors to veer from calls for budget discipline often embedded in loan agreements. Ironically, our model suggests that being able to solve a collective action problem leaves bankers with less sway over debtor government policies.

By contrast, we surmise that collective action failures are more common in global bond financing, given its ownership dispersion among creditors. When credit risk is channeled across such a large pool of financiers, creditors not only reduce their exposure to borrowers, but also their stake in their financial futures. They hold too small a share of borrowers' debt exposure to warrant providing new funds. These predictions are in line with Olson's collective action theory, which claims that large, heterogeneous groups often experience coordination failures (Olson 1965). Group members, with low personal stakes in the collective good, often prefer to survive without it than pay their share. However, collective action failures typically impede groups from pressuring governments. In this case, decentralized creditors benefit from their coordination problem; it indirectly increases their influence over debtor governments. If countries do not demonstrate commitment to economic policies that ensure debt repayment, bondholders can cut their financial ties without incurring a severe profitability shock. Hence, our model suggests that compared to vested bankers, bondholders'

credible threat to cease new funding allows them to more crudely impose austerity demands.

In addition to this general effect, our model anticipates that elections intensify the disciplining effect of bond market indebtedness. In line with previous political business cycle models, our model shows that information asymmetries between the government and the people can often lead to political budget cycles, or spending increases before elections (see Proposition 2). However, we find that such electoral cycles are also conditional on the government's debt structure (see Proposition 3). To draw new investments from decentralized bondholders during periods of political uncertainty, governments must raise interest rates on new public debt, which constrains politicians from using deficit spending before elections. If governments do not meet bondholders' policy expectations, they risk precipitating capital exit and a destabilizing shock. Hence, our model suggests that – holding constant the total investment in a country – greater ownership dispersion among creditors (an increase in total investors) should decrease macroeconomic cyclicity around elections. Additionally, a reduction in each creditor's standing investment (a dilution of creditor exposure) – holding constant the number of investors – should also decrease electoral cyclicity.

3 Empirical Tests

To evaluate our theoretical statements systematically, we translate the propositions into the following testable hypothesis:

H1: A shift to decentralized bond finance (characterized by greater ownership dispersion) will lead to improved fiscal balances, with a particularly strong effect in election years. Relative to a centralized finance regime (characterized by high creditor concentration), such a shift will also lead to a decrease in inflation and economic growth during election years.

To test our hypothesis, we journey to Latin America, a region that is ideally suited for our analysis because it offers significant variation in public debt composition. Throughout the 1970s and 1980s, large banks had provided the majority of cross-border capital flows to the region (Frieden 1987). The 1990s Brady Restructurings converted this commercial bank debt, which many countries had defaulted on during the 1980s debt crisis, into market-traded debt held by a diversified group of global investors. These restructurings helped fuel a surge in Latin American bond issuance, which

quickly replaced commercial bank loans as the region’s primary funding source (see Figure A.1 in the appendix).

How did this dramatic change in debt financing affect creditors and debtors in Latin America? Before these restructurings, creditors often injected new money into their debtors during hard economic times. For example, when Mexico ignited the 1982 debt crisis by announcing a 90-day debt moratorium, a small core of global bankers collectively responded by providing new loans to the region rather than cutting financial ties.⁶ By comparison, after the Brady restructurings, creditors had redistributed risk across a large decentralized pool of financiers – who were more likely to sell their bondholdings than lend defensively during hard times – making the region more susceptible to sudden capital withdrawals. Recall that to prevent such outflows, we expect governments to exhibit greater discipline generally, and particularly during election years. In the rest of this section, we will test this proposed explanation more rigorously. Specifically, in what follows we operationalize our hypothesis (H1) with the following baseline regression equation:

$$\begin{aligned}
 Y_{it^k} = & \alpha + \beta_1 Election_{it} + \beta_2 d_{it} + \beta_3 Election_{it} * d_{it} \\
 & + \hat{\beta}_4 X_{it} + \hat{\beta}_5 Y_{it^k, t-1} + n_i + \varepsilon_{it}
 \end{aligned} \tag{1}$$

where Y_{it^k} = economic indicator; where $k = a, b, c$ with $a =$ fiscal balance, and $b =$ inflation, and $c =$ GDP growth; where $Election_{it}$ = election variable; where d_{it} = the share of decentralized bond finance relative to total external public debt; and $Election_{it} * d_{it}$ = the interaction between decentralized financing and elections. The index $i =$ country and $t =$ year. X_{it} = vector of control variables; and $Y_{it^k, t-1}$ = economic dependent variable (one year lag). The term n_i = dummy for each country, intended to capture unobserved country effects, while ε_{it} = error term.

To test the hypotheses, we focus on the coefficients on $Election_{it}$, d_{it} (decentralized bond finance), and in particular, the interaction terms between these variables. A positive coefficient on the interaction term, when the government’s fiscal balance is the dependent variable, would provide support for the hypothesis that decentralized finance improves fiscal balances (i.e. narrows

⁶To protect their investments, banks embedded IMF conditionality into these loan agreements (Vreeland 2003; Nelson 2015).

budget deficits or bolsters budget surpluses) before elections. Similarly, a negative coefficient when inflation / growth is the dependent variable would confirm the hypothesis that bond financing has a deflationary electoral effect.

3.1 Data and Methodology

We base our empirical tests on a panel of data covering 16 democratic countries in Latin America from 1961-2011. Employing the dataset, we can observe how Latin America – a region known for its high indebtedness – governed through considerable financial volatility beginning with the 1982 debt crisis and through the most recent global crisis. We also adjudicate between our theoretical priors about debt structure and the effect of IMF conditionality using a variable that measures whether a country participated in the IMF-led Baker Plan, a debt restructuring that called for austerity and predated bond market securitization.

Latin America’s predominance of presidential systems makes it an ideal setting to examine political business cycles. The presence of election-timing that is fixed and constitutionally-mandated avoids endogeneity problems with the election variable,⁷ or the possibility that current economic conditions reflect political tinkering with election dates.

We present our findings using both fixed effects and generalized methods of moments (GMM) estimators. The empirical analysis proceeds in two stages. First, we use a series of basic regression models to test for the traditional political business cycle, presenting evidence about the effect of elections on government budgets and core macroeconomic indicators: inflation and growth. Second, in the crux of the analysis, we analyze the impact of decentralized debt on fiscal policy and the economy; in addition to the direct effect, we condition decentralized debt on elections to evaluate its effect during election years. All models are estimated with robust standard errors, clustered by country. Fixed year effects were tested and removed since they were not statistically significant and did not affect the main results. In the appendix, we include data sources and descriptive statistics.

⁷To confirm that the election variable is exogenous (and that the incumbent did not disregard the constitution by changing election timing), we verified that the election dates in our time series corresponded to constitutionally-mandated election dates.

3.1.1 Data Description: Independent Variables

Elections According to political business cycle theorists, politicians’ desire to maintain office compels them to aggressively intervene in the economy. In line with this premise, we limit our unit of analysis to democratically competitive elections, which are classified based on whether there is electoral alternation (Przeworski et. al. 2000). Employing this classification, we code a total of 139 contested presidential elections that span the entire dataset from 1961 to 2011 (see Figure A.2 in appendix). We study presidential rather than legislative contests because historically Latin American economic policy is more strongly influenced by the executive than by other public actors.

After classifying these elections, we then constructed a binary variable, $Election_{it}$, as a pre-election dummy for fiscal stimulus and growth, but as a post-election dummy for inflation. We employ the separate post-election dummy variable to account for the expected lag between economic policy decisions and inflation. According to macroeconomic theory, monetary policy affects the economy incrementally, with inflationary pressures often mounting between a half year and a year and a half. Fiscal policy may also have a lag, but generally affects the economy more quickly (Friedman 1970). Given such potential lags, we use the post-election dummy to track inflation both during the election year and subsequent years.

$$pre_election_{it} = \begin{cases} 1 & \text{in the election year, and the preceding N-1 years} \\ 0 & \text{otherwise, where N=2 or 3} \end{cases}$$
$$post_election_{it} = \begin{cases} 1 & \text{in the election year, and the subsequent years} \\ 0 & \text{otherwise} \end{cases}$$

Decentralized Bond Debt To test our theory, we construct a variable, $Bondfinancing_{it}$, that measures global bonds outstanding as a percentage of government’s total external financing. If our theory is correct, political business cycles may exist when countries have a low level of global bond indebtedness. However, as global bond account for a higher share of government debt – relative to alternative external financing sources such as bank lending – we should be more likely to observe fiscal discipline and inflation control.

Control Variables We control for a variety of global economic factors, domestic economic variables, and institutional factors that may affect national fiscal balances, growth, and inflation.

As past economic performance influences present economic conditions, we also include a lagged dependent variable. Finally, we use a slightly different set of controls for the fiscal policy and growth/inflation regressions, as we expect different factors to be important for different outcomes (for more details, see the appendix).

3.2 Empirical Results

The first series of basic regression models display the unconditional effects of the independent variables on budget balances and the economy. These effects are unconditional in that they ignore the government's debt structure at the time of elections, which in the regressions means the interaction variables between elections and bond financing are omitted. We find evidence that primary budget deficits deteriorate more during elections than other time periods. In fact, the coefficient on the election variable is negative and statistically significant (see model 1 in Table 1). These results are consistent with empirical studies that have found a political deficit cycle both in Latin America and developing economies more generally.

Does such fiscal tinkering have an effect on the macroeconomy? Perhaps, governments increase deficit spending to target political supporters with public works projects or salary increases before elections, but do not provide sufficiently large stimulus to affect the broad economy. For example, the OECD literature finds evidence of pre-electoral fiscal stimulus, but no significant increase in aggregate economic activity before elections (Drazen 2001). We find a similar pattern. Despite the appearance of a political deficit cycle, there is no evidence that elections stimulate Latin American economies. The election coefficients for both the *inflation* and *growth* regressions are statistically insignificant (see model 1 in Tables 2-3).

We find considerable support for a general bond financing effect on policy making and inflation control. Across the first two basic regression models, the bond-financing coefficient exhibits a statistically significant relationship with both governments' budget balances and inflation. In other words, a greater reliance on global bond financing corresponds to improved budget balances (narrower budget deficits or higher budget surpluses) and lower inflation.⁸

Finally, the control variables results indicate that the coefficient for global growth is statistically

⁸By contrast, we do not find a statistically significant relationship between bond financing and growth, which supports the findings that budget policy and inflation are among the most scrutinized factors by international investors (Mosley 2003).

significant across all of the unconditional models (Tables 1-3). Global growth is associated with improved budget balances, higher domestic growth, and moderate inflation. In line with expectations, interest rates and executive constraints are negatively and positively correlated with budget balances respectively, and terms of trade gains appear to boost economic activity.

Does this estimated impact of bond financing differ between election and non-election years? Our theory suggest that the cyclicalty around elections should decrease as governments become more dependent on decentralized bond markets. In the conditional regression models (models 3-7 in Table 1), decentralized bond finance has a strong and statistically significant mitigating effect on budget deficits during election periods, lending support to our primary hypothesis.

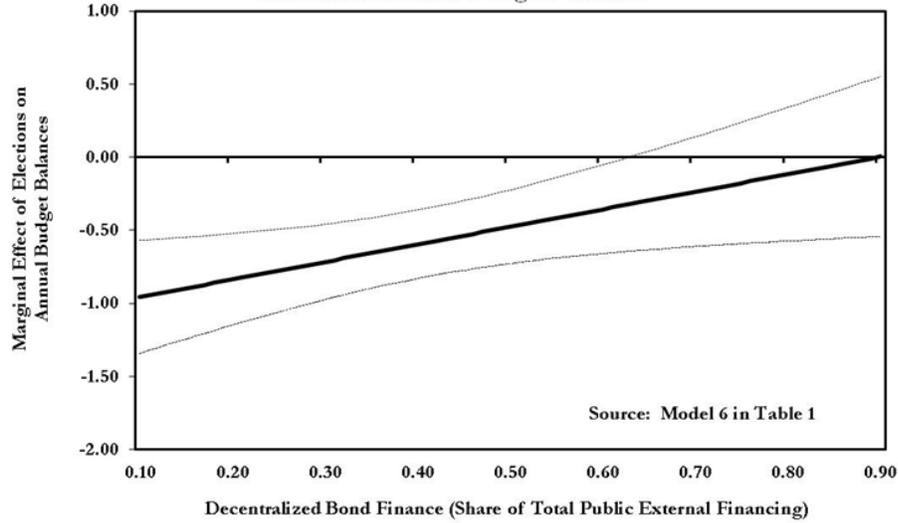
Figure 1 shows the marginal effects of these conditional models. When countries have little or no exposure to global bond markets, elections have a negative and statistically significant effect on budget balances. Elections tend to increase government budget deficits by as much as 1.1 percent of GDP (see Table 1), confirming the expectations of the political budget cycle literature.

Notably, however, as global bonds outstanding account for a growing share of external financing, this statistically significant relationship considerably narrows in magnitude (see Figure 1). For instance, when bonds comprise about two-fifths of public external debt, government budget deficits shrink by about one-half of 1 percent of GDP compared to election years where governments have little or no bond financing. With greater bond indebtedness, fiscal austerity becomes even more acute. For countries where global bonds account for four-fifths of a country's external financing, average deficits narrow by almost 1 percentage point of GDP compared to election years where governments have little or no bond debt outstanding.

In line with our theoretical model and empirical hypothesis, bond indebtedness appears to promote budgetary discipline in highly indebted countries. Does it also have a disciplining effect on the economy during election periods? The conditional models (see Tables 2 and 3) examine this relationship. The regression results show that bond finance has a statistically significant and strong moderating effect on inflation and growth during elections. In other words, the higher a country's share of bond financing, the less likely its politicians are to craft a high growth, high inflation election cycle.

The coefficients for the control variables generally correspond to expectations (Tables 1-3). Global growth continues to be associated with improved budget balances, higher domestic growth,

Figure 1: Marginal Effect of Elections on Latin American Budget Balances



and moderate inflation. As expected, domestic investment is also positively related to domestic growth. Finally, when the primary fiscal balance (lagged by one year) is a control variable; its coefficient has a statistically significant relationship with both inflation and growth, but in a negative and positive direction respectively. In other words, a narrower budget deficit is associated with lower average inflation and higher growth.

To extract a meaningful relationship between bond financing and elections, we can calculate the marginal effects of elections over different values of decentralized bond finance. In Figures 2 and 3, we observe that as global bond markets account for a higher share of government financing, the effect of elections on inflation and economic growth not only becomes greater in magnitude, but also more highly statistically significant. These results provide considerable support for our theoretical framework and empirical hypothesis.

3.2.1 Robustness Checks

In a series of robustness checks, we found that the correlation between decentralized financing and the economy is markedly resilient. First, we repeated the statistical tests just described using the Arellano-Bond GMM estimator to help mitigate concerns about the possibility of reverse causality in the independent variables. Overall, the GMM results support the governing hypothesis that

Figure 2: Marginal Effect of Elections on Latin American Inflation Rates

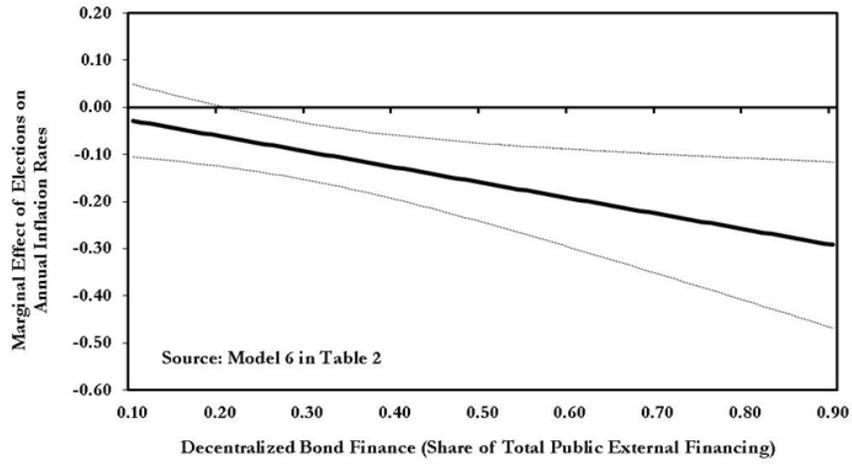
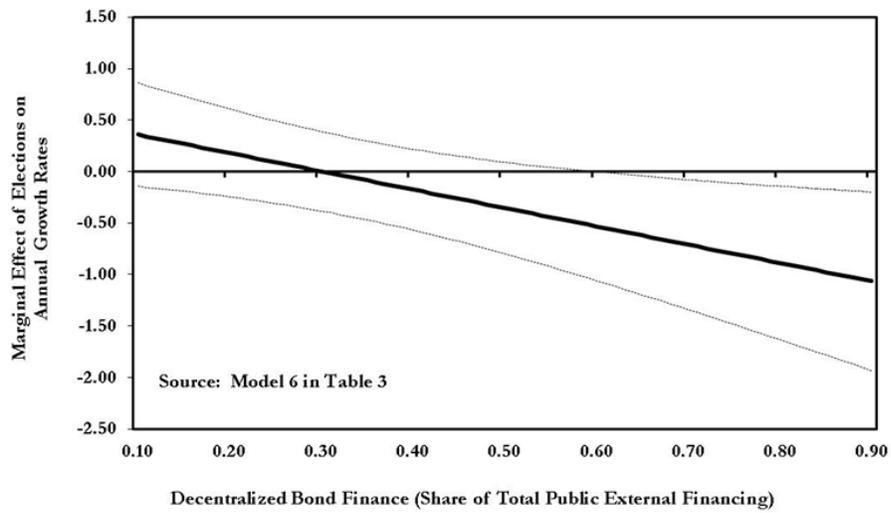


Figure 3: Marginal Effect of Elections on Latin American Growth Rates



the relationship between elections and the economy is contingent on decentralized finance.⁹ Elections occurring under bond financing are positively correlated with government budget balances, but negatively correlated with inflation and growth (see models 2 and 6 in Tables 1-3).

We also inserted several additional control variables - including left partisanship and the existence of an IMF program - into the original models to account for the potential influence of political and institutional factors on government budgets and the economy. None of these additional controls significantly changed the size, direction, or statistical significance of the key results (see models 3 and 4 in Tables 1-3).

Notably, the statistically significant IMF coefficients in Table 1 suggest that governments under IMF programs tend to improve budget balances, but IMF programs alone do not appear to be a sufficient condition for austerity. Before the 1990s' debt securitizations that developed Latin American bond markets, the Baker Plan variable captures the years where an IMF-led sovereign debt restructuring was in effect (see model 5 in Tables 1-3). Embedded with conditionality agreements, these restructurings should make narrower fiscal deficits more likely if an IMF agreement alone was a sufficient condition for budget discipline. The Baker Plan coefficients, however, are statistically insignificant, suggesting that we cannot reject the null hypothesis that IMF programs during the Baker years had no effect on budget balances. At the same time, we should also expect inflation control to be more likely under IMF programs. While the Baker Plan coefficient is statistically significant, its positive sign suggests that average inflation tended to be higher during these years. These findings support scholarship that has found that Latin American governments exhibited low rates of compliance with their IMF programs during the 1980s (Haggard 1985; Edwards 2001). This relationship appears to change in the 1990s as bonds comprise a larger share of sovereign debt, when both bond finance and IMF agreements are strongly correlated with budget discipline. Hence, our work does not rule out the possibility that conditionality *may* lead to more fiscal discipline, but it does show that the magnitude of its effects depends on the structure of government debt.

Notwithstanding these findings about the importance of debt composition, might the size of external debt itself be an important driver of austerity? We expect that high indebtedness should at least be a basic prerequisite for electoral austerity. Noting that external debt in Latin America

⁹The Arellano-Bond test for the GMM-estimators presents no significant evidence of serial correlation in the first-differenced errors at the second order. The Hansen-Sargan test suggest that the model has the correct specification and that the overidentifying restrictions are valid.

has rarely been manageable – averaging 40 percent of GDP in the region during the last fifty years, a level that is well-above the 20 percent threshold that is considered "safe" for many emerging market countries¹⁰ – we reran the statistical tests dropping any observations below the 20 percent threshold and later omitting those below a more conservative 25 percent threshold. Importantly, the coefficients on the interaction effects do not change sign but are greater in magnitude, strengthening the initial positive relationship between decentralized finance and election-year budget balances (see model 7 in Table 1) and negative relationship between decentralized finance and the economy (see model 7 in Tables 2-3). Notably, above this external debt threshold, the marginal effect of elections on budget balances shifts into positive territory for higher levels of bond indebtedness, meaning we observe small budget surpluses rather than the narrowing deficits we first saw in Figure 1.

As a final robustness check, we modified the structure of the binary election variable to account for longer/shorter-than-expected policy lags between economic decisions and inflation. Our theory predicts that when bonds account for a large share of external debt, we should observe a deflationary effect not only in the election year, but also the subsequent year. To account for a potentially even-longer monetary policy lag, we also varied this lag structure by adding second year to the binary election variable. We also shifted the election variable to capture the possibility of a shorter policy lag by tracking inflation patterns that predate the electoral campaign. These robustness tests did not yield any material changes.

4 Discussion

When countries have weak institutional transparency and few executive constraints, political economy theory expects politicians to use budget deficits to engineer an election-timed boom, known as the political business cycle. But, why might we observe austerity in countries notwithstanding their level of institutional development? We have shown that the global financialization has profound effects on domestic politics. When politicians from highly-indebted countries rely on decentralized bond markets (rather than centralized lending), they often exhibit more fiscal discipline, which is particularly strong during election periods.

For example, Peru – a country marked by a decade-long flirtation with authoritarianism earlier

¹⁰Reinhart, Rogoff, and Savastano 2003 find that "safe" debt thresholds are as low as 15 percent of GNP.

in the 1990s – held only five democratic elections between 1963 and 2011. Featuring still-fledgling institutions, the incumbent president, Alan García, oversaw a more than 2 percentage point increase in the primary budget surplus (as a percentage of GDP) in the two years before the 2011 elections. Why would García – who was no stranger to hefty government expenditures during his first presidency in the mid-1980s – engage in such austerity when he was intending on making another presidential bid?¹¹

During García’s first presidency in the 1980s, commercial banks were Peru’s main creditors (loans from banks and official creditors accounted for nearly four-fifths of the country’s debt). Without a credible exit threat from their lending relationships, they helped underwrite election-oriented deficit spending. By the time García had returned to office in 2006, Peru had become highly reliant on global bond markets for its budgetary financing – with international loans accounting for a paltry 0.3 percent of total debt financing. Under bond financing, García surprisingly turned to electoral austerity in 2011 in response to the threat of capital flight from investors who feared a return of fiscal largesse.

Does the relationship between debt financing and electoral behavior simply reflect Latin America’s unique circumstances, where the Brady Restructurings swiftly transferred debt ownership from bankers to bondholders, or might these patterns also hold in other highly indebted regions? In particular, might our results help us better understand contemporary events? To glean some insight into these questions, we can look outside of our sample to Southern Europe. Not only has the recent financial crisis generated tremendous interest among scholars, policy-makers and the general public, but it has brought the question of fiscal responsibility to the forefront of European relations again. Fiscal responsibility was initially a centerpiece of the Eurozone convergence criteria, which mandated limits on government borrowing and national debt, in the prelude to the 2001 dawn of the monetary union. However, the sovereign debt difficulties at the heart of the 2009-10 Eurozone crisis have underscored the lack of fiscal responsibility during the euro’s first decade.

In the wake of the crisis, these debt difficulties have catalyzed Southern Europe’s adoption of austerity policies, despite running counter to many of its incumbent governments’ ideological and political roots. One often cited reason for the region’s turn toward austerity has been coercive pressures from Europe’s troika of international creditors: European Commission, the European

¹¹ Presidents are constitutionally banned from immediate reelection, but García plans to run for reelection in 2016.

Central Bank, and the International Monetary Fund. Our analysis brings a new set of considerations to the austerity question, suggesting that the structure of sovereign debt financing may also be an important determinant of economic policy choices.

To illustrate, let us briefly journey to the Iberian Peninsula, home to Spain and Portugal, two nations that share a common characteristic with the Latin American experience: they have become reliant on external financing, and specifically global bond markets to fund their government deficits. Notwithstanding this similarity, investors have often considered Latin America and Southern Europe to be institutionally and developmentally distinct (Mosley 2003). As members of the European Union and the European Monetary Union, Spain and Portugal have benefited from a sound institutional framework that allowed them to readily attract capital. Investors deemed that such established democracies with a history of stable economic governance were relatively free from default risk. By contrast, Latin America – a highly indebted region with a less developed institutional infrastructure – often struggled to overcome investor concerns about its legacy of debt crises. If we find that high bond indebtedness is also a precursor to austerity in Spain and Portugal, two countries that are institutionally very different from Latin America, it suggests that our central findings about high bond market indebtedness may generalize beyond Latin America (Mill 2011).

In the years leading up to the eurozone crisis, bond indebtedness accounted for an average of 91 and 98 percent of total external debt in Spain and Portugal respectively between 2007 and 2009, with the remainder comprised of international bank loans. With such high bond market indebtedness, our theoretical model anticipates that the dilution of creditor ownership would have induced austerity in response to capital outflows and increasing interest rates on public debt. As expected, the capital outflows generated by the crisis were associated with higher interest rates. By the end of 2010, the average 10-year yield spread over comparable German bonds in Spain and Portugal reached 249 and 364 basis points, relative to a mere 5 and 16 basis point spread during 2006. Facing these funding pressures, the Spanish and Portuguese authorities narrowed their primary budget deficits by 2.0 and 0.5 percentage points respectively during 2010.

In addition to this generalized effect, we also observe pronounced electoral austerity in these two countries during their 2011 elections. This pattern is particularly surprising given that socialist parties were governing in both countries. In Spain, the incumbent PSOE party faced fervent protests against austerity from its political base, including the trade union movement. In Portugal,

Prime Minister José Sócrates (PS) resigned in March 2011 after failing to secure approval for a new fiscal austerity package that featured social spending cuts that were unpopular with many of his supporters within his own party. In light of these domestic pressures, why would these socialist governments have pursued austerity before new elections?

We present a possible explanation. Their high bond indebtedness made both governments susceptible to capital flight. During 2011, capital flight contributed to both Spanish and Portuguese bonds yields surging further by mid-year, and crossing the six percent threshold considered by investors to be sustainable in both countries. Facing these deteriorating credit conditions, Spanish Prime Minister and Socialist Party leader (PSOE) José Luis Rodríguez Zapatero announced a fiscal adjustment package in spite of the upcoming November elections.¹² The prime minister also controversially capped regional government spending by decree and introduced a constitutional amendment mandating strict deficit and debt limits. Notwithstanding the resignation of Portuguese Prime Minister Sócrates over his unpopular austerity measures earlier in the year, the entire campaign before Portugal's June elections centered around austerity negotiations, and Portugal also cut its fiscal deficit in the spring of 2011 in hopes of assuaging its creditors.

In summary, there is little trace of the political business cycle during these two elections. While a full analysis of Southern Europe's recent experience is well beyond the scope of this paper, the electoral pattern in Spain and Portugal in 2011 is consistent with our theoretical expectations. Governments adhere to fiscal discipline when creditors' ownership dispersion imposes a credible capital exit threat, suggesting that the effect of bond market indebtedness on public spending choices may not be unique to Latin America.

5 Conclusion

We have examined how a reliance on external financing can affect the economic policy choices of highly-indebted governments. Compared to those countries that have little or no foreign debt, highly-indebted governments are less insulated from the international investment community. With fewer resources to draw on domestically from less-developed tax bases and capital markets, many cash-strapped nations have little choice but to raise financing internationally. In exchange for funds,

¹²Reverse causality is unlikely to be a problem, given that Zapatero introduced the fiscal austerity package on August 19th, well-after he had called for an early election on July 29th.

debtor governments are typically required by their creditors to pursue fiscal restraint to increase the likelihood that their debts are repaid. Whether we observe fiscal discipline, however, is often conditional on a country's external debt structure.

We have developed and tested a model that shows that deficit spending declines with the greater dispersion of creditor ownership that is characteristic of global bond markets. In other words, we expect that globally-decentralized bond markets should have more of a disciplining effect on macroeconomic governance than other types of more centralized credit such as commercial banking.¹³ In our cross-national test in Latin America – a region that is known for its historically high level of external indebtedness – we find that governments whose global bond portfolios account for a greater share of their external debt are more likely to have narrower budget deficits. This effect holds generally, but is most pronounced during elections.

Our theoretical model offers many promising future research opportunities. Moving beyond this setting, it would be interesting to explore the effect of recent legal changes in the global financial architecture. For example, the 2013 European Stability Mechanism has sought to insulate euro-area citizens from capital flight by mandating that all new sovereign bonds have collective action clauses. These clauses facilitate creditor-debtor negotiations by allowing a supermajority of bondholders to overrule holdout creditors, and as a result, lessen the likelihood of default. We have argued that greater magnitudes of creditors under bond financing catalyzes capital exit during hard times, necessitating more austerity to assuage creditor fears of default. However, if the adoption of collective action clauses helps forge a bondholder consensus, creditors may behave more like centralized bank lenders, making capital exit and ultimately austerity less likely.

A related and important question is how litigation from 'holdout creditors' – as observed in Argentina and Greece¹⁴ – might mitigate such an effect. These holdout creditors typically refuse to accept negotiated bondholder settlements, demanding that their borrowers repay them fully. Fearing that consensus-driven restructuring efforts will create a new precedence, they prefer to uphold the legal tradition that governments cannot renege on their contracts with individual creditors. If such litigation strategies become more common, they could threaten to dilute creditor coordination

¹³Aid flows, which are historically less prominent in Latin America, may also be an important form of centralized credit in other regions such as Africa (see Winters 2010 and Dietrich 2013 for more details).

¹⁴Hedge funds, such as Elliott Associates and Dart Management, have used litigation strategies to circumvent participating in Argentina and Greece's creditor restructurings in 2005/2010 and 2012 respectively.

and intensify bondholder exit, as each creditor holds out for a better deal. Not only might default become more likely, but governments might be forced to take even more onerous actions to curb capital exit. For example, during the first half of 2014, the Argentine government had expended tremendous political and financial capital demonstrating its commitment to market governance in hopes of returning to global capital markets.¹⁵ Caught by surprise when the U.S. Supreme Court refused to hear its July 2014 appeal, the Argentine government opted for a technical default rather than comply with a US district court ruling demanding that it repay its holdout creditors. It feared that paying some holdouts could spark a cascade of claims from other bondholders that could surpass US\$15 billion, potentially depleting the nation's dollar reserve funds meant to protect against future financial instability. Argentina preferred to find new alternative financing sources, including a US\$11 billion currency swap agreement with China,¹⁶ than risk such capital reversals.

These examples suggest that our theoretical framework could be fruitfully extended in several ways. We have shown that global ownership diffusion can plague creditor coordination and breed austerity in countries with high bond indebtedness. By exploring the effects of other dimensions of the international financial architecture beyond ownership dispersion, such as the legal evolution of bond contracts, we can gain a better understanding for creditor-debtor relationships, and ultimately for thinking about how the structure of global finance may affect future sovereign crises.

¹⁵Over the last year, the Kirchner government has attempted to restore its credibility with international investors by repaying its long-standing Paris Club arrears and compensating the Spanish energy company, Repsol, for the government's YPF expropriation.

¹⁶For more details on China's increased role in global finance, see Steinberg 2014 and McDowell and Liao 2014.

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Table 1: The Effect of Elections on Fiscal Balances (16 Latin American Countries)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	FE	GMM	FE	FE	FE	GMM	FE/debt>25%
Elections	-0.675*** (0.169)	-0.688*** (0.162)	-1.041*** (0.314)	-1.057*** (0.310)	-1.068*** (0.302)	-1.075*** (0.286)	-1.370*** (0.362)
Bond Financing	1.388** (0.511)	1.496*** (0.497)	0.990* (0.465)	1.028** (0.463)	1.109* (0.555)	1.104** (0.543)	0.399 (0.458)
Elections*Bonds			1.149* (0.651)	1.176* (0.659)	1.191* (0.647)	1.199** (0.609)	1.673* (0.876)
Global Growth	0.315*** (0.095)	0.316*** (0.092)	0.328*** (0.091)	0.326*** (0.089)	0.319*** (0.091)	0.320*** (0.086)	0.284*** (0.094)
Terms of Trade	0.261 (0.268)	0.266 (0.277)	0.270 (0.252)	0.271 (0.232)	0.261 (0.237)	0.250 (0.232)	0.477** (0.181)
External Debt	-0.003 (0.002)	-0.003 (0.002)	-0.003 (0.002)	-0.003 (0.002)	-0.003 (0.002)	-0.003* (0.002)	-0.003 (0.002)
Output Gap	0.049 (0.039)	0.048 (0.036)	0.030 (0.041)	0.038 (0.044)	0.038 (0.044)	0.037 (0.040)	0.049 (0.048)
Interest Rate	-0.321* (0.161)	-0.321** (0.155)	-0.317* (0.150)	-0.310** (0.145)	-0.305* (0.145)	-0.314** (0.139)	-0.236 (0.338)
Unemployment (t-1)	-0.056 (0.045)	-0.061 (0.044)	-0.075 (0.047)	-0.084* (0.047)	-0.083* (0.047)	-0.087* (0.044)	-0.181** (0.083)
Inflation (t-1)	0.477** (0.215)	0.481** (0.206)	0.445* (0.235)	0.463** (0.206)	0.449** (0.207)	0.451** (0.196)	0.047 (0.243)
Fiscal Balance (t-1)	0.400** (0.137)	0.398*** (0.132)	0.383** (0.130)	0.384*** (0.128)	0.380** (0.129)	0.378*** (0.124)	0.198 (0.161)
Exec. Constraints	0.234** (0.103)	0.245** (0.102)	0.274*** (0.088)	0.267*** (0.083)	0.267*** (0.084)	0.280*** (0.081)	0.416** (0.166)
Left Governments			0.582** (0.238)	0.591** (0.218)	0.595** (0.225)	0.590*** (0.215)	0.502 (0.465)
IMF Program				0.436* (0.235)	0.429* (0.229)	0.437** (0.218)	0.544** (0.240)
Baker Plan					0.194 (0.627)	0.195 (0.602)	0.423 (0.927)
Observations	375	357	375	375	375	357	204
R^2	0.38		0.39	0.40	0.40		0.32

Standard errors in parentheses

FE=Fixed effect models. GMM=GMM estimator, using first differences. All models use robust standard errors.

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

Table 2: The Effect of Elections on Inflation (16 Latin American Countries)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	FE	GMM	FE	FE	FE	GMM	FE/debt>25%
Elections	-0.058 (0.041)	-0.058 (0.039)	0.033 (0.069)	0.027 (0.065)	0.004 (0.062)	0.005 (0.059)	0.081 (0.090)
Bond Financing	-0.835** (0.316)	-0.829*** (0.306)	-0.724** (0.257)	-0.742** (0.269)	-0.537** (0.200)	-0.526*** (0.196)	-0.581* (0.320)
Elections*Bonds			-0.362* (0.176)	-0.379** (0.170)	-0.327* (0.172)	-0.330** (0.163)	-0.624** (0.281)
Global Growth	0.057** (0.022)	0.057*** (0.021)	0.062*** (0.019)	0.065*** (0.022)	0.048** (0.020)	0.048** (0.019)	0.065* (0.033)
Terms of Trade	0.315* (0.157)	0.314** (0.150)	0.316* (0.150)	0.325* (0.153)	0.292* (0.142)	0.293** (0.136)	0.265* (0.144)
Trade Openness	0.001 (0.003)	0.001 (0.003)	0.001 (0.003)	-0.000 (0.003)	-0.001 (0.003)	-0.001 (0.003)	-0.002 (0.004)
External Debt	0.000 (0.001)	0.000 (0.001)	0.000 (0.001)	0.000 (0.001)	0.000 (0.000)	0.000 (0.000)	0.001*** (0.000)
Financial Depth	0.011* (0.005)	0.011** (0.005)	0.010* (0.005)	0.009 (0.005)	0.010* (0.005)	0.010* (0.005)	0.014** (0.006)
Fiscal Balance (t-1)	-0.038*** (0.009)	-0.039*** (0.008)	-0.038*** (0.008)	-0.036*** (0.007)	-0.041*** (0.006)	-0.041*** (0.005)	-0.042*** (0.012)
Growth (t-1)	0.002 (0.006)	0.002 (0.006)	0.003 (0.005)	0.002 (0.006)	0.001 (0.005)	0.001 (0.005)	-0.003 (0.007)
Inflation (t-1)	0.798*** (0.027)	0.798*** (0.026)	0.805*** (0.030)	0.798*** (0.032)	0.778*** (0.034)	0.776*** (0.033)	0.712*** (0.028)
Left Governments				0.086 (0.122)	0.066 (0.096)	0.066 (0.090)	0.285*** (0.090)
IMF Program				-0.108 (0.084)	-0.124 (0.085)	-0.126 (0.082)	-0.210* (0.116)
Baker Plan					0.516*** (0.154)	0.543*** (0.153)	0.505** (0.180)
Observations	432	414	432	432	432	414	243
R^2	0.82		0.82	0.83	0.83		0.81

Standard errors in parentheses

FE=Fixed effect models. GMM=GMM estimator, using first differences. Robust standard errors. Inflation=log(CPI).

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

Table 3: The Effect of Elections on Economic Growth (16 Latin American Countries)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	FE	GMM	FE	FE	FE	GMM	FE/debt>25%
Elections	-0.027 (0.318)	-0.027 (0.304)	0.514 (0.381)	0.500 (0.388)	0.541 (0.379)	0.536 (0.366)	0.571 (0.595)
Bond Financing	0.477 (1.449)	0.477 (1.385)	1.197 (1.468)	1.255 (1.532)	0.563 (1.592)	0.506 (1.468)	2.896 (2.166)
Elections*Bonds			-1.762* (0.849)	-1.794* (0.881)	-1.806* (0.897)	-1.781** (0.839)	-2.486* (1.359)
Global Growth	0.447*** (0.102)	0.447*** (0.097)	0.431*** (0.099)	0.413*** (0.104)	0.471*** (0.099)	0.470*** (0.094)	0.306** (0.122)
Terms of Trade	0.046 (0.300)	0.046 (0.287)	0.021 (0.296)	-0.006 (0.296)	0.067 (0.260)	0.051 (0.255)	-0.224 (0.370)
Trade Openness	0.025 (0.015)	0.025* (0.014)	0.023 (0.014)	0.027* (0.014)	0.028* (0.013)	0.028** (0.013)	0.032* (0.015)
External Debt	-0.001 (0.003)	-0.001 (0.003)	-0.001 (0.003)	-0.001 (0.003)	-0.001 (0.003)	-0.001 (0.002)	-0.003 (0.003)
Domestic Investment	0.143*** (0.033)	0.143*** (0.031)	0.144*** (0.032)	0.146*** (0.032)	0.144*** (0.032)	0.143*** (0.030)	0.125*** (0.028)
Fiscal Balance (t-1)	0.114* (0.059)	0.114** (0.057)	0.111* (0.059)	0.101* (0.053)	0.118** (0.051)	0.120*** (0.046)	0.136*** (0.033)
Inflation (t-1)	-0.075 (0.241)	-0.075 (0.230)	-0.068 (0.241)	-0.058 (0.235)	0.009 (0.224)	-0.003 (0.217)	0.219 (0.285)
Growth (t-1)	0.215*** (0.051)	0.215*** (0.049)	0.219*** (0.051)	0.220*** (0.051)	0.221*** (0.050)	0.224*** (0.044)	0.246*** (0.040)
Left Governments				-0.529 (0.402)	-0.462 (0.376)	-0.457 (0.354)	-1.191** (0.489)
IMF Program				0.118 (0.284)	0.158 (0.288)	0.150 (0.277)	-0.022 (0.384)
Baker Plan					-1.562** (0.582)	-1.542*** (0.552)	-1.473** (0.605)
Observations	386	370	386	386	386	370	214
R^2	0.56		0.57	0.57	0.58		0.55

Standard errors in parentheses

FE=Fixed effect models. GMM=GMM estimator, using first differences. Robust standard errors.

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

A Appendix

Table A.1: Variable Definitions and Sources

Variable	Definition and Measurement	Source(s)
Primary Fiscal Balance	Government revenues - expenditures Net of interest payments (+/- percent of GDP)	Comision Economica para America Latina y El Caribe (CEPAL).
GDP Growth	Change in real GDP (annual percentage change)	World Development Indicators (WDI)
Inflation	Change in log CPI (annual percentage change)	World Development Indicators (WDI)
Election Dummy	For the inflation regressions, the binary variable takes on the value of 1 in election year and subsequent year, and 0 otherwise. For the fiscal balance and growth regressions, the binary variable takes on the value of 1 in an election year and the preceding N-1 years, and 0 otherwise, where N = 2 or 3.	Political Handbook of the World (2006-2007; 2007-2008; 2008-2009); EIU; Cheibub and Kalandrakis (2004), Global Database of Political Institutions and Economic Performance.
Decentralized Bond Financing	The government's total bond debt outstanding as a percentage of its public external debt.	Calculated from the World Bank's Global Financial Development (GFD) Database.
Global GDP Growth	Average global real GDP growth (annual percentage change).	Calculated from World Bank's World Development Indicators (WDI).
Terms of Trade	Export value index (2000=100) / import value index (2000=100).	Calculated from World Bank's World Development Indicators (WDI).
Trade Openness	Total exports plus total imports as a percentage of GDP.	Calculated from World Bank's World Development Indicators (WDI).
Total Public External Debt	Total public external debt as a percentage of GDP.	Calculated from the World Bank's Global Development Finance (GDF) Database.
Domestic Output Gap	Measure of the output gap, calculated as the log difference between real GDP and its country specific trend.	Country specific trend calculated using the Hodrick-Prescott filter on real GDP change.
Interest Rates	Deposit interest rate paid by commercial or similar banks for demand, time, or savings deposits (percent per annum).	International Financial Statistics (IFS).
Unemployment	Change in unemployment (percentage of total labor force).	CEPAL.
Domestic Financial Depth	Broad money (M2), or money in circulation, as a percentage of GDP.	World Bank's World Development Indicators (WDI).
Domestic Investment	Gross capital formation (annual percentage change).	World Bank's World Development Indicators (WDI).
Left Partisanship	Party orientation with respect to economic policy, coded from 0 to 1. Parties that are defined as communist, socialist, social democratic, or left-wing take on a value of 1. Otherwise, the variable is 0.	World Bank's 2010 Database of Political Institutions.
IMF Participation (Vreeland, 2003)	Participation in IMF programs: Dummy variable coded 1 for country-years when there was a conditioned IMF agreement in force, 0 otherwise.	Vreeland, James Raymond (2003). <i>The IMF and Economic Development</i> . Cambridge University Press.
IMF Participation (Dreher, 2006)	IMF Participation: Dummy variable coded 1 for country-years when there was IMF standby or EFF agreement for at least five months, 0 otherwise.	Dreher, Axel (2006). IMF and Economic Growth: The Effects of Programs, Loans, and Compliance with Conditionality, <i>World Development</i> 34(5).
Executive Constraints (Polity IV)	Measure of checks and balances on executive power; employs a seven-category scale from unlimited authority to executive parity.	Polity IV Codebook and Database.
Executive Constraints (Henisz)	Measure of political constraints; estimates the feasibility of policy change relative to institutional checks and balances.	Henisz, W.J. (2000). The Institutional Environment for Economic Growth. <i>Economics and Politics</i> , 12(1).
Central Bank Independence	Measures autonomy of central banks as written into countries' laws and legal systems. Updates Cukierman, Webb, and Neyapti (1992) Index.	Polillo, S. and Guillen, M. (2005). Globalization Pressures and the State: The Global Spread of Central Bank Independence. <i>American Journal of Sociology</i> , 110(6).
Baker Plan	Binary variable for 1980s' IMF-led sovereign debt restructuring; takes on a 1 for those years when a country received funding through the Baker Plan, and 0 otherwise.	Cline (1989). The Baker Plan: Progress, Shortcomings, and Future. World Bank's International Economics Department.

Table A.2: Summary Statistics (16 Latin American Countries)

	mean	sd	min	max
Fiscal Balance	0.01	3.61	-28	9
Growth	3.83	4.30	-26	18
Inflation	2.83	1.25	-0	10
Bond Financing	19.54	24.91	0	81
Global Growth	3.55	1.72	-2	7
Terms of Trade	1.18	0.50	0	7
Trade Openness	42.86	23.96	9	146
External Debt	40.88	60.99	0	830
Output Gap	0.95	1.89	-15	13
Interest Rate	335.23	4835.38	1	107379
Unemployment	8.87	3.81	2	21
Exec. Constraints	4.68	2.06	0	7
Financial Depth	32.32	16.35	7	111
Domestic Investment	5.41	16.56	-65	152
IMF Program	0.34	0.47	0	1

Average inflation is converted to its natural logarithm.

Control Variable Discussion In the regression analysis, we use a slightly different set of controls for the fiscal policy and growth/inflation regressions, as we expect different factors to be important for different outcomes. When employing national fiscal balances as the dependent variable, there are several standard control variables that are unique to such regressions. They are an output gap (*Domestic output gap*) and an unemployment (*Unemployment*) and inflation measure (*Inflation*) – both lagged by one year – to control for a country’s position in its economic cycle. In addition, we use a domestic interest rate variable (*Interest rate*) to account for fluctuations in the cost of credit that tend to ease or tighten budgetary constraints, and a measure of constraints on executive power (*Executive constraints*) based on the assumption that budgetary cycles are less common when presidents confront greater checks and balances.

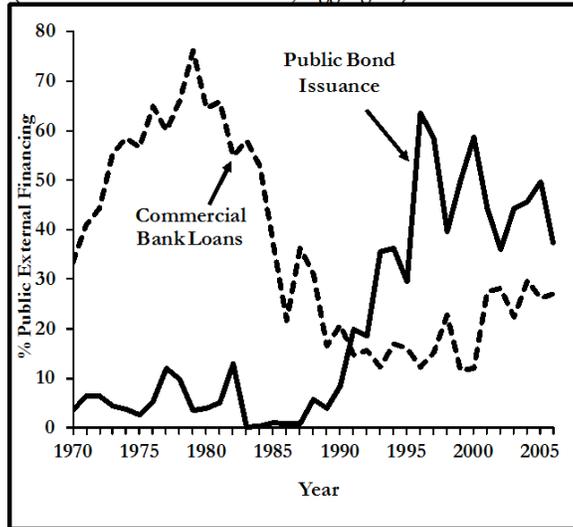
In all of the regressions, we also use a series of control variables to account for alternative factors beyond the structure of finance that may influence the economy. First, we control for the global growth (*Global growth*), given that our sample includes many small open economies. Because many Latin American countries are dependent on primary commodity exports, we also include a country’s terms of trade position (*Terms of trade*) in our regressions to account for commodity volatility. We also control for economic openness, employing a measure of imports plus exports as a percentage of GDP (*Trade*). In general, we expect global fluctuations in growth, trade, and commodities to influence domestic budget balances, growth, and inflation. Finally, we include a measure of overall external indebtedness (*External debt*) to control for its effect on fiscal policy and the economy.

Some other control variables are exclusive to the growth and inflation regressions. We control for the primary fiscal balance as a percentage of GDP (*Fiscal balance*)—lagged by one year to avoid any possible endogeneity—based on the assumption that fiscal stimulus drives both economic growth and inflation. We use the primary fiscal balance (net of interest payments on public debt) rather than the general government balance (inclusive of interest payments) because it is the more appropriate measure of the government’s fiscal policy stance in highly-indebted countries. When economic growth is the dependent variable, we also control for the rate of domestic investment as

a percentage of GDP (*Domestic investment*) because investment is often a key engine of growth. In addition, we include the inflation rate (*Inflation*) – lagged one year – to control for the effect of price instability on economic growth. When inflation is the dependent variable, we include annual GDP growth (*Growth*) – lagged one year – to account for its effect on price cyclicality. We also employ M2 as a percentage of GDP as a proxy for financial sector size (*Domestic financial depth*), assuming that nations with stronger financial systems tend to have lower inflation.

Finally, to account for institutional factors that may affect budget balances, growth, and inflation, we add several control variables in our robustness checks, including measures of IMF participation (*IMF*), left partisanship (*Left governments*), and legal central bank autonomy (*Central bank independence*). This measure was ultimately not included in the regression results because it assigns numerical values to countries that do not vary over time, making it indistinguishable from the country dummies already incorporated in the model.

**Figure A.1: Bond Issuance Supplants Bank Lending
(16 Latin American Countries, Aggregate)**



**Figure A.2: Latin American Presidential Elections
(16 Latin American Countries, 1961-2011)**

