

# On Constitutionalizing a Balanced Budget

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October 12, 2018

## Abstract

Do constitutional rules that mandate a balanced budget improve fiscal discipline? Although such rules are at the heart of austerity debates across the world, we know surprisingly little about their consequences. We leverage original data on constitutional budget provisions and analyze their effect against standard determinants of governments' primary budget balances. We find that constitutional rules that require balanced budgets are robustly associated with fiscal discipline. The constitutional effect remains even after controlling for statutory rules, it increases as constitutions become more difficult to amend, and it is only binding for countries for whom balancing their budgets is realistic. The results will be surprising to those who appreciate the strong pressures against fiscal discipline as well as the creativity of governments in devising strategies to evade spending limits. To our knowledge, these findings are the first cross-national, over-time study of the impact of constitutional budget commitments and, therefore, provide a reference point for policy debates surrounding financial crises in many national contexts.

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\*Prepared for presentation at the conference, "Liberal Democratic Constitutions During Severe Financial Crises" (Lisbon, May 2017). The authors thank Emily Hencken Ritter and Andrew Kerner for helpful comments. Thanks to Trey Gustafson, Henry Pascoe, and Ian Ebmeier for research assistance.

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# 1 Introduction

The struggle to control country-level public spending is pervasive. The essential problem is easy to grasp. One characterization sees the problem as a *common pool resource* challenge (Weingast et al. 1981; Hallerberg and von Hagen 2009; Bawn and Rosenbluth 2006): politicians face incentives to maximize spending for their constituents but face fewer incentives to be attentive to aggregate spending levels. The result is that aggregate spending often exceeds revenue, governments must borrow to finance the gap, and, ultimately, countries develop persistent deficit-spending habits and mounting debt. Governments often seek to institutionalize budget rules to solve this. One of the simpler approaches is one that resonates with citizens: require that disbursements equal receipts (a *balanced-budget rule*). But of course, leaders are tempted to modify or ignore these rules in the face of short-term political exigencies. One way to overcome this time-inconsistency problem is to entrench budget rules constitutionally, since constitutions are usually more difficult to alter than are administrative rules. Constitutional rules *may* also be more difficult to evade and easier to enforce. But what exactly *are* the effects of constitutionalizing budget rules, which may seem to be about as binding as a New Year’s resolution? Are their effects on budgets substantially different from non-constitutional (whether statutory or regulatory) means? And since constitutional rules are often written at a higher level of generality than specific budgetary procedures, are they simply proverbial “parchment barriers” or do they meaningfully help governments reduce deficit spending?

These questions are at the heart of institutional design, whose challenge we view as rooted in (1) striking a balance between commitment and flexibility, and (2) adjusting incentives to avoid collectively sub-optimal outcomes. The persistent Greek debt crisis is illustrative of this challenge. The recent unpleasantness there stems from 2009, when the Greek finance ministry announced that previous governments had hidden debt levels, a revelation that caused Greek bond yields to skyrocket. Amidst fears of a default, the IMF and EU intervened with a bailout deal that included demands for budget reform. Three bailouts later, the future of Greece’s economy remains on uncertain grounds. Could the Greek crisis (and its feared spread) have been averted with a different set of institutional rules regarding the accumulation of public debt? Specifically, would a constitutional balanced-budget provision have had any effect?

Following the European financial crisis, countries have taken steps to entrench budget rules *constitutionally*. The European Fiscal Compact (formally, the *Treaty on Stability, Coordination, and Governance in the Economic and Monetary Union*), which entered into force for 16 ratifying states in January 2013, represents a binding commitment to do such. By April 2014, all twenty-five signatories had ratified the treaty. Under the treaty, signatories must implement domestic legal changes that require a balanced budget. The treaty requires that provisions be implemented in domestic law, “preferably” in constitutions (Fiscal Compact, Article 3, Section 2). Although the compact is not formally an EU law, its provisions allow for enforcement through the European Court of Justice, which can levy a fine of up to 0.1 percent of GDP for noncompliance (Fiscal Compact, Article 8). While the compact does not *require* that signatories enact a constitutional provision, a strong preference for a constitutionalized budget law represents an extraordinary attempt to tie governments’ hands. This preference for constitutionalization was not added lightly; some governments (e.g., Ireland) resisted any such language – a recognition, perhaps, of the strength of constitutional commitment.<sup>1</sup> As of this writing, seven of the twenty-five signatories have constitutionalized a balanced-budget provision.<sup>2</sup>

The Greek and broader European experience is not unique. The pressures to spend often overwhelm those to raise revenue. Budget battles in the United States highlight this tension. There, austerity proponents periodically issue calls to add a constitutional balanced budget amendment. This statement from Texas Senator John Cornyn in 2016 is typical: “we are on an unsustainable course, and so far we’ve done nothing to address it. We can address our nation’s runaway debt through a balanced budget amendment, *the kind of fiscal rule that can put us back on course*” (emphasis added).<sup>3</sup>

It is not surprising to hear calls for austerity from conservative leaders (especially those in campaign mode) and a balanced-budget rule would seem to be a simple articulation of that political view. Yet the same suggestion has emerged in other contexts and from unlikely corners. Even Democratic politicians have supported balanced budget amendments. In 1995, then Senator

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<sup>1</sup>See Burret and Schnellenbach (2014) for more on the fiscal compact. Kohler and Koenig (2015) provide an analysis of the Stability and Growth Pact and find that it produced uneven deficit-reducing results since 1999.

<sup>2</sup>Balanced-budget provisions are tracked by the Comparative Constitutions Project and in-force provisions for such are available online at [constituteproject.org](http://constituteproject.org)

<sup>3</sup>Juliegrace Brufke. “Senate GOP Lawmakers Want Balanced Budget Amendment Added To Constitution.” *The Libertarian Republican* 17 March 2016.

Biden, explaining his support for a balanced budget amendment in a *New York Times* op-ed, wrote “The question for me is not whether the budget must be in perfect balance. The question is whether we can indefinitely sustain deficits of 200 billion and more without permanently and dangerously limiting future options for our children’s generation.”<sup>4</sup> Of course, these calls may ring hollow in a constitutional environment like that in the United States in which amendments are rarely adopted.

As we note below, a growing number of national constitutions contain such a provision, especially now that international organizations and treaties encourage the practice. Unfortunately, and surprisingly given the issue’s salience, policy makers in capital cities can only guess at the effects of these laws. They, and we, know that politicians often hurdle the “parchment barriers” of higher law, so it is an open question whether balanced budget provisions are effective at controlling public debt.<sup>5</sup> Moreover, the consequences of such provisions are likely to be obscured by selection effects. Countries that undertake the extreme measure of requiring a balanced budget in their constitution may be those that are most in need of fiscal discipline, and hence least likely to be solvent. Conversely, adopters may be those countries in which fulfilling such a provision is easiest, which will lead analysts to overestimate the provision’s effectiveness. Whichever group is more susceptible, the motivation for implementing such provisions must be considered in any analysis of their effects. This article is, to our knowledge, the first published attempt to assess cross-nationally whether constitutional balanced budget provisions contribute to less deficit spending. We do so by leveraging yearly data on constitutional provisions covering 52 countries from 1950 to 2011, and comparing the effects of constitutional provisions to lower-level, statutory budget rules.

We begin by reviewing extant work on the role of constitutional provisions in the governance of budgetary policy. Second, we expand on theories of constitutions as both commitment and coordination devices and apply them to balanced budget provisions.<sup>6</sup> In this vein, we develop theory about why and, importantly, *when*, constitutions work. Third, we describe some of the historical detail and distribution of balanced-budget provisions in the world’s constitutions. Finally, we analyze cross-national time-series data on the relationship between budget provisions (consti-

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<sup>4</sup>Joe Biden. “Why I switched.” *The New York Times*. 25 February 1995.

<sup>5</sup>Briffault (1996), for instance, argues that state-level balanced budget provisions in the U.S. result in balanced budgets only on paper, as state governments find ways to evade the formal requirement.

<sup>6</sup>As we note below, we view these mechanisms not as mutually exclusive, but rather as mutually reinforcing.

tutional and statutory) and budget balances. We also analyze within-country data on primary balances over time for a small set of cases that experienced a shift in their constitutional provision on balanced budgets. On the whole, the evidence leads us to respect the power of constitutionalized balanced budget arrangements. Our analysis shows that having a balanced budget provision in place is associated with an average increase in a country's primary balance of between 1.7 and 1.9 percent of GDP. We also find these effects are separate from those of statutory law, which have their own independent effects.

## 2 Fiscal Governance: Background and Evidence

Controlling budgetary spending is a classic collective action problem. As Hallerberg (2013) describes it, politicians are motivated to maximize spending that directly benefits their constituencies but are less concerned about an accompanying tax burden that would be more widely distributed (see also Weingast et al. 1981; Velasco 2000; Hallerberg et al. 2009). Therefore, governments are challenged with crafting a sustainable budgetary policy that minimizes the incentives to drain the common pool. The solutions, typically, are to alter politicians' incentives, for example by delegating budgetary decisions to a separate government entity, or to create enforceable limits on spending.<sup>7</sup>

Hallerberg et al. (2009) divide fiscal decision-making rules into two categories: (1) delegation to a centralized bureaucrat, and (2) fiscal contracting, understood as a coalitional agreement among multiple governing parties. Our focus here is on a variant of this second approach. Hallerberg et al. argue that one-party governments are more likely to use centralized bureaucrats, while multi-party coalitional governments will utilize fiscal contracting. Within these arrangements, it is evident that other institutional and procedural choices matter. Martin and Vanberg (2013), for example, demonstrate that rules that reduce the influence of individual parties in budgetary policy or those that reduce the incentives for coalition partners to spend, can be effective in dealing with the common pool resource problem.<sup>8</sup> Federalism is another institution that may, under some conditions, create perverse incentives that contribute to the problem. When sub-national units are not adequately constrained, they may fail to rein in spending patterns that, when aggregated, undermine national economic performance (e.g. Wibbels 2000; Rodden and Wibbels 2002; Rodden

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<sup>7</sup>cf. Bawn and Rosenbluth (2006).

<sup>8</sup>See also Persson, Roland, and Tabellini (2007).

2003).

Several empirical studies characterize budget rules along roughly three dimensions: centralization, transparency, and stringency (e.g. Hallerberg and von Hagen 1999; Alt and Lowry 1994; Poterba 1995; Alt and Lassen 2006). Some notable studies also focus on whether partisanship influences spending patterns, and generally find that whatever partisan trends exist are highly conditioned by prevailing economic circumstances (e.g. Cusack 1999; Iversen and Cusack 2000). Due to limited data availability, much of this work focuses on OECD countries, Latin America, or U.S. states, and typically for a limited time period.<sup>9</sup> One of the themes of this work is a tension between a focus on statutory rules as against persistent informality in the budget process, with the recognition that formal rules may not constrain actual practice (Hallerberg et al. 2009). Our work continues this theme, quite consciously, in the sense that compliance with formal rules is one way to understand our research question. We share an interest in understanding the effect of formal rules, for some of the same reasons that others do. Formal rules are often an indicator of attempts to institutionalize sustainable budgetary practices and are, of course, observable and convenient for analysis. We should note that clear rules are helpful for both analysts and those who might observe and enforce such rules.

What we know about balanced-budget rules suggests that both sub- and supra-national rules are consequential. For example, in two benchmark studies, Poterba (1994) and Alt and Lowry (1994) find substantial effects of such rules on “fiscal responsiveness” (operationalized as spending levels) in studies of U.S. states. Von Hagen (1991) finds that debt is lower in states with stringent budget requirements (see also Kiewit and Szakaly 1992). Alt and Lowry (1995) find that U.S. states with balanced budget rules receive lower interest rates on bonds, a finding echoed in a sample of Eurozone countries (Hallerberg and Wolff 2008). Kohler and Koenig (2015) find, using synthetic controls, that the EU Stability and Growth Pact has reduced government spending across the Eurozone, though its influence on individual countries varies widely.

This evidence suggests that formal rules may signal fiscal responsibility to market actors, which implies that these rules are deemed credible, despite examples of countries’ circumventing paper rules. Indeed, this signal is a central insight in an important recent study by Keleman and

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<sup>9</sup>Of course, the general problem of spending need not apply only to democracies. Non-democracies may have various factions that push for more spending, though their influence in the budgetary process will likely vary more widely in non-democratic settings than it will in democratic ones.

Teo (2014), who see coordination around bond markets as a primary function of such rules (more below). Alesina et al. (1999) similarly find that budgetary institutions matter for controlling deficits in Latin America. Focanti et al. (2013) update the Latin American data to examine the origins of budgetary institutional reforms, and find that IMF conditionality and inflation have not been significant drivers of tax reforms, contrary to conventional expectations.

The evidence from these studies suggests that statutory rules can have *some* appreciable effect on public spending and borrowing costs. However, none of these studies focuses on the added effects of *constitutional* provisions in a cross-national context.<sup>10</sup> There are several reasons for this omission. First, entrenching a balanced budget provision in a national constitution is comparatively rare; in our survey of constitutions in force from 1789 to 2015 we find only 61 constitutional systems in 32 countries that have these provisions, though those systems vary significantly in longevity (more detail on these patterns below).<sup>11</sup> Second, as Hou and Smith (2006) argue, constitutional rules tend to be written abstractly and lack specific details, leaving room for maneuvering with various fiscal policy decisions.<sup>12</sup> Thus, the studies mentioned above are able to focus on the nuances of fiscal governance rules, while a focus on constitutional provisions will necessarily be one on broader, overarching commitments.

### 3 A Theory of Constitutional Power

#### 3.1 Prima Facie Reasons for Pessimism

Constitutional commitments not to overspend would seem, in some ways, overly optimistic. Constitutions make lofty promises, including rights-laden passages that can read like fiction. The most derided examples were, for many years, the constitutions of the “Democratic-Republic-of” countries, whose commitments to democratic principles were anything but. One could say the same thing about authoritarians on the right, whose constitutional aspirations went equally unrealized (see Elkins, Ginsburg, Melton (2013)). Madison was surely right to worry about the impotency of “parchment barriers.”<sup>13</sup>

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<sup>10</sup>A notable exception is Ardanaz and Scartascini (2014), who examine how the constitutional allocation of budgetary responsibilities across the executive and legislature affects the common pool resource problem.

<sup>11</sup>Constitutional “systems” are marked by the wholesale replacement of one constitution by another. See Elkins, Ginsburg, and Melton 2009.

<sup>12</sup>But see Kydland and Prescott (1977) on tradeoffs in budgetary rules.

<sup>13</sup>Federalist 48

Yet constitutions remain a highly salient – sometimes nearly sacred – source of obligations and commitments. A reasonable conclusion regarding these dueling notions of efficacy is that constitutional compliance is highly conditional. The relevant research question, then, is under what conditions do constitutional promises matter? Here we focus on variation in the *kinds* of provisions. For reasons that we describe below, we suspect that balanced budget provisions are the *kind* of provision that would exhibit higher than average levels of compliance.

### 3.2 The General Logic of Constitutional Compliance

The authors of the European Fiscal Compact put their faith in constitutions, but why? Certainly, constitutions are *meant* to be important. The “legal” (and perhaps idealistic) logic is that such documents are important pieces of higher (controlling) law. In addition to their supremacy, Constitutions are difficult to amend (and are, thus, entrenched). They are designed to resist short-term impulses, including *impulse spending*, and so could act as commitment devices to restrain zealous, spendthrift executives. As such, a key role of constitutions, according to North and Weingast, is “control over the arbitrary and confiscatory power” of the government, and to “make credible the government’s ability to honor its commitments” (1989, 804).

In this sense, budgetary policy is a logical concern of constitutional drafters because it involves a time-inconsistency problem. Government actors come under *short-term* political pressures to spend more and tax less, despite the fact that such actions (according to economic orthodoxy) can lead to negative *long-run* economic consequences. To limit this pressure, governments look for ways to tie their hands. Constitutional balanced budget provisions are a very public — and in ideal conditions, binding — commitment to maintain budget discipline.

One might be tempted to think of constitutions as *contracts* that guide future behavior. But if so, they are curious contracts since the societal actor generally charged with enforcing the law – the executive – is precisely the one mostly likely violate it. It seems fanciful, particularly in unstable political environments, to think that a group of non-elected high-court judges might constrain the actions of a President who commands the armed forces and allegedly acts in the name of the people. Clearly, Constitutional contracts require some rather special conditions for their enforcement — conditions that are not always obtained.

### 3.3 When do Constitutions Work?

For many, a better understanding of Constitutions is that they function as much as *coordination* devices as they do *contractual* commitments (Ordeshook 1992; Weingast 1997). If the fox (executive) who guards the hen house cannot reliably police him- or herself, it is up to the hens (citizens or opposition elites) to do so. But citizens (and oppositional elites) face costs in contesting executive transgressions. Interpreting rules poses high information costs and opposing power involves elements of personal and professional risk. As a result, an individual will not be inclined to oppose publicly a perceived transgression unless she believes that a significant number of others share her interpretation, and no individual will have any confidence in such a consensus unless rules are clear and their legitimacy widely shared. Hence, the need for coordination. Constitutions are, presumably, ideally situated to communicate laws with clarity and legitimacy to citizens and elites. Leaders anticipate opposition organized along constitutional lines and, in turn, refrain from testing those limits. Through this logic lies the often surprising power of constitutional law, which ostensibly, entails little in terms of enforcement capacity.

We know that some provisions are more likely to be enforced. For example, Elkins, Ginsburg, and Melton (2009:30) analyze the gap between the “scripture and practice” across two sets of constitutional provisions and find that while the civil and political rights promised in constitutions do not predict *de facto* rights protection, the legislature’s power, as enumerated in constitutions, corresponds closely to actual power. Why are constitutions enforced in one domain, but not another?

Our sense is that some provisions facilitate citizen coordination, while others impede coordination. Provisions facilitate coordination by easing the interpretation and application of the principle in question. Recall, successful constitutional enforcement requires that limits be widely understood and respected by citizens. Rights may be widely respected, but if written abstractly, they may be poorly understood. Or at least, it is unclear where the line lies between a government’s legitimate activity and a citizen’s rights. Consider the 2016 (and continuing) political troubles in Brazil. Was Brazilian ex-president Lula’s right to privacy violated in March of that year when a judge released his private phone conversations? (The conversations allegedly detailed illicit activity with Dilma Rouseff, who followed Lula as President.) Who knows? The Brazilian Supreme

Court was split on the matter. By contrast, the Brazilian legislature clearly has the power to impeach the president, which it did in the case of Rouseff. One set of constitutional promises (e.g., right to privacy) is vague and contested; another (impeachment power) is discrete and almost self-interpreting. We expect that balanced budget provisions are in this latter category, albeit with all of the “motivated” interpretation and reasoning that characterizes the cognition of political actors.

But what happens when executives overspend, or simply consider doing so? We might think that the implementing details of the rules matter. The commitment may be credible only to the extent that actors face specific barriers to deficit spending, such as legal or procedural impediments. A Constitutional provision *might* spell out the default position in the case of an attempt at overspending. For example, some constitutions dictate that if a balanced budget cannot be reached, the previous year’s budget allocations carry forward. Other constitutions remove budgetary control from the legislature should the body fail to agree on a budget. For example, Title V, Article 80 of the 2000 Cote d’Ivoire constitution mandates a balanced budget and further stipulates “If the National Assembly has not voted the budget by the end of this extraordinary session, the budget is definitively established by ordinance.”

Even with specific rules that make it costly to enact deficit spending policies, governments find ways to do so in extraordinary times. As North and Weingast (1989) show, the fiscal demands of war led to violations of sovereign commitments in Europe. Likewise in modern constitutions, exceptions to balanced budgets exist for times of war or fiscal emergencies.<sup>14</sup> And here one must acknowledge that balanced budgets – as good as they sound on their face – may not actually be sound economic policy under certain conditions. Indeed, we are agnostic about the advisability of balanced budgets generally, a debate among economists that will undoubtedly continue to rage. Nevertheless, the theory of constitutional “bite” described here, does not assume that political actors will always coordinate against the executive. It leaves open the possibility that there are times - such as financial crisis - when political actors decide it is in their best interests not to coordinate against the executive. In these instances, they will not collectively act to check the

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<sup>14</sup>For instance, Section X, Article 109 of the 1949 West German constitution states “The Federation and Länder may introduce rules intended to take into account, symmetrically in times of upswing and downswing, the effects of market developments that deviate from normal conditions, as well as exceptions for natural disasters or unusual emergency situations beyond governmental control and substantially harmful to the state’s financial capacity. For such exceptional regimes, a corresponding amortization plan must be adopted.”

executive, despite the lower costs associated with doing so.

In some sense, the credibility of the commitment is tied to the degree to which it raises the *ex post* costs of noncompliance. One can think of two ways costs may arise. First, through direct, automatic costs to incumbent governments that exceed budgetary limits. As noted above, these often come in the form of lost discretion over the budget, such as the automatic enactment of a previous budget. Note, it's possible some of this specific machinery could be spelled out in implementing legislation in ordinary law (and so, omitted from Constitutions).

The second mechanism, however, is built into the constitutional provision itself, and hinges on the coordination logic described above. Including a balanced budget provision in a constitution – provided it clearly delineates what constitutes violations of the provision – raises the political costs of overspending by amplifying the spotlight on the act of overspending. Constitutions, because of their visibility and symbolic value, may serve as the perfect devices to coordinate the behavioral expectations of policymakers and citizens. As such, constitutional budget provisions function as focal points that coordinate collective responses to executive violations of fiscal rules, whether or not they contain specific rules of engagement. We tend to think of citizens and opposition legislators coordinating to confront the ruling party, but it may be that outsiders also coordinate along these lines. Keleman and Teo (2014) see the relevant enforcers as investors, who use bright-line budget rules to coordinate in decentralized bond markets. In broad strokes, our argument about the power of constitutional budget rules is consistent with their story.

Note that these two mechanisms — coordinating political actors' responses to overspending and tying the hands of fiscal policymakers — are not mutually exclusive. Indeed, the commitment logic is likely to operate at least in part because of the ability of constitutions to serve as a focal point upon which to coordinate a costly response. We therefore see these as two possible mechanisms by which the high profile nature of constitutional provisions may serve to constrain, above and beyond the more technical and pedestrian statutory fiscal rules.

This logic leads to our central expectation - that constitutional provisions have a tightening effect on fiscal discipline:

**Hypothesis 1.** *A constitutional provision that mandates a balanced budget will result in smaller deficits and a greater likelihood of a balanced budget or budgetary surplus.*

A related hypothesis stems from our recognition that constitutions, though special, are not unique. Ordinary legislation that requires balanced budgets should matter as well.

**Hypothesis 2.** *A provision in ordinary law that mandates a balanced budget will result in smaller deficits and a greater likelihood of a balanced budget or budgetary surplus.*

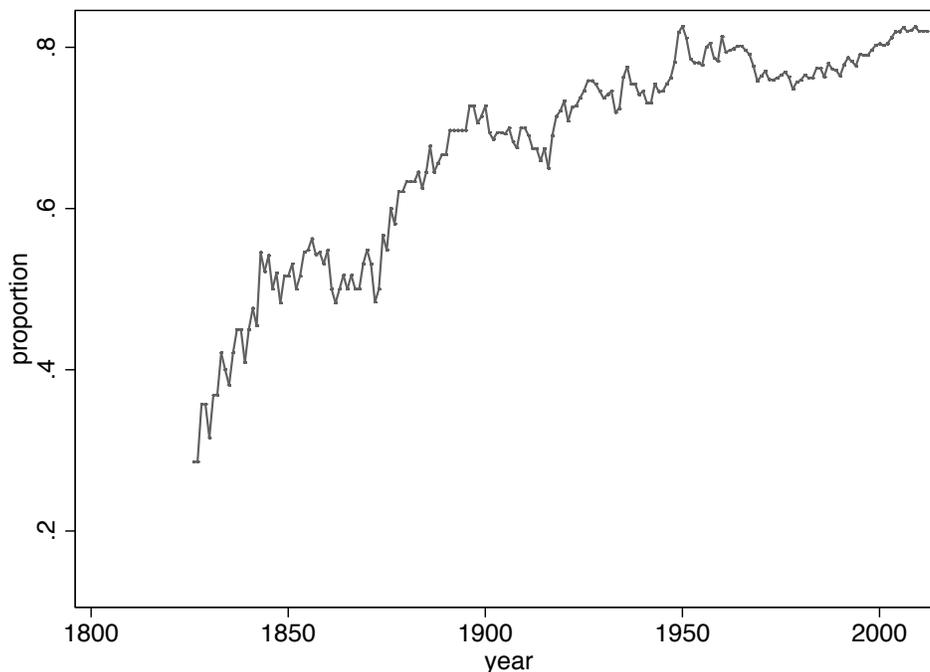
It is critical to reiterate that we do not see these “lower” forms of law as substitutes but rather as complements, for reasons we describe above. That is, a constitutional provision on the budget should be consequential even if it is duplicated in ordinary law. In statistical modeling terms, we think of these effects as additive.

Below, we develop a research design that allows us to test these expectations. Importantly, since laws do not emerge randomly, we extend our research design to account for the possibility that constitutional balanced budget provisions are endogenous to prevailing fiscal policy trends. We are uncertain about the direction of these selection effects. On one hand, provisions may be adopted when a country has difficulty maintaining fiscal discipline. In such cases, balanced budget provisions would appear in the “hardest” cases, and we might systematically underestimate their effects. Alternatively, it’s possible these provisions are adopted in circumstances in which meeting them is easy. After all, why voluntarily adopt a rule that will exact political costs if violated? In such cases, we may overestimate the effects of these provisions. The sheer diversity in the countries (from Niger to Germany) that have adopted balanced budget provisions reinforces our uncertainty (see Figure 3). We thus remain agnostic as to which (if any) of these scenarios describes our data. Below we analyze our data in order to develop a profile of countries predisposed to adopt balanced budget provisions.

## 4 Data and Research Design

One of the roadblocks to understanding the association between constitutional balanced-budget rules and budgets is a lack of comprehensive data. We introduce data on *constitutional* balanced-budget provisions, and describe how these laws vary over time and across regions. We then describe the data on *statutory* budget rules, outline patterns in the data, and report the level of congruence between these two data sources. We also provide an overview of key characteristics of the countries that have adopted constitutional provisions. Finally, we implement a research design to estimate the effects of constitutional balanced budget provisions on country’s primary budget balance and

Figure 1: Proportion of Constitutions that Identify a Special Legislative Process for Budget Bills  
*Sample/Universe: 722 of 854 Constitutional systems in force between 1789-2015*



discuss our results.

#### 4.1 Constitutions and Fiscal Governance

Rules regarding government budgets go back to the earliest constitutions. We draw from original data on balanced-budget provisions that we have collected from constitutions (and their amendments) since 1789.<sup>15</sup> One element of the constitutionalization of the budget is the specification of the process, as against that for other topics of legislation. Figure 1 plots, across time, the proportion of constitutions that identify a separate legislative process for budget bills. In the early 1800s, almost one-half of constitutions had such a process; by WWII, four-fifths had one. We interpret this increasing specialization as a threshold condition for the adoption of balanced-budget rules and, also, as an indication that the budget process is a topic predisposed to Constitutionalization. Recall that our theory assumes that budgets present exactly the kind of time-inconsistency problem that lends itself to constitutionalization.

While it is common for constitutions to include provisions regarding budget bills, rules with

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<sup>15</sup>We build on the infrastructure from the authors of the Comparative Constitutions Project (Elkins, Ginsburg, Melton), who have identified a comprehensive chronology of constitutional events for each country since 1789.

particular budget limits (such as balanced budget constraints) have not been especially common. According to our data (a sample of over 80% of the 854 known constitutional systems since 1789), the first constitution to include something approaching a balanced-budget requirement was Portugal's Constitution of 1822, which was suspended in 1823, and replaced in 1826. The phrasing in Article 226 of the 1822 Portuguese charter was short and simple ("Contributions [taxes] will be proportional to public expenses."). The Portuguese provision stood as the only example of a balanced-budget provision until Germany's unification constitution of 1871. Article 73 of that document allowed deficit spending only under conditions of "extraordinary need" and then, only by a separate legislative act. The post-war basic law of the German Federal Republic retained that provision. Following Germany (though not necessarily *modeled* after Germany), a small set of Latin American constitutions included such a provision in the late 19th and early 20th centuries. The Honduran constitution of 1873 stated simply that the adopted budget could not exceed income, a statement repeated in subsequent Honduran charters. Constitutions in Nicaragua (1905) and Ecuador (1906) contained similar provisions. The Brazilian post-war constitution (1946) included the requirement as well, along with a highly detailed set of budget specifications.

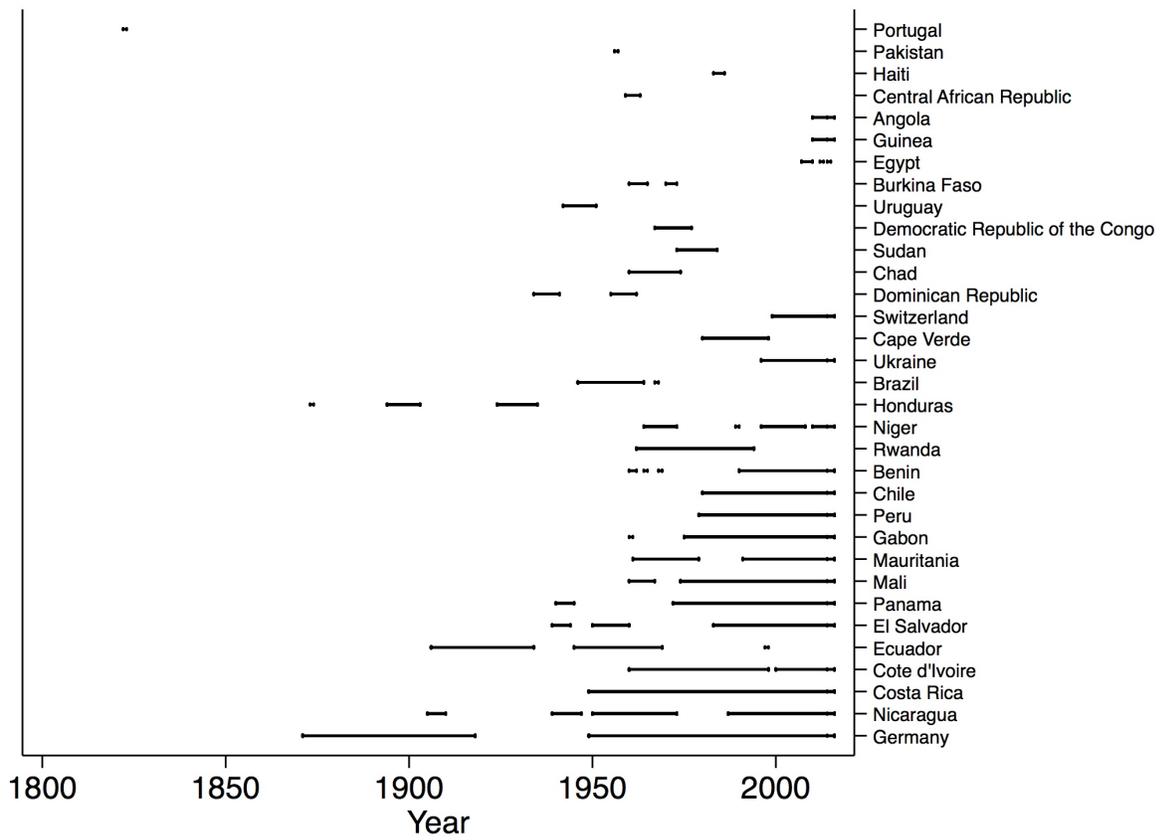
A first glance at the countries that have adopted balanced budget provisions in Figure 3 shows no simple pattern. Countries with diverse governments and circumstances have adopted these rules at various points in their histories. This is not to say that the distribution of balanced budget provisions is random. Indeed, the list *seems* to be over-representative of developing countries, with some noticeable clusters in Africa and Central America. This preponderance among developing countries is balanced by what seems to be a recent wave in Western Europe associated with the aforementioned Fiscal Compact.

Following WWII almost (95%) of the constitutions with balanced budget requirements appear in Latin America or Africa. The formulation of these clauses continued to be quite general, though a handful of constitutions began to contemplate the procedural consequences of unbalanced budgets. So, Article 42 of Chad's 1960 constitution states (in part):

The draft budget bill must provide for the necessary resources to cover integral expenses. . .

If the bill adopted by the Assembly does not provide sufficient revenue to balance spending, the Government must order, in the manner described in the previous paragraph,

Figure 2: Periods in which constitutional budget balance provisions have been in force  
*Sample/Universe: 722 of 854 Constitutional systems in force between 1789-2015*



reduction of credit or the creation of new revenue to the extent necessary to obtain equilibrium . . .

If the Assembly does not vote on a balanced budget at the end of the special session, the budget is definitively established as a government project not subject to ratification.

## 4.2 Constitutional and non-constitutional provisions

IMF data on fiscal governance (Schaechter et al. 2012) makes for a reasonable companion dataset with which to compare constitutional provisions. The authors of the data record balanced-budget provisions (as well as other components of fiscal governance) and identify the source of the fiscal rule – i.e., whether it is found in political commitments, statutes, treaties, or constitutions.

Our theory suggests that constitutional and statutory provisions differ in their level of compliance. However, enacting law at one level does not preclude doing so at the other. Theoretically, one can think of laws across these levels as either *substitutes* for, or *complements* of, one another. In fact, we find only a moderate overlap between the two. Table 1 presents the cross-tabulation of data for balanced budget rules across the two sources of law.<sup>16</sup> The unit of analysis is the constitutional system and the sample includes the 370 constitutional systems that pertain to the countries and years in the IMF data.<sup>17</sup>

Table 1: Balanced Budget Rules in Constitutions\* and Statutory Law

Constitutional Budget Rule	Statutory Budget Rule		Total
	No	yes	
No	245 (71.85%)	96 (28.15%)	341 (100%)
Yes	16 (55.17%)	13 (44.83%)	29 (100%)
Total	261 (70.54%)	109 (29.46%)	370 (100%)

\*Sample: 370 constitutional systems in force between 1984-2012

Cases are coded as having a balanced budget rule (whether constitutional or statutory)

<sup>16</sup>Data on non-constitutional rules from Schaechter et al. 2012.

<sup>17</sup>For this description, we aggregate our country-year data to the constitutional system (note that following the Comparative Constitutions Project, we distinguish amendments from replacements, the latter define the beginning of new “systems”). This aggregation decision recognizes that country-years will be highly dependent on one another, given the inertia of constitutional law.

if one was ever enacted during the duration of the constitutional system. Fewer than half (45%) of all constitutional systems with a balanced budget provision also have a corresponding rule, at some point, in non-constitutional law. A significant minority (28%) of constitutional systems without a budget provision, however, have such law in the non-constitutional format. Clearly, constitutionalizing balanced budgets is neither a necessary nor sufficient path to non-constitutional law on the topic. To put it differently, a significant proportion of jurisdictions seem to treat the two levels of law as substitutes for one another, which provides leverage to assess their separate effects.

For those jurisdictions that include balanced-budget provisions at both levels, one may wonder whether constitutional provisions precede or follow statutory law? The answer is clear: precede. Twelve of the thirteen countries that have had provisions in both arenas enacted their constitutional provisions at least one year before they did their statutory rules. Cote D'Ivoire, which adopted the provision in both forms in 2000, is the sole exception – and even in that case, the seeming simultaneity may mask Constitutional priority. Such sequencing seems logical if one envisions constitutions as a site for the initial inscription of general objectives and promises, to be specified later in ordinary law.

## 5 Origins and Effects of Balanced Budgets

### 5.1 Characteristics of Balanced Budget Adopters

Which countries tend to adopt balanced-budget provisions in their Constitutions? Figure 3 does not suggest a clear profile of such countries. Consider the characteristics in Table 2), which reports the mean of select variables for states with and without a provision in place in the year 2000. In that year, on average, those countries with balanced budget provisions were more developed than others as measured by three dimensions of the human development index: GDP per capita, infant mortality, and literacy. However, those with balanced budgets had lower expenditures and lower central government debt (both as a percentage of GDP), which suggests the *possibility* of some budgeting austerity attributable to balanced budget rules.

Readers might associate fiscal austerity with governments of the right, but the data suggest that countries of various ideological persuasions adopt balanced budgets. Of the seven governments that adopted balanced budgets post-1945, only two (Chile in 1980 and Brazil in 1946) were right

Table 2: Characteristics of States with Constitutional Balanced Budget Provisions (c. 2000)

Attribute	Balanced Budget	
	Yes	No
GDP per capita (in 2000 US\$)	7,025.31	5,219.32
Central Govt. Expenditure (% of GDP)	16.31	13.75
Central Govt. Debt (% of GDP)	58.95	35.45
Infant Mortality Rate	40.34	46.73
Literacy (adult)	77.5	71.68
N	15	176

N=191 Constitutional systems in 2000

or center right, in the case of Brazil. The remainder were either socialist, generally left of center, or under military rule at the time of adoption. These cases do not support an understanding of balanced budgets as an instrument of the right, which is puzzling but analytically useful. It seems possible that left governments adopt such provisions as strong counter-signals to market actors leery of redistributive and regulatory policies. Regardless, this heterogeneity in ideology among adopters suggests that constitutional restrictions on the budget may be more than simply reflections of an austerity predisposition. And analytically, the heterogeneity helps us more easily distinguish the effects of institutions, which may not in fact be endogenous to something like “political will.”

## 5.2 Multivariate Models of Primary Balances

So, are balanced budget rules associated with balanced budgets, controlling for other relevant predictors? We build a multivariate model to predict a country’s *primary balance*, measured as revenues minus expenditures (excluding interest payments) as a percentage of GDP. A primary balance of zero indicates that public revenues match expenditures precisely, a negative balance indicates a public deficit, and a positive primary balance indicates a surplus (prior to interest payments). Alternative measures of budgeting would seem worth considering. For example, one may worry that primary balances, which exclude interest payments, are not fully representative of expenditures. A country’s “real” balance may be well into the red, even if the primary balance is in the black (Milesi-Ferretti 2004). It could be, then, that creative and motivated accounting achieves a balanced budget in the primary balance against a background of deep indebtedness. We thus

take some care in interpreting any effects as nominal effects: the question, properly understood, is whether balanced budget provisions reduce deficits, *as reported by governments*.

If we assume that balanced-budget rules will unleash the creativity of a government's accountants', we might want to understand accounting procedures and assess the impact of any tricks on the "real" budget. Porterba (1995) highlights three common accounting tricks. One would be to "increase revenue" by transferring funds set aside for a specific purpose to general budget funds. Theoretically, this transfer could continue iteratively until such trust funds are spent down to zero. Second, public expenditures near the end of the fiscal year could be delayed until the new fiscal year begins. Of course, such delays only push back expenditures to the next year, when they would present increased solvency challenges. Third, and similarly, taxes can be collected on an accelerated schedule while counting next year's projected revenues into the current fiscal year. Each of these budgeting tricks, however, should be exposed over time. We should be wary of interpreting one-off budget surpluses as "real" austerity.

So, over a short- or medium-time horizon, these tactics may work to hide deficits (von Hagen and Wolff 2006). In the long term, however, tactics would likely be exposed by bond markets or financial institutions that provide technical assistance when countries fail to meet their debt obligations. We note that our sample covers decades, which allows us to understand if the rules generate sustained effects over and above any short-term ones. Shifts of one year by governments to accelerate tax collection or delay expenditures adds noise to the dependent variable, but should not change the overall relationship. Moreover, as governments in power change hands, new governments are incentivized to call out previous governments for budgetary mismanagement to avoid blame for problems created by their predecessors. An example of this occurred when the government changed hands in Malaysia in May of 2018. The new Malaysian government – presumably to absolve itself of any blame – quickly informed the public and markets of the incumbent government's fiscal mismanagement (Iwamoto 2018). Finally, our sample (in contrast to that of Mauro et al., a benchmark study for us) includes financial crisis years. We do so - in part - because those countries that incorporate accounting gimmicks over a long enough time horizon, will eventually see primary surpluses correct downward when crises hit, which should be recorded in the dependent variable.<sup>18</sup>

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<sup>18</sup>It is worth noting that in order for accounting tricks to result in a spurious correlation between the presence of balanced budget provisions and primary balances, it would have to be the case that such tricks are much more likely to be adopted by those countries with balanced budget provisions. Such an expectation is dubious. Nearly all

Our analysis draws from a set of statistical models in the public finance literature. A useful point of departure is Bohn (1998), who shows that the U.S. government historically takes corrective austerity measures in response to rising debt. Importantly, Bohn also shows that cyclical fluctuations and wartime spending mask the relationship between primary balances and other variables. We incorporate this insight by employing a statistical procedure, called a “Bohn fiscal reaction regression,” that allows one to accurately model the determinants of primary balances. Bohn (ibid) shows that the primary balance and the ratio of debt-to-GDP are non-stationary because both variables are correlated with cyclical economic fluctuations. Therefore, any regression procedures that fail to incorporate the cyclical components of these two variables will produce inconsistent results. Since the point to which debt reverts is conditional on cyclical factors, the relationship between debt-to-GDP and primary balance is masked absent regression controls that incorporate these factors. The term “fiscal reaction” derives from the idea that governments can self-correct spending patterns to ensure finances are sustainable long-term. Other analysts of the primary balance have adopted Bohn’s basic modeling framework (e.g., Mendoza and Ostry (2008) and Mauro et al. (2015)), a convention that provides a useful set of reference points for our analysis.

We build directly on a model developed in Mauro et al. (2015), who have produced a convenient set of data for many of the important predictors of primary balances for a sample of 55 countries from 1800 to 2011.<sup>19</sup> The historical scope for our multivariate analysis is much shorter however, from 1950 to 2011, since constitutional provisions were relatively rare prior to this start date. (Separately, we have also run the analysis back to 1800). Ultimately, our multivariate analysis includes 52 countries over this shortened time period once all independent variables are merged to the Mauro et al (2015) dataset (for a list of the countries in our sample, see the Appendix).

We specify a model very similar to that in the Mauro et al. analysis, which includes some now-standard predictors of a primary balance, including short-term and medium-term real interest

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governments face incentives – be they due to political competition within or from investors and IFIs from without – to publicly display “healthy” economic indicators. This is true both for countries without such public commitments as well as those with. In fact, such pressures make adoption all the more puzzling: why publicly tie one’s hands and possibly invite more scrutiny of budgetary outlays?

<sup>19</sup>IMF fiscal governance data is collected via several means, with different threats to reliability. Country self-report form an initial baseline. Although countries face incentives to under-report debt in efforts to deter capital flight, the IMF and its principals have a direct stake in having accurate fiscal data so IMF staff supplement self-reporting with a variety of tools aimed at validating fiscal governance measures. For this reason, IMF data is thought to be the most reliable data available on primary balances in a cross-national context. For more information, see the “Methodological and Statistical Appendix” of the *IMF Fiscal Monitor* April 2014, “Public Expenditure Reform: Making Difficult Choices.”

rates, called *Short/Med Int* in the tables, gross public debt lagged by one year, called *Debt t-1* in the tables, public expenditures, and GDP growth; all as a percentage of GDP. We also include two world-wide commodity price indices from the MOxLAD data set, one for non-oil commodities and one for oil, referred to as *Total Non-Oil* and *Oil* in the multivariate tables, respectively. Finally, we include a measure of democracy from Polity IV, which ranges from zero to ten with higher values corresponding to higher levels of democracy. Our prior expectations about democracy are mixed; we see how representative government might exacerbate common resource problems at the same time that it assists in coordination and oversight. Either way, we see democratic institutions as relevant and whose effects are worth testing.

As we note above, Bohn (1998) shows that cyclical fluctuations and wartime spending can mask the relationship between primary balances and independent variables. Bohn analyzes a single time-series from the United States and excludes WWII and its immediate aftermath. We follow Mauro et al. (2015) and exclude relevant wars in our sample coverage, which includes the Indo-Pakistani War of 1971 (see appendix for list of country-years).

To control for cyclical fluctuations inherent in the macroeconomic variables, we implement a Hodrick-Prescott filter to separate trend and cyclical components of GDP and expenditure growth (Hodrick and Prescott, 1997; Mendoza and Ostry, 2008; Mauro et al., 2015). We provide a more detailed description of this procedure in the Appendix, but the intuition is that time trends in GDP growth and growth of national debt and spending can pose inferential problems in a cross-sectional time-series analysis. The Hodrick-Prescott filter “de-trends” these series, leaving essentially the “gap” between the predicted and realized value of the variable in a given country-year. Following Mendoza and Ostry (2008), we use a smoothing parameter of 100 and we run the filter on individual time-series of 15 years or more. Note, when individual time series have missing data within three years observed values, we impute the midpoints (Mauro et al., 2015). This filter is used on both the public expenditure variable and the GDP growth variable, which produces trend and random components for each. From these components, we generate three variables used in our analysis: (1) the random component output from the filter (i.e. the difference between the trend line and the observed value for that country-year) we call *GDP Growth Gap*, (2) the *Public Expenditure Gap*, and (3) the *Output Gap*.<sup>20</sup>

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<sup>20</sup>The output and expenditure gaps are calculated in the following way. Let “R” be the observed data and “S” be

These variables are important because they pick up the less predictable elements of the macro-economy. Importantly, public budgeting requires a government to estimate the projected performance of the economy and make plans based on those projections before the government knows how much actual spending or revenue is needed. Since the output and expenditure gaps integrate recent output and expenditure trends into their calculation, their inclusion allows the model to incorporate deviations from recent history that could impact the primary balance. For example, an economic shock that reduces overall GDP for a given country-year could increase the need for social spending and reduce tax collection leading to a primary deficit for that year. The GDP growth gap variable follows the same logic, however it measures deviations off the historical trend of GDP growth, making it a much broader measure.

### 5.2.1 Estimation

We estimate the model with a cross-sectional time-series version of Bohn’s fiscal reaction regression (Mendoza and Ostry, 2008; Mauro et al., 2015), which has the following general form:

$$pb_{it} = \rho d_{it-1} + \alpha Z_{it} + \epsilon_{it} \quad (1)$$

Where  $pb_{it}$  is the primary balance (as a percentage of GDP) of country  $i$  at time  $t$ ,  $\rho$  is Bohn’s fiscal reaction coefficient,  $d_{it-1}$  is the debt level (as a percentage of GDP) of country  $i$  at time  $t - 1$ ,  $\alpha Z_{it}$  is a matrix of control variables and their related coefficients, and  $\epsilon_{it}$  is the error term. Analysts typically consider a positive and significant  $\rho$  to be an indicator that a given country’s debt is sustainable in the long-term.

Our analysis begins by replicating a series of baseline models drawn from Mauro et al.’s (2013) cross-sectional panel regression analysis, with country-level fixed effects.<sup>21</sup> The results reproduce the authors’ central findings, with some trivial deviations.<sup>22</sup> We then alter the Mauro et al. model in two important ways. First, we include a control for the country’s level of democracy.

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the unobserved trend value from the Hodrick-Prescott filter. The gap variables are then simply:  $[\frac{(R_i - S_i)}{S_i}]$  for each  $i$ ’th observation.

<sup>21</sup>Results available upon request.

<sup>22</sup>Specifically, cumulative debt as a percent of GDP is positively associated with the dependent variable and that coefficient remains near 0.03 in all specifications of the model (see Mauro et al., 2013, Table 14, for comparison). Some differences do remain in the other independent variables and can be attributed to the fact that their models exclude financial crisis years, while our models do not, increasing the variance on the dependent variable. We chose not to drop financial crisis years because those years produce many of the most dire deficits, and it is precisely these situations that balanced budget provisions are meant to prevent.

Second, we substitute medium/short-term interest rates for Mauro et al.’s (2013) long-term interest rates to increase coverage.<sup>23</sup>

To test Hypothesis 1, we update equation 1 by adding  $\gamma x_{it}$ , which measures whether a country has a constitutional provision in effect for country  $i$  in time  $t$ .  $\gamma$ , then, can be interpreted as the average effect of a constitutional provision on the primary balance. Therefore, the full model is as follows:

$$pb_{it} = \rho d_{it-1} + \gamma x_{it} + \alpha Z_{it} + \epsilon_{it} \quad (2)$$

We report the results in Table 3. In all six specifications, the balanced budget provision is substantively and statistically significant. The estimated coefficient is approximately 1.65 (or higher), which means that a balanced budget provision improves the primary balance by approximately 1.65% of GDP on average, a shift of approximately one-half of one standard deviation. Note that the dependent variable has a mean of 0.38 in our sample, with a standard deviation of 3.5. Since budgets negotiated in one year may not take effect until the following year, we run a robustness check by substituting the balanced-budget variable with itself, lagged by one year and by five years (not shown). The coefficients for these lagged variables are approximately 1.7–1.9% and 0.8–0.9% of GDP, respectively, and all remain significant. These effects give us some reason to think that constitutional budget constraints may be consequential.

### 5.3 Statutory Provisions

Constitutional restrictions on budgets, then, seem to have a pronounced effect on budget balances. But what about statutory laws? Recall that some scholars (e.g., Hou and Smith (2006)) worry that the highly general nature of constitutional provisions creates space for creative actors to maneuver within their limits. By contrast, statutory rules may provide more specific guidance about how governmental actors make collective fiscal decisions and thus might have a more direct impact on fiscal outcomes. This line of thinking opens the possibility that constitutional provisions may simply provide the superstructure, and some momentum, for lawmakers to operate. The real action might be around statutory laws that would more directly (and profoundly) influence the behavior

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<sup>23</sup>The coverage of countries with both long-term real interest rates and constitutional provisions are all in Western Europe in the data. Coverage for short/medium-term interest rates is wider, allowing the analysis to retain a broader set of countries. These two variables are correlated at 0.18, but the latter variable produces much stronger effects on primary balances in the models. Finally, including the short/medium rate reduces the overall  $R^2$  of these models, but recall more emerging economies remain in the sample, which have higher levels of variation on the dependent variable.

Table 3: Panel Regression with Fixed Effects

Variable	H					
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Constitutional Rule	1.65*** (0.44)	1.65*** (0.44)	1.85*** (0.44)	1.85*** (0.44)	1.91*** (0.44)	1.91*** (0.44)
Debt (t-1)	0.011*** (0.002)	0.011*** (0.002)	0.003 (0.003)	0.002 (0.003)	0.002 (0.003)	0.001 (0.003)
GDP Growth Gap	0.11*** (0.02)	0.10*** (0.03)			0.11*** (0.02)	0.11*** (0.03)
Output Gap	-0.01 (0.009)	-0.01* (0.009)	-0.01 (0.008)	-0.01 (0.008)	-0.01 (0.008)	-0.01 (0.009)
Expenditure Gap	-0.22** (0.10)	-0.22** (0.10)	-0.27*** (0.10)	-0.27*** (0.10)	-0.23** (0.10)	-0.23** (0.10)
Total nonoil	-0.02*** (0.003)	-0.02*** (0.003)	-0.01*** (0.003)	-0.01*** (0.003)	-0.01*** (0.003)	-0.01*** (0.003)
Oil	-0.0 (0.00)	-0.0 (0.00)				
Debt t-1 $\times$ GDP Growth Gap		0.0 (0.0)				0.00 (0.0)
Short/Med int. (% of GDP)			0.26*** (0.03)	0.23*** (0.05)	0.26*** (0.03)	0.24*** (0.05)
Debt t-1 $\times$ interest payments				0.0 (0.0)		0.0 (0.0)
Institutionalized Democracy	0.05* (0.03)	0.05* (0.03)	0.04 (0.03)	0.04 (0.03)	0.04 (0.03)	0.04 (0.3)
Constant	1.4*** (0.39)	1.4*** (0.39)	0.09 (0.41)	0.18 (0.43)	0.15 (0.41)	0.20 (0.43)
R <sup>2</sup>	0.08	0.08	0.09	0.09	0.10	0.10
N	2, 505	2, 505	2, 497	2, 497	2, 497	2, 497

\* $p < 0.1$ ; \*\* $p < 0.05$ ; \*\*\* $p < 0.01$

of lawmakers and, thus, more resolutely address the collective resource pool problem. To explore these ideas, we estimate the effects of constitutional provisions in the same model with statutory rules. The guiding question is whether constitutional provisions have their own independent effect or whether they are simply the impetus for statutory provisions, which do the real work. In Table 4 we report the results for a set of models parallel to those in Table 3, but this time including the statutory rule for balanced budgets.

Table 4: Panel Regressions with Fixed Effects, Constitutional and Statutory Provisions

Variable	Model 7	Model 8	Model 9	Model 10	Model 11	Model 12
Constitutional Rule	1.75*** (0.42)	1.75*** (0.42)	1.81*** (0.43)	1.80*** (0.43)	1.86*** (0.42)	1.86*** (0.42)
Statutory Rule	1.51*** (0.19)	1.51*** (0.19)	1.09*** (0.17)	1.10*** (0.17)	1.10*** (0.17)	1.10*** (0.17)
Debt (t-1)	0.02*** (0.003)	0.02*** (0.003)	0.01*** (0.003)	0.01* (0.003)	0.01** (0.003)	0.01* (0.003)
GDP Growth Gap	0.11*** (0.02)	0.10*** (0.03)			0.11*** (0.02)	0.12*** (0.03)
Output Gap	-0.02* (0.01)	-0.02* (0.01)	-0.01 (0.01)	-0.01 (0.01)	-0.02** (0.01)	-0.02* (0.01)
Expenditure Gap	-0.15 (0.10)	-0.16 (0.10)	-0.20** (0.10)	-0.20** (0.10)	-0.15 (0.10)	-0.15 (0.10)
Total non oil	-0.02*** (0.003)	-0.02*** (0.003)	-0.01** (0.003)	-0.01** (0.003)	-0.01** (0.003)	-0.01*** (0.003)
Oil	-0.003*** (0.0)	-0.003*** (0.0)				
Debt (t-1) × GDP Growth Gap		0.0 (0.001)				-0.0 (0.001)
Short/Med int. (% of GDP)			0.20*** (0.04)	0.17*** (0.06)	0.20*** (0.04)	0.18*** (0.06)
Debt (t-1) × interest payments				0.0 (0.001)		0.0 (0.001)
Institutionalized Democracy	-0.10*** (0.03)	-0.10*** (0.03)	-0.13*** (0.03)	-0.13*** (0.03)	-0.13*** (0.03)	-0.13*** (0.03)
Constant	1.95*** (0.41)	1.95*** (0.41)	0.75* (0.45)	0.85* (0.48)	0.77* (0.45)	0.82* (0.47)
$R^2$	0.12	0.12	0.10	0.10	0.11	0.11
N	2, 139	2, 139	2, 134	2, 134	2, 134	2, 134

\* $p < 0.1$ ; \*\* $p < 0.05$ ; \*\*\* $p < 0.01$

The results suggest that the effects of constitutional balanced budget provisions hold up

when statutory rules are included in the models. As with the earlier models, the constitutional effect amounts to a shift of approximately 1.8 percent of GDP across the six models. Interestingly, the statutory laws also seem to have an independent impact on budgets, though one less pronounced than that of the constitutional laws. The estimate of the effect of statutory laws ranges from 1.1 to 1.5 percent of GDP depending on the specification.<sup>24</sup> Finally, one may suspect that the rules may be reinforcing such that the joint provision of balanced budgets in constitutions and statutes is especially impactful. Not so, evidently. When the statutory law variable is interacted with the constitutional balanced budget provision variable and included in Models 7 through 12 (not shown), the coefficient on the interaction is not statistically different from zero in any of them. It may be that one source of law complements, or even substitutes for, the other. But it does not seem to be the case that one source of law depends upon the other for its impact.

The results presented thus far suggest that constitutional balanced budget provisions do increase the primary balance for countries that adopt them and that these effects are independent of statutory laws that might also be in place. However, this single-stage model does not have much to say about any selection effects in operation.

#### 5.4 Constitutional Balanced Budget Amendment as Endogenous

Who adopts balanced-budget rules, and what does any such predisposition towards them imply for the estimate of their effects? Recall that we hold two competing expectations. On the one hand, adopters of constitutional budget provisions may be precisely those governments most in need of fiscal discipline. Such countries may be the most likely to run high deficits, overspend, and generate negative fiscal and economic outcomes – a diagnosis which inevitably provokes calls for balanced budget restrictions. As such, any analysis of the effects of constitutional provisions on fiscal outcomes such as deficits, expenditures, credit ratings, or other economic outcomes, may systematically *underestimate* the effects of constitutional provisions, as they are likely to be adopted in systems where they are least likely to work smoothly. On the other hand, the opposite sort of endogeneity may be at play: it may be exactly those countries that do not struggle with fiscal discipline that adopt restrictive constitutional provisions – that is, they adopt them because they *can* (without any disturbance). Either way, a naive regression of primary balances on constitutional

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<sup>24</sup>A one standard deviation change in each independent variable is associated with a 0.44 to 0.51 percent change in primary balance for constitutional provisions and a 0.47 to 0.65 percent primary balance change for statutory rules.

provisions may result in a biased coefficient estimate, either underestimating or over estimating the effect of the provisions.

Short of a randomized, controlled trial, there is no simple solution for causal inference challenges of this sort. We take a multi-pronged approach. First, we explore an instrumental variable approach. Next we analyze, in more depth, a small set of cases that vary in their balanced budget provision. Finally, we identify – and test – a set of more discrete observable implications consistent with a theory of balanced budget effects.

The simultaneous-equation analysis, of course, hinges on a set of assumptions about the exogeneity and strength of the instruments. In our case, we identify a set of credible instruments, but we are realistic about our assumptions: we view the results from these models as potentially corroboratory – not decisive – evidence. We present our full modeling approach in the appendix and summarize the approach and results here. We construct instruments with spatial lags of the dependent variable, a method that has some precedence in the comparative politics and international relations literature, but has come under some compelling recent criticism (Betz, Cook, and Hollenbach (2018)). The argument underlying such instruments is a diffusion one: constitutional design is highly interdependent and countries tend to borrow provisions from geographic (and otherwise related) neighbors. The two-stage results (see Appendix) suggest more reason to be confident about the explanatory power of balanced budget restrictions. The effects of that variable remain significant and range from 3.3 to 4.5%, significantly larger in magnitude than the effects from the single equation models presented above. Nevertheless, we take very seriously the reservations of Betz, Cook, and Hollenbach (2018) regarding the potentially undetected exogeneity of such instruments. We test for exogeneity as best as possible (see Appendix), but we present these results in the spirit of robustness.<sup>25</sup>

## 5.5 Within-Country Variation in Balanced-Budget Rules

We probe further to explore the countries in the sample that have spells with and without a constitutional provision. Again, the background analytic challenge is one of endogeneity. One

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<sup>25</sup>Betz, Cook, and Hollenbach (2018) argue that the likelihood of identifying one spatial relationship while denying all others - a requirement for the instrument to impact the dependent variable via the first stage outcome and only the first stage outcome - is close to nil. Given that economic conditions across regions are often subject to diffusion, and that prevailing economic conditions in the region may encourage adoption of strong fiscal rules, we take this cautionary note seriously. In one attempt to address such concerns, we construct our instrument using one, five, and ten-year lags in order to reduce the likelihood that proximate economic conditions or competition for capital render the instrument itself endogenous.

source of such may be that both improved fiscal governance and the adoption of balanced budget provisions reflect some underlying change in the political challenges to fiscal governance. Could an underlying “political will” lead to both smaller deficits/increased surpluses and the adoption of constitutional balanced budget rules? Within-unit analysis can help illuminate the process and test further the cross-sectional findings.

Of the seven countries that shifted to or from a constitutionalized balanced budget during our analysis period (1950-2012), we have primary balance data before and after the change for five of them: Peru, Panama, Switzerland, Brazil, and Chile. Table 5 reports the average primary balance for each country under conditions of budget restriction (balanced budget) and non-restriction across all country-years. The results suggest several noteworthy patterns. First, in all cases, balances are more favorable under balanced-budget-rule conditions than they are under unrestricted conditions (the difference is significant – at .05 – for all but Chile and Brazil). In three of the five cases, the primary balance averages a surplus regardless of the budget rule. However, in two of the five cases (Peru and Panama), the average balance is *negative* under unrestricted conditions and *positive* under restricted conditions. Panama exhibits a particularly notable difference: its balance under unrestricted conditions is a full standard deviation below the sample average and one-half of one standard deviation above the sample average under restricted conditions. *Prima facie*, the within-country results suggest a budget tightening effect similar to what we see in the cross-sectional analysis.

Table 5: Within Country t-tests for a Sample of Countries with Balanced Budget Provisions

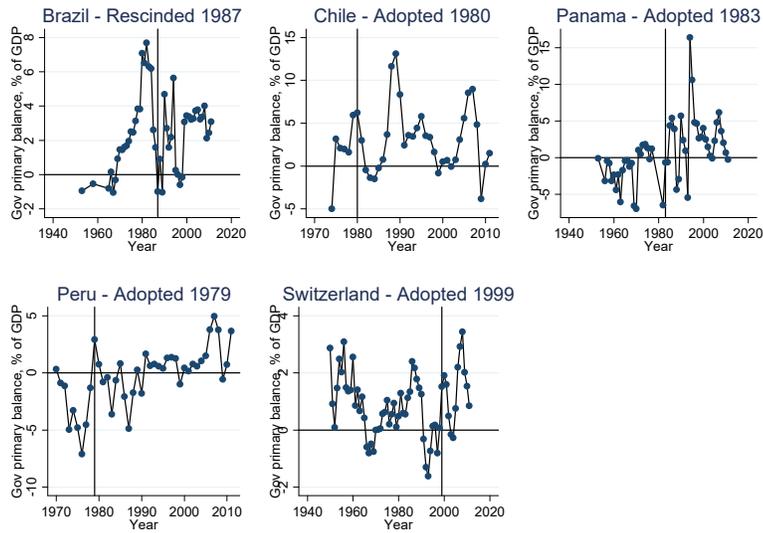
Country	Mean Primary Balance		p-value	N
	No Budget Restriction	Balanced Budget Restriction		
All Countries	0.24 (0.07)	1.00 (0.20)	0.00	2795
Brazil	2.43 (0.35)	2.33 (0.54)	0.88	49
Chile	1.63 (1.47)	3.16 (0.69)	0.38	38
Panama	-1.67 (0.56)	2.26 (0.79)	0.00	53
Peru	-3.1 (0.82)	0.50 (0.35)	0.00	42
Switzerland	0.72 (0.15)	1.44 (0.31)	0.04	62

(Standard errors in parentheses.)

Country-level chronologies tell more of the story. Figure 3 plots a time series of primary balances for each of the five countries. The vertical line in each graph denotes the year each country adopted (or rescinded, in the case of Brazil) its constitutional provision.

Peru and Panama – the countries with the most dramatic changes in their primary balance – invite further exploration. A brief political-economic history illuminates the context surrounding the constitutional revisions and reveals putative motivations behind them. Peru’s adoption of balanced budgets in 1979 may seem almost inevitable when viewed from the lens of the prior decade, years characterized by fiscal and political turmoil. Beginning with a military coup in 1968, the Peruvian government and economy were in the hands of military leaders (first Velasco and then Morales), each of whom adopted a series of nationalist economic policies, including the nationalization of important fishing, oil, and banking operations and the implementation of large-scale agrarian reform. Unlike “miracles” in other authoritarian economies, Peru’s economy did not thrive under the military. One view of 1970’s Peru is that the country began the decade with an economy in a relatively strong position (or, at least, solvent), but over the course of the decade the country fell victim to failed development policies and a growing debt burden, worsened by global shocks to commodity prices in the 1970’s. As Figure 3 suggests, Peru’s budget was more negatively unbalanced in the 1970’s than at any other point during the period. 1979 saw the prospects for a

Figure 3: Primary Balance Time Series for Before and After Adoption  
*Brazil, Chile, Panama, Peru, and Switzerland for Various Years*



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return of democracy heralded by a new Constitution with – importantly – a balanced-budget rule. Article 197 of that Constitution, famously begins:

**Article 197.** The President of the Republic transmits to Congress, within thirty days following the installation of the first annual Ordinary legislature, the budget bill of the public sector for the subsequent year. *A bill whose outlays are not effectively balanced by revenues cannot be introduced.*

By all appearances, then, Peru was poised to turn the corner politically in 1979 and its balanced budget rule of that year was one of many changes. Shortly after the transition to democracy and the election of Belaunde (who had, incidentally, been the leader ousted by the military in 1968), the government began to implement a number of fiscal and monetary reforms but did not fully jettison import substitution industrialization policies. As it happens, 1979's balanced budget rule would undergo an extreme stress test. By 1980, the global economy had begun its double-dip global recession (1980 and then again 1981-2). Interest rates spiked amid inflationary concerns, and Latin America entered its well-known debt crisis, which so characterized the region in the 1980s. In 1985, in the face of sluggish growth, Peru undertook a series of countercyclical fiscal and monetary policies designed to stimulate the economy.<sup>26</sup> If the 1980's provided a stress test of the balanced budget rule, the outcome was a qualified failure. The data in Figure 3 suggest that primary balances improved noticeably after 1979, but the budget did not reach solvency until 1991. It was a year earlier (1990) that President Fujimori was elected. His "Fujishock" therapy in 1992 would include a full suite of free-market reforms, including austerity measures. In 1993, Fujimori oversaw the enactment of a new constitution that enumerated the balanced budget rule more clearly, and took the opportunity to remove any loopholes. Article 78 of that constitution states:

**Article 78.** The President of the Republic sends to Congress the Budget bill within a deadline which expires on August 30 of each year. On the same date, he also sends his reports involving the country's debts and the budgetary balance.

The Budget bill must be effectively balanced. Loans from the Central Reserve Bank or the National Bank are not counted as State revenues. Recurrent expenses cannot be

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<sup>26</sup>See Werner and Santos (2015, 9-12; 14) for a good summary of this period.

covered by revolving loans [los gastos de carácter permanente].

The budget cannot be approved without a portion of it being designated to service the public debt.

One consequence of Fujimori's controversial administration was the beginning of consistently balanced budgets, which has continued until today.<sup>27</sup> Peru's story reminds us that budget restrictions are by no means inviolable. Yes, fiscal balances *improved* in the early (and difficult) 1980's following the adoption of a balanced budget rule. But in the face of a stagnating economy and the government's stimulus response, deficit-spending continued regardless of any constitutional edict. The Peruvian case also suggests that leaders are very conscious of accounting sleight of hand. The revised provision in the 1993 Constitution considerably strengthened the rule by specifying the measurement of revenue and spending more specifically.

Meanwhile further North, Panama instituted a balanced budget provision at roughly the same time as Peru and with similar effects. As Figure 3 shows, during the 1960's and 70's, Panama's primary balance bounced between deficit and surplus, with deficits as high as 6% in some years and a series of surpluses in the 1970's. Beginning in the early 1970s Panama instituted a number of monetary and fiscal reforms aimed at capitalizing on the rather unique confluence of trade and investor friendly characteristics. Notably, the country's central location and its role as the conduit for substantial trans-ocean trade, along with an exchange rate tied to the US dollar, marks Panama as a locus of opportunity *without* the price instability of other Central and South American countries (at least during the 1970's and 1980's). 1970 seemed to consolidate this reputation more firmly. In that year, Cabinet Decree 238 reorganized and instituted new regulations over the financial sector.<sup>28</sup>

In the midst of the economic challenges of the 1980's, Panama adopted a simple balanced budget provision in 1983. Article 267, adopted in that year, read:

**Article 267.** In the Budget planned by the Executive Branch, expenditures shall be

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<sup>27</sup>1992 marked the beginning of wholesale reforms, implemented by the Fujimori administration under the advice of the World Bank and International Monetary Fund. These reforms consisted of common set of "Washington Consensus" austerity policies which imposed costs on citizens but ultimately helped stabilize the economy (Chossudovsky 1992), World Bank (2003, 16-17).

<sup>28</sup>See Zimbalist and Weeks (1991, 70-71). Some of these regulations involved additional secrecy provisions and the easing of incorporation restrictions, which contributed to an environment ripe for offshore banking and shell corporations. However, increased activity in the banking sector, while possibly crowding local savings and investment, led to strong growth through the 1970s.

balanced with revenues and must be presented to the Legislative assembly no less than three months before the expiration date of the Budget for the present fiscal year.

As in Peru, the balanced budget rule would be tested before the ink dried. It proved unequal to the massive economic challenges of the decade, and Panama sustained deficits despite the rule. It wasn't until 1990 that Panama saw consistent budget surpluses, which would continue until for another thirty years. In 2004, the Panamanians streamlined the budget section of its Constitution, but maintained the balanced budget provision as Article 270. The only edit was to remove the deadline for the submission of the proposed budget to the legislature.

**Article 270.** In the Budget planned by the Executive Branch, expenditures shall be balanced with revenues ~~and must be presented to the Legislative assembly no less than three months before the expiration date of the Budget for the present fiscal year.~~

## 5.6 Threshold Effects

Balanced budget provisions, then, appear to be robustly associated with more favorable budget balances in cross-sectional, time-series data. Still, doubts about causality will persist. We thus test two additional implications of our theory. One implication hinges on the fact that balanced-budget provisions target a certain threshold of deficit spending, namely zero. They do not, per se, restrict the *magnitude* of deficit spending. So, a country with a one-percent surplus and another country with a surplus of 10 percent are equally compliant with the budget rule. And while actors may — all things equal — be in favor of maximizing their surplus, there is nothing institutionally that would encourage them to do so once they have balanced the budget. Indeed, their competing incentives may well lead them to clear the hurdle, with nothing to spare. Excessive surpluses, we might think, are a product of other factors.

A further test of the effects of balanced-budget rules, therefore, is whether they predict the binary outcome of solvency (or not), regardless of the magnitude. We test this possibility with a logistic regression in which the dependent variable is coded one if the primary balance is at or above zero. We regress this black/red variable on each of the same sets of covariates in Table 8 (see appendix). In each of these six models, the balanced budget rule is strongly associated with the binary outcome. We find that a balanced budget rule produces coefficients ranging from 0.97

to 1.05, which corresponds with an increase in the odds of solvency by a factor ranging from 2.6 to 2.9.

This test suggests that balanced budget rules are sensitive to a zero threshold. An even stronger test would be one that showed that balanced budget rules do not predict variation in balances that are distant from the threshold. That is, that balanced budget rules matter when countries are within striking distance of balancing their budget, but are irrelevant under conditions of extreme imbalance, one way or another.

We explore this possibility by splitting the sample into two groups: those with primary balances just above or below zero and those with primary balances 'far' from zero. To split the data, we define an upper and lower cutoff at one standard deviation (2.45 percent) above and below zero. Presumably, those budgets within the two bounds will be those sensitive to balanced-budget rules, while those outside of the bounds (in either direction) should be insensitive to such. For each group, we regress the primary balance on the same set of covariates from Table 3. We find that balanced-budget rules are significant predictors of surplus for the in-bounds group (coefficients range from 0.63 to 0.80), but insignificant for the out-of-bounds group (coefficients range from 0.80 to 1.01). This difference in effects is consistent with what we would expect if balanced budget restrictions (and not political zeal for austerity) was the driving force behind increases in surplus.<sup>29</sup>

## 5.7 Time, Constitutional Change, and Constitutional Enforcement

One nagging concern regarding the effect of constitutionalized balanced budgets regards the degree to which they are *entrenched*. Indeed, one might worry that the domestic political situation at any given time might lead capricious political actors to enact and dissolve balanced budget provisions in their constitutions as their economic fortunes change.<sup>30</sup> This mutability would render constitutional budget provisions epiphenomenal to a larger political will for fiscal austerity.

Clearly, much of the putative power of constitutions rests on their seeming immutability. Constitutions are widely understood to serve as higher law across *generations*, whatever future majorities may say. The stickiness of these laws matters if one is to protect revenues from the clutches of short-term-focused politicians. This countermajoritarian purpose is, of course, in tension with Jefferson's famous complaint that the "dead" would "rule the living." But as a practical

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<sup>29</sup>We include a dummy variable for those countries whose prior year was in surplus to ensure the average effects aren't driven by high performing countries where no coordination to pressure the executive would occur.

<sup>30</sup>We thank Reviewer 3 for raising this point.

matter, most constitutions (if not their provisions) do not outlive their citizens, and for such cases Jefferson’s concern seems overwrought.<sup>31</sup> In our case, the survival of balanced-budget provisions varies across our sample considerably. Of the 33 provisions put in place in the last 200 years (see Figure 3), seven have survived without interruption and for roughly half of the 33 cases, balanced budget laws exhibit a fair degree of stickiness (long spells). The other half of cases suggest a degree of one-off experimentation.

As it happens the mutability of Constitutions is — to some degree — hard-wired in their amendment provisions. Some Constitutions, such as Mexico’s are fairly easy to amend, sometimes requiring not much more than majorities in the legislature. Others, such as the United States, require supermajorities of two houses of the legislature and an acquiescence by a supermajority of state legislatures, which has provided prohibitively difficult. We can leverage this variation analytically. Our theory is that Constitutional balanced budget rules are consequential in part because of their degree of entrenchment. But if the degree of entrenchment varies, it follows that the degree of constitutional enforcement may vary accordingly. Balanced-budget laws in “sticky” (hard-to-amend) constitutions should, on average, have more bite than those in easily amended constitutions. To explore this possibility, we rerun the multivariate models (from Table 3) with a variable from the Comparative Constitutions Project that measures the ease with which each constitution can be amended. If countries are enacting and removing balanced budget amendments at their convenience, we might expect a strong joint effect of a balanced-budget provision and a rigid constitution. We rerun our six base regressions in Table 3 with this interaction term and find some support for this idea (see Table 9 in appendix). Specifically, the interaction term is positive and significant for all six specifications, indicating that primary balances increase as the constitution becomes more difficult to amend and a balanced-budget provision is in place.

Time matters in another way. Even if actors cannot enact and remove balanced-budget provisions at will, one might think that increasingly faithless actors would find ways to ignore them over time, as political will dissipates. Accordingly, one would expect to see primary balances shift into surplus immediately after implementation then taper off as the time from its enactment increases. This is a question relevant to Constitutional impact across domains, from rights to the

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<sup>31</sup>Elkins, Ginsburg, and Melton (2009) estimate the life expectancy of a constitution at 19 years, eerily and exactly the age that Jefferson suggested constitutions should expire.

economy. What evidence there is from other empirical work suggests that the enforcement of laws *grows* (not decays) over time (Elkins, Ginsburg, Melton 2016). The history of Peru and Panama, to recall, is also one of increasing impact over time. Neither Peru nor Panama achieved consistent surpluses until a decade or two after their adoption of the rule. Brazil’s case is also informative. As the only country to rescind a provision during the timeframe, one might have expected to see deficits in immediately ensuing years. Not so: Brazil continued to post surpluses after the rule disappeared. It seems that balanced-budget restrictions, like other constitutional provisions, take some time to gain traction and exert a fair degree of inertia.

## 6 Conclusion

This paper is, to our knowledge, the first attempt to assess whether *and how* constitutional constraints on budget balances lead to lower deficits across a large cross-section of countries over time. Many governments continue to enact such mandates in the hopes that the restrictions will curb deficit spending. But hope is the right word here, since the provisions are dogged by real skepticism about their efficacy. Recently, the European Union has taken this article of faith to an even higher level by requiring (in their Fiscal Compact) balanced budget restrictions in member-country constitutions.

Nevertheless, we suspect – albeit with some of the aforementioned skepticism – that such constitutional provisions *can* be consequential. We reason that entrenching balanced budget rules constitutionally amounts to a qualitatively different institutional choice from that of merely creating new administrative rules and procedures. Indeed, we reason that balanced budget rules in constitutions – as against other constitutional edicts – may be especially effective in terms of compliance. We draw on theories of the power of constitutional law in order to support this argument.

We build from a compelling set of empirical models on the determinants of primary balances (Mauro et al. 2013, 4). We extend these models in several ways, including an instrumental variables approach to account for possible endogeneity. In each of these test, we find that constitutional rules are consistently and strongly associated with positive primary balances. Countries that adopt such rules in their constitutions, on average, have smaller and fewer deficits, and are more likely to run surpluses. These findings persist despite controlling for a number of possibly confounding factors.

An important point of comparison in these analyses is the *form* that budget laws take.

The relevant question is whether constitutions, relative to statutory law, are consequential. In some ways, the question is very much about the effect of constitutions more generally, since constitutions can seem sometimes to be no more than parchment. We therefore compare our data on constitutional provisions against measures of budget provisions in ordinary law. Our analysis shows that constitutions and statutory procedures for balanced budgets are fundamentally different institutions in some ways, and thus deserve independent analyses. For one thing, we learn that constitutional balanced budget provisions are neither necessary nor sufficient for lower-level balanced budget laws, but in cases in which countries have both forms, the former tends to precede the latter in time. That sequence suggests that constitutional aspirations can pave the way for specific statutory measures. Importantly however, our multivariate analysis shows that both constitutional and statutory provisions are independently associated with tighter fiscal discipline. Constitutions matter, but so do ordinary laws. Policy makers intent upon reining in budget deficits might stretch for Constitutions, which can lead to ordinary law. But ordinary law itself can be impactful.

Our analysis bears on important policy debates within the United States, the European Union, and elsewhere. Austerity proposals appear cyclical, in that they gain momentum when economic times are tough. But the fundamental institutional rules that drive fiscal behavior operate in both boom and bust times and shape trends that determine whether busts will become full blown crises or merely minor downturns. Despite the centrality of rules for shaping these outcomes, we have scant cross-national over-time empirical evidence that could inform austerity debates. Our paper fills this lacuna and suggests a powerful role for constitutions in overseeing fiscal discipline.

## 7 Appendix

### 7.1 Omitted Cases

As noted in the text, we handle some extraordinary moments in the last two centuries by omission. As we note, Bohn (1998) shows that cyclical fluctuations and wartime spending can mask the relationship between primary balances and independent variables of interest. Bohn analyzes a single time-series from the United States and excludes WWII and its immediate aftermath. Our approach, following Mauro et al. (2013), is to exclude cases affected by the Danish-Swedish War of 1808-1809, the United States Civil War, the Greco-Turkish War, World War I, World War II and the Indo-Pakistani War of 1971 (Mauro et al., 2013, pp. 10-11). As only one of those wars occurred post-1950, Pakistan in 1971 was dropped.

### 7.2 Countries Included in Multivariate Regression Models

The multivariate regression models include the following 52 countries in the sample: Argentina, Australia, Austria, Belgium, Bolivia, Brazil, Bulgaria, Canada, Chile, China, Colombia, Costa Rica, Denmark, Dominican Republic, Finland, France, Germany, Ghana, Greece, Haiti, Honduras, Hungary, India, Iran, Ireland, Israel, Italy, Japan, Mexico, Netherlands, New Zealand, Nicaragua, Norway, Pakistan, Panama, Paraguay, Peru, Philippines, Poland, Portugal, Romania, South Africa, South Korea, Spain, Sweden, Switzerland, Thailand, Turkey, United Kingdom, United States, Uruguay, Venezuela

### 7.3 Bohn Regression and Hodrick-Prescott Filter Procedure

Bohn (1998) demonstrates that determining whether governments take corrective measures to reduce the accumulation of debt is inherently difficult because the primary balance and debt-GDP ratio are non-stationary; they are correlated with cyclical fluctuations in the economy and shocks caused by war. Therefore, regression procedures that fail to include the cyclical components of both primary balance and the debt-GDP ratio will produce inconsistent estimates.

Stationarity is restored to the debt-GDP variable when all cyclical variation and shocks are included in the model (ibid). In this paper, our base-model is a cross-sectional time series version of Bohn's "fiscal reaction" regression (Mendoza and Ostry 2008; Mauro et al. 2013), which has the

following general form:

$$pb_{it} = \rho d_{it-1} + \alpha Z_{it} + \epsilon_{it} \quad (3)$$

Where  $pb_{it}$  is the primary balance of country  $i$  at time  $t$  as a percentage of GDP,  $\rho$  is Bohn's fiscal reaction coefficient,  $d_{it-1}$  is the debt level of country  $i$  at time  $t - 1$  as a percent of GDP,  $\alpha Z_{it}$  is a matrix of control variables that capture cyclical fluctuations and their related coefficients, and  $\epsilon_{it}$  is the error term. In this literature, researchers focus on  $\rho$  and conclude that when  $0 < \rho$  government debt as a percent of GDP is “mean-reverting” and sustainable in the long-term. However, since the mean to which debt reverts to is conditional on cyclical factors (i.e. the debt may revert to different primary balance levels given different circumstances, even within the same country over time) this relationship is masked when cyclical factors are omitted from the regression model.

Hodrick and Prescott (1997) develop a procedure to decompose the cyclical and trend components of GDP, which we implement to generate the independent variables in  $Z_{it}$  in the base equation. Economic growth is known to vary “smoothly” over time so trend components may change in any time series. To decompose these two components in GDP, Hodrick and Prescott (1997, 3) begin by noting a given time series denoted  $y_t$  is made up of a cyclical component,  $c_t$ , and a trend component,  $g_t$ , for each time period  $t = 1$  to  $T$ . It is written below:

$$y_t = g_t + c_t \quad (4)$$

Assume that  $c_t$  measures deviations from the trend so they average to zero over a long time horizon. Moreover, the smoothness of the trend component is defined as the sum of the squared second differences. Mathematically, this is written below (Hodrick and Prescott, 1997, p.3):

$$\min_{g_{t-1}, \dots, g_T} (\sum_{t=1}^T c_t^2 + \lambda \sum_{t=1}^T ((g_t - g_{t-1}) - (g_{t-1} - g_{t-2}))^2) \quad (5)$$

Where  $c_t = y_t - g_t$ . In equation 3, Hodrick and Prescott (1997, 3) assume  $\lambda > 0$  and as  $\lambda$  increases, the trend component becomes more smooth (i.e. allows for less variation in the trend). At the minimum,  $g_{t+1} - g_t$  is pushed toward an arbitrary constant they call  $\beta$ , which indicates  $g_t$  gets arbitrarily close to  $g_0 + \beta$ . This gives the least square fit for the trend component of equation 2, given any chosen  $\lambda$ .

We set  $\lambda$  to 100 (following Mendoza and Ostry 2008; Mauro et al. 2013) and run the filter procedure using the ‘hprescott’ command in Stata on each of the individual country time series of 15 or more years. Following Mauro et al. (2013), midpoints were imputed for missing values when there were less than three years between observed values. This procedure was run on GDP to generate two variables and public expenditures to generate one variable incorporated in  $Z_{it}$  in equation (6) above.

The filter was applied to GDP to create the *GDP Growth Gap* and *Output Gap* variables. *GDP Growth Gap* is  $c_t$  for each country in the data set and measures the change in GDP above or below the trend for that year in a given country. The *Output Gap* variable is simply  $\frac{y_t - g_t}{g_t}$  for each country.

For the *Expenditure Gap*, the ‘hprescott’ command in STATA was run for each country where public expenditure data as a percentage of GDP was present. Also following Mauro et al. (2013), midpoints were imputed for missing values when there were less than three years between observed values, and we used  $\lambda = 100$  for the smoothing parameter. The *Expenditure Gap* variable is then simply  $\frac{y_t - g_t}{g_t}$  for each country where  $y_t$  is the observed value for that country-year and  $g_t$  is the trend value for that year.

## 7.4 Instrumental Variable Estimation

Our approach is a simultaneous-equations one, which helps account for endogeneity *and* sheds some light on the predictors of the budget provisions in question. The key to such approach is, of course, the choice of instrumental variables in the first-stage equation. We leverage the spatial and temporal clustering of constitutional provisions, and present arguments that these patterns are useful predictors of constitutional provisions and exogenous to the dependent variable.

### 7.4.1 Instruments

Some basic assumptions about human behavior, and a rich and deep empirical literature, attest to the highly interdependent nature of policy- and law-making (e.g., Franzese and Hays 2008, Weyland 2007, Brinks and Coppedge 2006, Elkins 2009, and Simmons and Elkins 2004). Decision makers are understandably highly attuned to, and influenced by, decisions in other related jurisdictions. Much of evidence of this sort of diffusion has been developed in the context of economic policy making and constitutional design. There is very good reason to think that balanced budget provisions

are subject to the same sort of interdependence. Some of this diffusion might be coordinated by international organizations, as our discussion above of the Fiscal Compact suggests, but some of it may well be uncoordinated. Recall Figure 3, which depicts spells in which balanced budget provisions were present. The patterns in Figure 3 suggest that there could be strong neighborhood effects. We capitalize on these regional patterns by constructing a spatial lag of the independent variable using the entire Comparative Constitutions data for each year in our multivariate sample. In practice, this variable is the proportion of countries in each region that had constitutional provisions in place in a given year, lagged by one year. We lag the instrumental variable by 5, then by 10 years to accommodate potential anticipatory effects.<sup>32</sup> Within the spatial econometrics literature, there is some precedent for using the spatial lags of a regressor as an instrument in a simultaneous model. For example, Simmons (2009) employs instruments of this kind in models of human rights compliance. Franzese and Hays (2007 and 2008) evaluate a species of such models and find, in simulations, that they retain good statistical properties (see also Anselin (1988)). We discuss and evaluate our concerns about the assumptions of these models below.

#### 7.4.2 Two-stage estimation

With the above instrument, we estimate a system of equations to simultaneously model the origins and effects of constitutional provisions. The system takes the following form:

$$x_{it} = \phi v_{it} + \rho_2 d_{it-1} + \alpha_2 Z_{it} + \epsilon_{2it} \quad (6)$$

$$pb_{it} = \rho_1 d_{it-1} + \gamma \hat{x}_{it} + \alpha_1 Z_{it} + \epsilon_{1it} \quad (7)$$

Where  $Z$  is a vector of control variables,  $\hat{x}$  is the predicted outcome from the first stage of the model, and  $v$  represents our instrumental variable.

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<sup>32</sup>Regions were defined following the Comparative Constitutions Project data - the source of the constitutional provision variable. They are Eastern Europe, East Asia, Latin America, Middle East and North Africa, Oceania, South Asia, Sub-saharan Africa, and Western Europe/USA/Canada. The proportions range from 0 to 0.2

Table 6: Instrumental Variable Regression for Constitutional Ammendment with Fixed Effects

Variable	Model 13	Model 14	Model 15	Model 16	Model 17	Model 18
Constitutional Rule	3.3*** (1.0)	4.4*** (1.0)	3.3*** (1.0)	4.5*** (1.0)	4.3*** (1.1)	4.3*** (1.1)
Debt (t-1)	0.01*** (0.002)	0.01*** (0.002)	0.00 (0.003)	0.00 (0.003)	0.00 (0.003)	0.00 (0.003)
Growth Gap	0.11*** (0.02)	0.10*** (0.03)			0.11*** (0.02)	0.12*** (0.03)
Output Gap	-0.01 (0.01)	-0.01 (0.01)	-0.01 (0.01)	-0.01 (0.01)	-0.01 (0.01)	-0.01 (0.01)
Export Gap	-0.22** (0.10)	-0.22** (0.10)	-0.27*** (0.10)	-0.27*** (0.10)	-0.22*** (0.10)	-0.23*** (0.10)
Total non-oil	-0.02*** (0.003)	-0.02*** (0.003)	-0.01*** (0.003)	-0.01*** (0.003)	-0.01*** (0.003)	-0.01*** (0.003)
Oil	-0.0 (0.0)	-0.0 (0.0)				
Debt (t-1) × Growth Gap		0.0 (0.0)				-0.0 (0.0)
Short/Med. term int.			0.28*** (0.04)	0.24*** (0.05)	0.28*** (0.04)	0.25*** (0.05)
Debt (t-1) × Interest				0.0 (0.0)		0.0 (0.0)
Institutionalized Democracy	0.00 (0.03)	0.00 (0.03)	-0.01 (0.03)	0.02 (0.03)	-0.00 (0.03)	0.02 (0.03)
Constant	3.1*** (0.6)	3.1*** (0.6)	1.9*** (0.6)	1.9*** (0.6)	2.0*** (0.6)	1.9*** (0.6)
N	2,505	2,505	2,497	2,497	2,497	2,497

\* $p < 0.1$ ; \*\* $p < 0.05$ ; \*\*\* $p < 0.01$

Although the econometrics literature shows that researchers can use non-parametric models to model binary outcomes in the first stage to estimate average effects, bias may creep into the estimate if it is far from the mean of the distribution or a large portion of the predicted values fall outside the range of observed values (Woolridge 2002; Angrist and Pischke 2009; Das 2004). Since the percentage of country years with balanced budget provisions in effect is less than ten percent of the sample, this is cause for concern. As such, we parameterize the first stage using a probit link and check for robustness using a two-step consistent estimator (Cerulli 2014). Maddala (1983, 271) shows that two-stage selection models that utilize a probit function in the first stage

need not exclude any exogenous variables to achieve identification. However, Vella (1998) cautions that this identification strategy relies on non-linearity of the inverse Mills ratio approaches, which can approach linearity under certain conditions, thus creating inconsistent and biased estimates. Therefore, Vella (ibid) warns one should be cautious of coefficients identified without exclusion restrictions. We report models utilizing a probit function and one exclusion in the first stage, but the results from a two-stage least-squares estimation with fixed effects are substantively identical. We also estimated models using a nonparametric model in the first stage and find similar results.<sup>33</sup> The results presented below are likely conservative estimates, given the concerns noted here.

The simultaneous-equations strategy depends upon some well-known assumptions, notably that the instruments ( $Z$ ) predict constitutional provisions ( $x$ ) but do not predict account balances ( $y$ ) except through  $x$  (i.e.,  $Z$  are not associated with the error term). Summarize these assumptions as ones of “strength” and “exogeneity.” Given our spatial structure, the exogeneity question amounts to whether we should expect what Franzese and Hays (2008) term “cross-spatial endogeneity,” which we can think of more precisely as a pattern of across-unit/across-variable associations. We view such a pattern as unlikely. That is, while it seems plausible that country  $i$ ’s constitutional choice would affect country  $j$ ’s constitutional choice, it seems unlikely that country  $i$ ’s constitutional choice would be associated with country  $j$ ’s budget balance, except through country  $j$ ’s constitutional choice. Or at least that is the logic behind our choice of instruments. Franzese and Hays also see such possibilities as quite rare, and in this case we have no particular reason to expect such, *a priori*.

We evaluate these assumptions with some standard statistical tests. Sovey and Green (2010) recommend an F-test (between the nested and full model) to assess the predictive power of the instrument, with an F statistic of 10 serving as a rough guideline for sufficient strength (see also Staiger and Stock 1997). With one instrumental variable, this criteria is met when the coefficient of the instrumental variable in the first stage equation produces a t-value greater than 3.16 (Sovey and Green 2010, p.190). In the six probit-linked models presented here, t-values are all over 15 in the first stage, indicating that none of these specifications suffers from a weak instrument. The correlations between residuals of the first and second stage equations ( $\rho$ ) range from  $-0.29$  to  $-0.53$  indicating a substantive correction on the second stage coefficient. The assessment of

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<sup>33</sup>Results from both available upon request.

exogeneity is not as straightforward, especially in our just-identified set of equations. A basic (but revealing) analysis is to compare the instrument's prediction of  $x$  and of  $y$  (controlling for  $x$ ). We thus conduct two regressions on the sample, the first a bivariate regression in which the instrumental variable predicts the balanced budget variable and the second a multivariate regression in which the instrumental variable predicts the dependent variable, controlling for the balanced budget variable. The coefficient on the instrumental variable is statistically significant in the first regression ( $p < 0.01$ ), and marginally significant in the second regression ( $p > 0.5$ ), thus failing this basic hurdle. Note, the exclusion restriction has not been tested explicitly, a second instrument would be necessary to do this, however, this analysis demonstrates that the instrument is sufficiently strong and that a substantial correction takes place between the actual and predicted values between stages one and two of the model. However, the instrument is somewhat correlated with the dependent variable when conditioned by the principal independent variable, indicating that it may not pass this test in the sample analyzed here.

The results from the parameterized two-stage models are presented in Table 7 (second-stage estimates are reported; first-stage results available on request). The two-stage results in Table 7 suggest more reasons to be confident about the explanatory power of balanced budget restrictions. The effects of that variable remain significant and range from 3.3 to 4.4%, significantly larger in magnitude than the effects from the single equation models presented above. Finally, we present three additional robustness tests in the appendix. A recent paper by Betz, Cook, and Hollenbach (2018) argues that spatial instruments fail to pass the exclusion restriction because the first stage outcome and the instrument are determined simultaneously. Although the instrument in our analysis is lagged by one year to address this, we acknowledge a constitutional amendment is likely to be part of the public discussion the year prior to its implementation, and therefore, a one year lag may pick up anticipatory effects. Therefore, we include robustness checks of our primary IV model using a five and ten year lag of the instrument and find substantively similar results (Five year lagged results presented in the Appendix).

Table 7: Instrumental Variable Regression for Constitutional Amendment with Fixed Effects: 5 Year Lagged IV

Variable	Model 25	Model 26	Model 27	Model 28	Model 29	Model 30
Constitutional Rule	4.4*** (1.1)	4.4*** (1.1)	4.5*** (1.0)	3.3*** (1.0)	4.2*** (1.0)	3.3*** (1.0)
Debt (t-1)	0.01*** (0.002)	0.01*** (0.002)	0.00 (0.003)	0.00 (0.003)	0.00 (0.003)	0.00 (0.003)
Growth Gap	0.11*** (0.02)	0.10*** (0.03)			0.11*** (0.02)	0.11*** (0.03)
Output Gap	-0.01 (0.01)	-0.01 (0.01)	-0.00 (0.01)	-0.01 (0.01)	-0.01 (0.01)	-0.01 (0.01)
Export Gap	-0.22** (0.10)	-0.22** (0.10)	-0.27*** (0.10)	-0.27*** (0.10)	-0.22** (0.10)	-0.23** (0.10)
Total non-oil	-0.02*** (0.002)	-0.02*** (0.003)	-0.01*** (0.003)	-0.01*** (0.003)	-0.01*** (0.003)	-0.01** (0.003)
Oil	-0.0 (0.0)	-0.0 (0.0)				
Debt (t-1) × Growth Gap		0.0 (0.0)				-0.0 (0.0)
Short/Med. term int.			0.28*** (0.04)	0.24*** (0.05)	0.28*** (0.04)	0.25*** (0.05)
Debt (t-1) × Interest				0.0 (0.0)		0.0 (0.0)
Institutionalized Democracy	0.00 (0.03)	0.00 (0.03)	-0.00 (0.03)	0.02 (0.03)	-0.00 (0.03)	0.02 (0.03)
Constant	3.1*** (0.6)	3.1*** (0.6)	1.9*** (0.6)	1.9*** (0.6)	2.0*** (0.6)	1.9*** (0.6)
N	2,505	2,505	2,497	2,497	2,497	2,497

\* $p < 0.1$ ; \*\* $p < 0.05$ ; \*\*\* $p < 0.01$

For the five year lagged results, the t-values for the coefficients on the IV in the first stage are all about 15 indicating the instruments are sufficiently strong. Rho ranges from -0.29 to -0.53 indicating a substantial adjustment in the value of the second stage independent variable values. The coefficients on the balanced budget amendment variable in the second stage range from 3.3 to 4.5 and all have a p-value less than 0.01 when using the ten year lagged IV. Finally, regressing the balanced budget variable onto the ten year lag generates a p value  $> 0.01$ , while regressing the primary balance onto the ten year lagged instrument, while controlling for the balanced budget amendment, generates a barely significant p-value. As the reader will note, the

results are substantively similar.

## 7.5 Logistic Panel Regression

Table 8: Logistic Panel Regressions with Fixed Effects, Constitutional Provisions and Binary Dependent Variable

Variable	Model	Model	Model	Model	Model	Model
Constitutional Rule	0.97** (0.4)	0.97** (0.4)	0.99** (0.4)	1.00** (0.4)	1.04** (0.4)	1.05** (0.4)
Ease of Amendment	2.2*** (0.6)	2.2*** (0.6)	2.1*** (0.6)	2.2*** (0.6)	2.2*** (0.6)	2.2*** (0.6)
Debt (t-1)	0.02*** (0.003)	0.02*** (0.003)	0.02*** (0.003)	0.02*** (0.003)	0.02*** (0.003)	0.02*** (0.003)
GDP Growth Gap	0.08*** (0.02)	0.09*** (0.03)			0.08*** (0.02)	0.09*** (0.03)
Output Gap	-0.01 (0.01)	-0.01 (0.01)	0.00 (0.01)	0.00 (0.01)	-0.01 (0.01)	-0.01 (0.01)
Expenditure Gap	-0.37 (0.22)	-0.37 (0.23)	-0.40* (0.23)	-0.40* (0.23)	-0.40* (0.23)	-0.40* (0.23)
Total non oil	-0.01*** (0.002)	-0.01*** (0.002)	-0.01** (0.003)	-0.01** (0.003)	-0.01*** (0.003)	-0.01*** (0.003)
Oil	-0.00 (0.0)	-0.00 (0.0)				
Debt (t-1) × GDP Growth Gap		-0.0 (0.0)				-0.0 (0.0)
Short/Med int. (% of GDP)			0.09*** (0.03)	0.13*** (0.05)	0.10*** (0.03)	0.14*** (0.05)
Debt (t-1) × interest payments				-0.0 (0.0)		-0.0 (0.0)
Institutionalized Democracy	-0.03 (0.02)	-0.03 (0.02)	-0.04 (0.02)	-0.04* (0.02)	-0.04 (0.02)	-0.04* (0.02)
N	2,197	2,197	2,189	2,189	2,189	2,189

\* $p < 0.1$ ; \*\* $p < 0.05$ ; \*\*\* $p < 0.01$

Table 9: Panel Regressions with Fixed Effects, Constitutional Provisions and Ease of Amendment Variable

Variable	Model 19	Model 20	Model 21	Model 22	Model 23	Model 24
Constitutional Rule	0.56 (0.58)	0.56 (0.58)	0.85 (0.58)	0.85 (0.58)	0.89 (0.57)	0.89 (0.57)
Ease of Amendment	0.60 (1.0)	0.60 (1.0)	0.70 (0.6)	0.70 (1.0)	0.69 (1.0)	0.69 (1.0)
Ease*Rule	2.6*** (0.94)	2.6*** (0.94)	2.3** (0.93)	2.3** (0.93)	2.4*** (0.93)	2.4*** (0.93)
Debt (t-1)	0.02*** (0.003)	0.02*** (0.003)	0.01*** (0.003)	0.01*** (0.004)	0.01*** (0.003)	0.01*** (0.004)
GDP Growth Gap	0.10*** (0.02)	0.10*** (0.03)			0.10*** (0.02)	0.11*** (0.03)
Output Gap	-0.01 (0.01)	-0.01 (0.01)	-0.00 (0.01)	-0.00 (0.01)	-0.01 (0.01)	-0.01 (0.01)
Expenditure Gap	-0.18* (0.10)	-0.18* (0.10)	-0.22** (0.10)	-0.22** (0.10)	-0.19** (0.09)	-0.18* (0.09)
Total non oil	-0.02*** (0.002)	-0.02*** (0.002)	-0.01*** (0.003)	-0.01*** (0.003)	-0.01*** (0.003)	-0.01*** (0.003)
Oil	-0.00 (0.0)	-0.00 (0.0)				
Debt (t-1) × GDP Growth Gap		-0.0 (0.0)				-0.0 (0.0)
Short/Med int. (% of GDP)			0.22*** (0.03)	0.23*** (0.05)	0.23*** (0.03)	0.24*** (0.05)
Debt (t-1) × interest payments				-0.0 (0.0)		-0.0 (0.0)
Institutionalized Democracy	-0.00 (0.03)	-0.00 (0.03)	-0.01 (0.03)	-0.01 (0.03)	-0.01 (0.03)	-0.01 (0.03)
Constant	0.96 (0.71)	0.96 (0.71)	-0.18 (0.72)	-0.21 (0.73)	-0.11 (0.72)	-0.17 (0.73)
$R^2$	0.11	0.11	0.12	0.12	0.13	0.13
N	2,197	2,197	2,189	2,189	2,189	2,189

\* $p < 0.1$ ; \*\* $p < 0.05$ ; \*\*\* $p < 0.01$

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