

FOCAL POINTS AND FISCAL DISCIPLINE

by

R. Daniel Kelemen and

Professor of Political Science,
Jean Monnet Chair and Director of the
Center for European Studies
Rutgers, The State Univ. of New Jersey

dkelemen@polisci.rutgers.edu

Terence K. Teo

Ph.D. Candidate
Department of Political Science
Rutgers, the State Univ. of New Jersey

tteo@rci.rutgers.edu



American Consortium on European Union Studies (ACES)
EU Center of Excellence Washington, D.C.

ACES Cases, No. 2013.2

Stephen J. Silvia, American University, editor

Copies of this case and others can be downloaded free of charge at the ACES website:
http://transatlantic.sais-jhu.edu/ACES/ACES_Cases/cases

Law, Focal Points and Fiscal Discipline

R. Daniel Kelemen^{*} and Terence K. Teo[†]

Many studies suggest that balanced budget rules can restrain sovereign debt and lower sovereign borrowing costs, even if those rules are never enforced in court. Typically, this is explained as a result of a legal deterrence logic, in which the threat of judicial enforcement deters sovereigns from violating the rules. By contrast, we argue that balanced budget rules work by coordinating decentralized punishment of sovereigns by bond markets, rather than by posing a credible threat of judicial enforcement. Therefore, the clarity of the focal point provided by the rule, rather than the strength of its judicial enforcement mechanisms, determines its effectiveness. We develop a formal model that captures the logic of our argument, and we assess this model using data on US states. We then consider implications of our argument for the impact of the balanced budget rules recently imposed on eurozone states in the Fiscal Compact Treaty. [148 words]

^{*}Professor of Political Science, Jean Monnet Chair and Director of the Center for European Studies, Rutgers, The State University Of New Jersey

[†]Ph.D. Candidate, Department of Political Science, Rutgers, The State University of New Jersey

Introduction

How can sovereigns be restrained from excessive, unsustainable borrowing? Can they be restrained by law? Can they be restrained by markets? The long history of sovereign defaults and the economic suffering that follows in their wake highlights the enduring importance of these questions (Reinhart and Rogoff 2009). The eurozone sovereign debt crisis makes these questions salient today and underlines the fact that they pose a particular challenge for federal-type systems.

Any federal or confederal system that shares a common currency and in which member states control important aspects of fiscal policy faces a fundamental challenge: it must find a credible way to discourage excessive borrowing by states. In the event of an asymmetric shock to a state's economy or simply of a sudden revelation of a state fiscal crisis, there will be substantial pressure on the federal level to make fiscal transfers to bail out the struggling state. However, if the federal level is perceived as guaranteeing the solvency of member states, this will create moral hazard encouraging states to borrow excessively (and encouraging lenders to indulge them). Excessive borrowing by state governments, in turn, may threaten the value of the common currency and over-all macroeconomic stability. This dilemma has, at various points in time, plagued federal-type polities across the world, from the United States, to Brazil, to Argentina, to Germany, to the European Union (Rodden 2002, 2006, Wibbels 2000, Triesman 2000).

In recent years, judicially enforceable fiscal rules, such as balanced budget requirements, debt brakes and expenditure limits, have become increasingly popular around the world in countries struggling to limit their debt (Liu and Webb 2011; Hallerberg 2010).¹ As we discuss below, the preponderance of empirical studies—most of which focus on US states²—suggest

¹In particular, this approach has become common in federal-type systems that combine a common currency with state control over important aspects of fiscal policy.

²In the US, 49 of the 50 US states have some sort of balanced budget requirement established in state law. Most of these laws were initially put in place in the 1840s, after a number of US states faced fiscal crises and nine states defaulted. US states imposed these balanced budget rules on themselves in order to restore the confidence of investors (Sylla and Grinath 2004, Wallis and Weingast 2008, Wallis 2000).

that entrenching balanced budget rules in state law can in fact limit state deficits and reduce state borrowing costs. These studies suggest that the stricter the legal enforcement mechanisms for these rules, the better they work (Bohn and Inman 1996; Claeys 2008, Feld et al 2010, Kiewiet and Szakaly 1996, Lutz and Follete 2012)³. Yet, the same studies also demonstrate that these rules are almost never actually enforced in court. Most authors explain this through a *legal deterrence* logic: the fear of judicial enforcement of balanced budget rules dissuades politicians from breaking those rules in the first place.

Many scholars have drawn lessons for the eurozone from the literature on US state balanced budget rules (Inman 1998, 2003; Corsetti and Roubini 1996; Eichengreen and von Hagen 1996; Bordo, Markiewicz and Jonung 2011; McNamara 2011; Henning and Kessler 2012). One important lesson drawn by many is that the key to the effectiveness of any balanced budget rule is the strength of its judicial enforcement mechanisms. As they seek to reform eurozone governance in the wake of the sovereign debt crisis, EU leaders have placed great emphasis on empowering national and EU courts to enforce deficit and debt limits. This is manifest in the Fiscal Compact Treaty (formally the Treaty on Stability, Coordination and Governance in the Economic and Monetary Union), one of the cornerstones of the EU's effort to reform eurozone governance. The Treaty requires the twenty-five member states that have ratified it to enshrine a “structurally balanced budget rule”⁴ in domestic law where it can be enforced by domestic courts.

We argue that the effectiveness of balanced budget rules does *not* in fact depend on a legal deterrence logic, as suggested by much of the literature. Though law often exerts its influence through the threat of coercive enforcement by a central authority (and behavioral changes that occur in the shadow of that threat), we argue that this is not the role law plays in the realm of balanced budget rules. Instead, we argue that to the extent that balanced budget

³States put in place deficit and debt restrictions in order to make a long-term, credible commitment to fiscal responsibility—in the hope that this commitment will reduce their borrowing costs. Thus, if legally enforceable debt brakes ‘work’ they should both enable the sovereign to borrow at reasonable rates and prevent the accumulation of unsustainable debt loads

⁴We explain below how the Treaty defines a structurally balanced budget.

rules “work”, they do so by acting as a focal point or coordination device that facilitates decentralized punishment of sovereigns by bond markets. Our argument builds on pioneering works by scholars such as Goldstein and Woglom (1992), Bayoumi, Goldstein & Woglom (1995) and Lowry and Alt (2001) who also suggest that it is the bond markets rather than the courts that discipline states who violate such fiscal rules. We advance on their contributions by linking their insights to the literature on the role of law as a coordinating device (Hadfield and Weingast 2011, 2012, 2013; McAdams 2000a, 2000b; McAdams and Nagler 2005; Sunstein 1995). Legal scholars have developed a sophisticated literature exploring how law can influence behavior not by threatening government imposed sanctions, but by coordinating decentralized punishment of rule violators by various societal actors.

Applying this perspective suggests that many empirical studies on the US positing a causal relationship between the *strictness* of state balanced budget rules and their effectiveness may suffer from an omitted variable bias, in that they have ignored the impact that the *clarity* of rules has on their effectiveness. Put simply, if balanced budget rules work by coordinating decentralized punishment by bond investors rather than by posing a credible threat of judicial enforcement, then the clarity of the focal point provided by the rule, rather than the strength of its judicial enforcement mechanisms, should be the key to its effectiveness. These rules are unlikely to ever be enforced in court, and market participants recognize this. Balanced budget rules will work better where they provide a clear focal point for investors, not where they are designed to be stringently enforced by judicial authorities.

The implications of this argument for the eurozone are not encouraging. First, the EU lacks some of the background conditions that have enabled bond markets to play an effective disciplinary role in other contexts above all the fact that the EU has set up a bailout fund undermines the potential for market discipline of sovereigns. Second, the types of structurally balanced budget rules called for in the Fiscal Compact Treaty do not provide a clear focal point for bond markets and are therefore unlikely to be effective. Our argument also has important implications beyond the US and EU contexts. With fiscal rules becoming

increasingly popular around the world, our findings suggest that the designers of those rules focus less on their judicial enforceability and more on their clarity and the ease with which bond markets can use them as focal points.

The remainder of the paper is divided into five sections. First, we review existing literature on whether and how balanced rules work, drawing on studies of the US and other political systems. Second, we present our argument on how balanced budget rules work to coordinate decentralized punishment by bond markets, even in the absence of any realistic prospect of judicial enforcement. Third, we examine the empirical record of fiscal rules in the US. We then review the structure of the balanced budget rules being put into place in accordance with the fiscal compact treaty and assess whether they can be expected to serve as effective focal points. Finally, we conclude.

Theoretical Perspectives

In federal-type systems, the central government must find ways to restrain unsustainable borrowing by states, borrowing which, if left unchecked, can lead to disastrous spillover effects on neighboring states and ultimately to demands for federal bailouts. Markets alone fail to adequately discipline sovereigns. If they did, as Bayoumi et al (1995, p.1046) explain, then yields on sovereign debt would “rise smoothly at an increasing rate with the level of borrowing, thereby providing the borrower with an incentive to restrain excessive borrowing.” But in fact yields often do not rise smoothly and excessive borrowing is not effectively restrained. Rather, sovereigns often build up substantial debt at low borrowing costs, and then face some type of fiscal crisis which prompts market panic, a rapid spike in borrowing costs to unsustainable levels. Instead of playing a helpful role deterring the accumulation of excessive debt, markets often react too late and then so forcefully that they help drive states to default.

To make up for the shortcomings of pure market discipline, many scholars and policy makers have called for the imposition of binding fiscal rules, including balanced budget rules.

With the imposition of such rules, law and courts are expected to force politicians to engage in responsible fiscal policy. One approach to examining the effects of formal fiscal rules is to analyze the outcome of public finances. Focusing on the institutional variation across American states, Bohn and Inman (1996) find that strict balanced budget rules have a greater deficit-reducing effect than more lenient rules. Furthermore, their results suggest that retrospective rules such as the no-carryover rule are more effective in lowering the likelihood of a state running a deficit in a given year than prospective rules. The benefits of strict fiscal rules are not restricted to lower deficits, however. A number of studies find that states with strict fiscal rules tend to issue less debt (Bunche 1991, Eichengreen 1992, Kiewiet and Szakaly 1996, von Hagen 1991), have lower expenditures (Rueben 1996), and are quicker to restore fiscal balance following an economic shock (Poterba 1994).

Similar results emerge from outside the United States. In a sample of Latin American countries, Alesina et al (1999) find that strict fiscal rules may contribute to lower fiscal deficits. Feld et al (2011) find that the existence and strength of fiscal rules in Swiss cantons are associated with lower bond risk premia of bonds. Finally, cross-national studies on EU member states find that fiscal rules appear to be effective at lowering public sector debt levels and deficits (Debrun et al 2008, Hallerberg et al 2007).

At the same time however, other scholars question the effectiveness of fiscal rules. Some argue that fiscally responsible countries do not need rules and fiscally irresponsible countries may not achieve fiscal discipline even with rules (Kennedy and Robbins 2001). If so, then fiscal prudence is less a function of fiscal rules than country-specific characteristics, such as political institutions. Briffault (1996) charges that in the US fiscal rules—state constitutional debt provisions in particular—are inconsistent, vague, and routinely circumvented by creative financing devices. In the EU, Iara and Wolff (2010) examine the relationship between numerical fiscal rules and government bond spreads and find that fiscal rules exert only a weak effect and that any impact occurs only in times of high risk and market stress. Similarly, the International Monetary Fund (IMF) finds no significant effect of fiscal rules on bond spreads

of 22 OECD countries (IMF 2009).

With the various qualifications noted above, it seems fair to conclude that most studies on balanced budget rules suggest that they at least have some positive effect on restraining sovereign debt and lowering sovereign borrowing costs. But how do these laws work given that they are never actually enforced in court? The prevailing argument is that they work through a form of legal deterrence. Bohn and Inman (1996) spell out this logic in their seminal article on state balanced budget rules:

“To our knowledge no case has yet been brought to the state supreme court challenging a state deficit under the state’s no-carry-over rule. We interpret this fact not as a weakness, but rather as a strength of the supreme court enforcement mechanism. Perhaps the last place the state legislature and governor want their budget decision made is in the state court. The threat to take a case to the courts under the no-carry-over rule is therefore effective, and, as our results seem to show, a balanced budget follows.” (p.54)⁵

Like Bohn and Inman (1996), a number of other studies suggest that the threat of judicial enforcement casts a long shadow; fear of the enforcement through the courts keeps politicians in line such that, no judicial enforcement is needed (Claeys 2008, Feld et al 2010, Kiewiet and Szakaly 1996, Lutz and Follete 2012).

We find this causal explanation of how balanced budget rules influence government behavior unconvincing. First, Bohn and Inman’s (1996) assertion that, “Perhaps the last place the state legislature and governor want their budget decisions made is in the state court,” is not compelling. The prospect of the judiciary making budget decisions is not necessarily anathema to law makers. In fiscal policy, as in many sensitive areas of policy making, law makers may be willing to punt sensitive questions to the courts (Graber 1993; Lovell

⁵While no such case had been brought to a state supreme court at the time of Bohn and Inman’s 1996 article, Briffault (2008, p.429) notes that a 2004 case in New Jersey, *Lance v. McGreevey*, “appears to be the only time any state supreme court has ever held that a state failed to balance its budget as the state’s constitution requires.”

2003; Frymer 2003; Whittington 2005). As Yoo and Gaziano (2011) put it, “If legislators know that courts will be lurking in the background, they may simply abdicate their own responsibilities to comply with a balanced-budget requirement.”

Second, the experience of state courts enforcing fiscal rules in the US federal system suggests that they are inclined to show political branches considerable deference in this field—a posture which would hardly strike fear into the hearts of lawmakers. Though there are few cases of litigation involving balanced budget requirements, there is an extensive case law concerning other fiscal rules. As Briffault (2003:939-940) explains, in adjudicating cases involving such rules state courts have treated fiscal limits not as issues of fundamental rights to be subject to strict scrutiny by the courts, but rather as matters of public policy best left to legislatures. The New Jersey Supreme Court summarized this accommodating judicial attitude in a 1972 ruling explaining, “the modern science of government has found a method of avoiding [the debt] clause, and the courts have approved it.”⁶

If lawmakers have less to fear from the prospect of judicial enforcement of balanced budget rules than the existing literature has theorized, how could it be that these rules nevertheless reduce state government deficits and state government borrowing costs?

A distinctive line of research on balanced budget rules developed by Goldstein and Woglom (1992), Bayoumi, Goldstein and Woglom (1995), and Lowry and Alt (2001) suggests that it is the bond markets rather than the courts that discipline states who violate such fiscal rules. Building on this line of research, we argue that balanced budget rules serve as a coordinating device for bond markets. These laws provide a focal point, helping bond investors to coordinate on when to punish states for running excessive deficits by demanding higher yields. The dissuasive effect of these rules comes not from the expectation that a court will enforce them strictly, taking control of fiscal policy away from elected politicians. Rather, where these rules exist, politicians recognize that any indication that they are violating the rule is likely to be met with a punishment imposed by bond markets (i.e. a spike

⁶New Jersey Sports & Exposition Authority v. McCrane, 292 A.2d 545(N.J. 1972) quoted in Briffault 2003, p.940.

in borrowing costs). This decentralized punishment would be felt before and would be far more painful than any penalty that might eventually be meted out by a court. To the extent that states obey balanced rules, they do so not due to fear of centralized judicial enforcement, but due to fear of the bond markets.

Though the scholars mentioned above have emphasized the role bond markets play in enforcing fiscal rules, and though some of them (Lowry and Alt 2001) have explicitly suggested that balanced budget rules can play a role as a coordinating device, our argument differs from theirs in several ways. Lowry and Alt (2001) suggest that investors lack adequate information on the intentions of government officials and that a particular form of balanced budget rule can help investors to “extract information from noisy signals” and coordinate their beliefs about how governments will react to one-time deficits (2001, p.52).

We suggest a different understanding of the coordinating role that balanced budget rules can play. Balanced budget laws help signal individual buyers the point at which other bond buyers are likely to withhold further financing; these rules thus create a focal point that can help investors coordinate on when to punish sovereigns by demanding far higher rates. In most cases, the fear of this coordinated market punishment is enough to restrain sovereigns from violating the balanced budget rules. On rare occasions where the rules are violated, the imposition of market discipline may quickly pressure sovereigns to rein in their deficits.

Scholars of political economy typically regard law as a sanctioning device, its impact on behavior a function of how strict and well-enforced it is. Thus in most of the research on the impact of fiscal rules, scholars focus on the strictness of the rules under the implicit assumption that these rules work under the threat of legal enforcement. However, as McAdams (2000) points out, law can affect behavior “independent of the sanctions it threatens to impose, that law works by what it says in addition to what it does (emphasis added)”. Law can help actors overcome coordination problems by acting as a focal point, which helps provide information and expectations on how others will behave; law is *expressive*.

Given its expressive function, law can help participants coordinate punishment against

a violator even in the *absence* of a formal enforcement mechanism (Hadfield and Weingast 2011, 2012, 2013). Hadfield and Weingast extend McAdams (2000) and others' arguments by focusing on the characteristics that such a law must have. They argue that "an important role of legal process, therefore, is to make rulings that reduce ambiguity". It is not sufficient that a law is common knowledge, it must also be clear. While other analyses examine how law, by acting as a focal point, can facilitate equilibrium selection, Hadfield and Weingast (2011) contend that a coordination equilibrium exists only if players prefer the payoffs from coordinating successfully than those without coordination.

Following Hadfield and Weingast (2011), our model assumes that individuals often hold different views, which makes coordination challenging and decentralized punishment difficult. We also make a similar assumption that each individual's information is private and unobservable by others. Unlike Hadfield and Weingast (2011) however, we make two modifications. First, the players in our model move *simultaneously* and are unable to observe the actions of other players prior to their decisions, as opposed to the sequential nature of Hadfield and Weingast's (2011) model, where players are willing to reveal information by taking costly actions if the benefits from doing so are sufficiently large. Second, we analyze explicitly how the clarity of a law—which Hadfield and Weingast (2011) stress as one of the key features of a coordinating device—affects its ability to facilitate coordination.

To do so, we draw on recent advances in game theory—the theory of global games, pioneered by Carlsson and van Damme (1993) and brought to the forefront of modern game theory by Morris and Shin (1998). Coordination games give rise to multiple equilibria. The problem of equilibrium selection in such games is due to the assumption that all relevant features of the game are *common knowledge*, or known to every player.⁷ A global game removes the common knowledge of payoffs; the game becomes one of incomplete information. Instead, players' payoffs are a function of some unknown 'state' variable, a feature of the environment that affects the payoffs of *all* players. In our model, the state variable is a

⁷More precisely, equilibrium multiplicity in coordination environments is due to the assumption that all players know the payoffs and play of the game.

government's fiscal situation.⁸ In addition, players' payoffs depend on the actions of other players in a particular way—the greater the number of players taking the same action, the higher the payoff to each individual player; players' actions are *strategic complements*.

In brief, our model shows that the clearer a balanced budget rule, the more effective it is as a coordinating device. Only when a rule is sufficiently clear can it serve as an effective focal point to facilitate decentralized enforcement. This implies that balanced budget rules can be effective in enabling states to borrow at sustainable rates while simultaneously preventing them from building up unsustainable debts—but that their effectiveness depends on their clarity and not on the strictness of their legal enforcement mechanisms.

The Model

There is a continuum of buyers in a bond market indexed by $i \in [0, 1]$. Each risk-neutral buyer chooses some amount of bonds, $b_i \in \mathbb{R}^+$, to purchase from a government. The simultaneous decisions of buyers form the aggregate level of financing the government receives, \mathcal{B} . We assume that each buyer is “small” in the sense that an individual buyer's stake is negligible as a proportion of the whole.⁹

Two components enter into the decision-making process of each buyer. First, each buyer cares about the government's fiscal situation, θ . A buyer would not want to purchase bonds from a government that is running unsustainable fiscal policies and may be potentially insolvent. Conversely, a government in good fiscal health makes for a sound investment. This uncertainty over the government's fiscal situation is known as *fundamental uncertainty*. Second, each buyer also cares about other buyers' beliefs and their decisions to finance the government's debt; an uncertainty referred to as *strategic uncertainty*. Players care about one another's

⁸Morris and Shin (2002) define global games as “games of incomplete information whose type space is determined by the players each observing a noisy signal of the underlying state.” Global games have been applied to a wide variety of contexts from speculative attacks and currency crises (Morris and Shin 1998, 1999) to riots, revolution and political regime change (Atkeson 2000, Edmonds 2008, 2011). Of late, political scientists have also started to adopt these models (see Dewan and Myatt 2008, 2012).

⁹This assumption is not crucial for our results but greatly simplifies our exposition. Our results also hold for a finite number of buyers.

beliefs and decisions about financing a governments debt, because they recognize that the sustainability of the government’s debt is itself a product of the bond markets’ willingness to finance that debt at reasonable rates. In other words, rational behavior for the individual bond buyer is not simply based on an assessment of economic fundamentals, but on their beliefs about the likely actions of other bond buyers.¹⁰

Let π denote the weight that each buyer places on other buyers’ actions. That is, $0 < \pi < 1$ captures the extent of complementarity. Each buyer’s concern for choosing the right value of financing given the government’s fiscal situation is thus $1 - \pi$. We can then write each buyer’s utility as follows:¹¹

$$u_i = \left[\underbrace{(1 - \pi)\theta}_{\text{concern for government's fiscal situation}} + \underbrace{\pi\mathcal{B}}_{\text{concern for other buyers' actions}} \right] b_i$$

The optimal strategy for buyer i is given by the first-order condition:

$$b_i^* = (1 - \pi)E_i(\theta) + \pi E_i(\mathcal{B})$$

where $\mathcal{B} = \int_0^1 b_i di$, the average action of the mass of buyers, and $E_i(\cdot)$ is the expectation operator for i .¹²

The government’s true fiscal situation θ is unknown to the buyers. As such, each buyer relies on her research to obtain information and form beliefs about θ . Since buyers’ prior experiences are different, they do not share the same information.¹³ Let this private information be represented by:

¹⁰As Morris and Shin (2003) puts it, rational behavior “depends not only on economic agents’ beliefs about common fundamentals, but also depends on beliefs of higher-order—that is, players’ beliefs about other players’ beliefs, players’ beliefs about other players’ beliefs about other players’ beliefs, and so on.”

¹¹We normalize the cost of purchasing bonds to zero.

¹²Since $0 < \pi < 1$, each buyer places positive weight on both the expected value of θ and the expected actions of other buyers \mathcal{B} . The fixed point of this best-response condition constitutes the equilibrium of the game.

¹³Put another way, buyers have heterogeneous beliefs about θ that are unknown to other buyers.

$$x_i = \theta + \epsilon_i, \epsilon_i \sim N(0, \sigma_x^2)$$

where ϵ_i represents buyer i 's idiosyncratic uncertainty over θ , is independent of θ , independent and identically distributed across buyers with mean zero and variance σ_x^2 over the standard normal. x_i is a private signal in the sense that it is not observable by others and only known to buyer i .

Suppose the government announces a balanced budget rule that is observable to all buyers; this rule is *common knowledge*. Let this public signal be denoted by:

$$y = \theta + \tau, \tau \sim N(0, \sigma_y^2)$$

where τ is independent of θ , independent and identically distributed over all buyers with mean zero and variance σ_y^2 drawn from the standard normal. The distribution of τ is referred to as the *common prior*.

Whereas buyers have different priors in the absence of a balanced budget rule, the buyers can now update their heterogeneous priors using the public signal and thus share a common prior. That is, each buyer now receives a common signal about the government's fiscal situation, which influences their expectations about other buyers' likely actions. The balanced budget rule serves two purposes: (1) it conveys information about fundamentals and (2) provides a focal point which signals individual buyers the point at which other bond buyers are likely to withhold further financing.

With the common prior, buyer i now forms her posterior belief by updating her private signal with the public signal. For ease of exposition, let:

$$\alpha = \frac{1}{\sigma_y^2}$$

$$\beta = \frac{1}{\sigma_x^2}$$

Buyer i 's expected value of θ is then:

$$E_i(\theta|x_i, y) = \frac{\alpha y + \beta x_i}{\alpha + \beta}$$

Definition 1. An equilibrium of the game consists of a set of beliefs for buyer i and a set of strategies $b_i^* : \mathbb{R}^2 \rightarrow \mathbb{R}$ such that for all (x_i, y) ,

$$u_i(b_i|x_i, y) = \arg \max_{b_i} (1 - \pi)E_i(\theta) + \pi E_i(\mathcal{B}) \quad (1)$$

Definition 2. A linear equilibrium is any strategy that satisfies 1 and is linear in x_i and y .

We solve for a linear equilibrium of this game and show that not only does such an equilibrium exist, it is unique.

Proposition 1. There exists a linear equilibrium in the game, $b_i^* = \phi x_i + (1 - \phi)y$, where

$$\begin{aligned} \phi &= \frac{\beta(1 - \pi)}{\alpha + \beta(1 - \pi)} \\ \alpha &= \frac{1}{\sigma_y^2} \\ \beta &= \frac{1}{\sigma_x^2} \end{aligned}$$

See [Technical Appendix](#) for proof.

Proposition 2. [Morris and Shin 2002] The equilibrium identified in proposition 1 is the unique equilibrium of the game.

See [Technical Appendix](#) for proof.

Given the equilibrium strategy of the buyer, we consider now how buyer i 's optimal decision, b_i^* , changes with respect to σ_x and σ_y , the clarity of buyer i 's private signal and the government's balanced budget rule respectively. Recall that:

$$E_i(\theta|x_i, y) = \frac{\alpha y + \beta x_i}{\alpha + \beta}$$

For a given σ_x , a reduction in σ_y —which corresponds to a clearer signal—leads buyer i to place greater weight on the public signal relative to her private signal and consequently improves coordination. Where a balanced budget rule is sufficiently clear, violations of that rule are more likely to trigger the bond markets to withhold financing. Knowing that violations of clear balanced budget rules would elicit a decentralized punishment by bond markets, governments will avoid violating those rules in the first place. On the contrary, a vague signal, i.e. σ_y is large, leads buyers to discount the information contained in the (noisy) public signal and instead place greater weight on their private signals, thereby making coordination more difficult. In other words, where a balanced budget rule is not sufficiently clear, violations of that rule will be more difficult to observe and will not provide bond markets with a clear focal point. Knowing that violations of a vague rule are unlikely to elicit a decentralized punishment by bond markets, governments have little incentive to respect the rule.

In sum, the model illustrates that a balanced budget rule can act as a focal point for the coordination of decentralized punishment by bond markets. More importantly, it shows that these rules need not be backed by the threat of legal enforcement to be effective; instead they can be backed by market deterrence. At the same time, focal points are not created equal. The extent to which a balanced budget rule can facilitate coordination is a function of its clarity. In particular, changes in the degree of clarity between private and public signals can affect the extent of coordination and thus the effectiveness of the rule. The clearer a balanced budget rule, the better it is as a focal point and, therefore, the more effective it is.

With this in mind, we specify the following hypotheses:

H1. The clearer a balanced budget rule, the greater its effectiveness.

H2. If a balanced budget rule is unclear, increasing the strictness of legal enforcement will not increase its effectiveness.

Empirical Applications: The US and the EU

While there is a rich literature on the effects of fiscal rules and fiscal institutions in EU member countries (Hallerberg and Wolff 2006), balanced budget rules at the national level are a recent phenomenon and the Fiscal Compact Treaty only took effect from January 2013. Given the absence of data on the impact of member state balanced budget rules in the EU context, we first turn to the US to conduct a quantitative analysis of our argument. After presenting data on the impact of the clarity of balanced budget rules in the US, we return to the case of the EU and assess the empirical implications of our argument there.

State Balanced Budget Rules in the US

Most quantitative studies on the impact of state balanced budget rules in the US share two similarities. First, they focus on examining the impact of rule strictness, which they operationalize using a measure of fiscal rule stringency compiled by the Advisory Commission of Intergovernmental Relations (ACIR). Second, in measuring the impact of strictness, they use a ‘hypothetical’ measure of bond yields drawn from the Chubb Relative Value Study.¹⁴ Like other studies, our analysis considers the impact of rule strictness measured with the ACIR index; however, our analysis also considers the impact of rule clarity—a factor that has not been explored in previous empirical studies. Moreover, where most previous studies rely on data from the Chubb Relative Value Study for their dependent variable, we use a dataset of US state general obligation bond credit ratings containing 521 observations between 1990–1999 from Johnson and Kriz (2005), which we argue provides a superior measure of the effectiveness of balanced budget rules.

Dependent Variable: General Obligation (GO) Bond Credit Rating. We use credit ratings on

¹⁴The Chubb Group of Insurance Companies’ “Relative Value Study” is a survey-based instrument conducted every six months since 1973. This survey uses evaluations by 20 to 25 traders at major brokerage firms that deal in tax-exempt bonds of “hypothetical” 20-year general-obligation bonds issued by 39 states relative to the state of New Jersey.

state GO bonds from the three main credit rating agencies as a proxy for a rule's effectiveness. The data set comes from Johnson and Kriz (2005), who highlight the limitations of data drawn from the Chubb Relative Value Study and the superiority of credit ratings as a measure in studies of the impact of fiscal institutions. Credit ratings on GO bonds are arguably superior to the Chubb survey data, first because they are based on actual market performance measures and expectations, such as the government's financial position, its debt burden, and economic health. Furthermore, bond ratings affect the interest costs of municipal debt; higher-rated bonds have lower rates than their lower-rated counterparts (Capeci 1991, Liu and Thakor 1984). Second, investors in the bond market pay attention to these ratings in making purchase decisions. As such, states care about the ratings of their GO bonds.

Our measure of GO bond ratings is an ordinal variable coded five for the highest of the three credit ratings on state GO bonds (Aaa for Moody's, and AAA for Standard and Poor's and Fitch), four the next highest, all the way to zero (the lowest of the three credit ratings). As a robustness check, we also run the models using credit ratings on GO bonds from each agency separately and obtain similar results.

Independent Variables

Rule Clarity. To construct our rule clarity index, we use the following dichotomous items from Alt, Lassen and Rose's (2006) fiscal transparency index (#1, #2, #4, #8, #9) of the American states:

1. Is the budget reported on a Generally Accepted Accounting Principles (GAPP) basis?
2. Are all appropriations included in a single bill?
3. Are the revenue forecasts binding?
4. Is the legislature prohibited from passing open-ended appropriations?
5. Does the budget require published performance measures?

Each question is scored one if the answer is yes, and zero otherwise. The final index ranges from zero to five, where higher values indicate greater clarity.

Rule Strictness. Like other studies of state balanced budget rules, we use the ACIR index of rule strictness as our indicator of the strictness of legal enforcement. This measure ranges from zero (states with lax requirements) to ten (states with stringent requirements). Vermont is the only state that lacks a formal balanced budget rule.

Controls. We include a set of economic control variables at the state level: the *unemployment rate*, *per capita income*, *general revenue*, and *debt outstanding*. Unemployment, as well as higher levels of outstanding debt, may hinder a state’s ability to service its debt and negatively impact its credit rating. Richer states, as captured by per capita income ought to have better credit ratings. Finally, we include a set of political (dummy) controls to account for the possible effects of fiscal institutions: *revenue limit*, *expenditure limit*, *debt issuance restriction*, and *popular vote requirement* (all coded one if such a restriction exists).

Table 1 presents summary statistics of the variables in our analysis.

Table 1: Summary Statistics of Variables

Variable	N	Mean	S.D.
Explanatory Variables			
Rule Clarity	521	1.89	1.51
Rule Strictness	521	7.52	2.51
Economic Controls			
Unemployment	521	5.97	1.36
Per Capita Income	521	18395.98	3219.61
General Revenue	521	1.69	0.47
Debt Outstanding	521	0.70	0.68
Political Controls			
Revenue Limit	521	0.15	0.36

Expenditure Limit	521	0.21	0.41
Debt Issuance Restriction	521	0.79	0.41
Popular Vote Requirement	521	0.30	0.46

Given our ordinal outcome, we estimate a series of ordered probit regressions. The first examines the effect of rule clarity and rule strictness with the consolidated bond credit ratings from all three ratings agencies as the outcome. The second includes a two-way interaction between clarity and strictness (*clarity*strictness*). As a robustness check, a third set of models uses bond credit ratings from each individual agency (Moody’s, Standard and Poor’s (S&P), and Fitch) as the outcome.

Results

Table 2 presents the coefficient estimates from the ordered probit regressions. Both rule clarity and strictness have a statistically significant impact on credit ratings and are in the expected direction (column *a*). As clarity (and strictness) increases, the probability of achieving a higher credit rating increases (*H1*).

Among the economic control variables, unemployment has a consistently negative and statistically significant effect on credit ratings, which suggests that higher unemployment is associated with lower credit ratings while per capita income is associated with higher credit ratings across all models. In addition, general revenue—a proxy for the relative tax burden of the state—and the amount of outstanding debt both have a negative impact on credit ratings.

Results on the political controls are mixed. Revenue limits appear to have no statistically significant effect on credit ratings; expenditure limits, which restrict the amount of state government spending, however, have a positive impact. Restrictions on the issuance of debt and the need of a popular vote majority to issue debt have the expected negative effect on credit ratings.

Our core arguments are that the effectiveness of a balanced budget rule increases with its clarity (*H1*) and that if a balanced budget rule lacks sufficient clarity, then increasing the strictness of legal enforcement will not increase the rule's effectiveness (*H2*). To assess these arguments, we include an interaction term *clarity*strictness* to the baseline model. As column *b* shows, this interaction is statistically significant and is furthermore robust when we substitute credit ratings from each of the three agencies (Moody's, S&P, and Fitch) as the outcome instead of the consolidated credit rating variable (columns *c*, *d*, and *e* respectively).

To better interpret the interaction between clarity and strictness, we construct plots that show how the predicted probability of a bond falling into the “best” credit rating category changes as a function of rule clarity and strictness. **Figure 1** shows the likelihood of a bond obtaining the “best” credit rating at low and high levels of strictness as rule clarity increases, with all other variables held at their means. As expected, if strictness is high (right plot), the probability of attaining the “best” credit rating rises with rule clarity, from about 20 percent at the lowest value of clarity to 75 percent at maximum clarity. More tellingly, if strictness is low (left plot), the likelihood of attaining the “best” credit rating still rises with clarity, from 24 percent to slightly under 36 percent.

Table 2: Ordered Probit Estimates of the Effects of Rule Clarity and Strictness on State GO Bond Credit Ratings

Variable	<i>a</i>	<i>b</i>	<i>c (Moody's)</i>	<i>d (S&P)</i>	<i>e (Fitch)</i>
Explanatory Variable					
Rule Clarity	0.09*** (0.04)	-0.87*** (0.17)	0.57*** (0.17)	-0.89*** (0.16)	-0.87*** (0.18)
Rule Strictness	0.22*** (0.03)	-0.08 (0.06)	0.00 (0.06)	-0.08 (0.05)	-0.24*** (0.06)
Two-Way Interaction					
Clarity*Strictness		0.12*** (0.02)	0.08*** (0.02)	0.12*** (0.02)	0.12*** (0.02)
Controls					
Unemployment	-0.26*** (0.05)	-0.30*** (0.05)	-0.26*** (0.05)	-0.38*** (0.05)	-0.24*** (0.05)
Per capita income	0.15*** (0.03)	0.11*** (0.03)	0.08** (0.03)	0.10*** (0.03)	0.13*** (0.03)
General Revenue	-0.73*** (0.15)	-0.66*** (0.15)	-0.79*** (0.15)	-0.27* (0.14)	-0.28* (0.15)
Debt Outstanding	-0.33*** (0.10)	-0.30*** (0.10)	-0.30*** (0.10)	-0.66*** (0.09)	0.09 (0.09)
Revenue Limit	0.08 (0.15)	0.02 (0.15)	0.18 (0.16)	0.62*** (0.15)	0.18 (0.15)
Expenditure Limit	0.35** (1523)	0.35** (0.15)	0.42** (0.15)	0.10 (0.14)	-0.04 (0.15)
Debt Issuance Restriction	-0.60*** (0.16)	-0.64*** (0.16)	-0.42** (0.17)	-0.27* (0.15)	0.14 (0.16)
Popular Vote Requirement	-0.28** (0.13)	-0.42** (0.14)	-0.44** (0.14)	-0.34** (0.13)	0.22 (0.14)
N	521	521	521	521	521

Robust standard errors are shown in (parentheses). *** indicates statistical significance at $p < .01$, ** at $p < .05$, and * at $p < .1$.

Figure 1: Predicted Probability of “Best” Credit Rating as Clarity Changes at Low and High Levels of Strictness

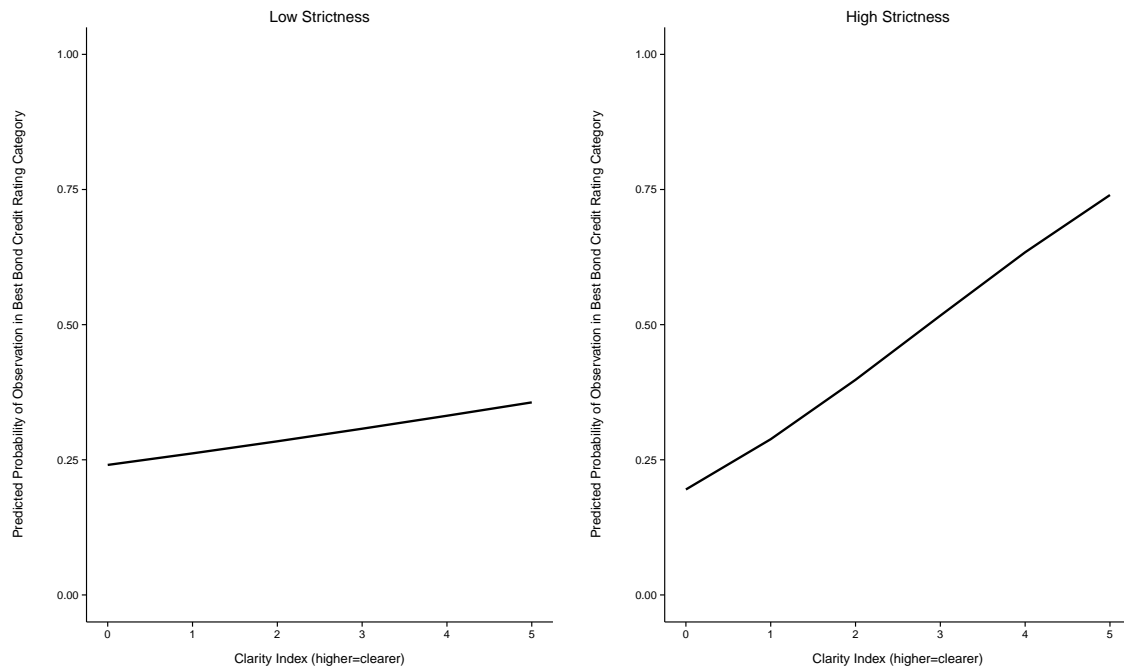
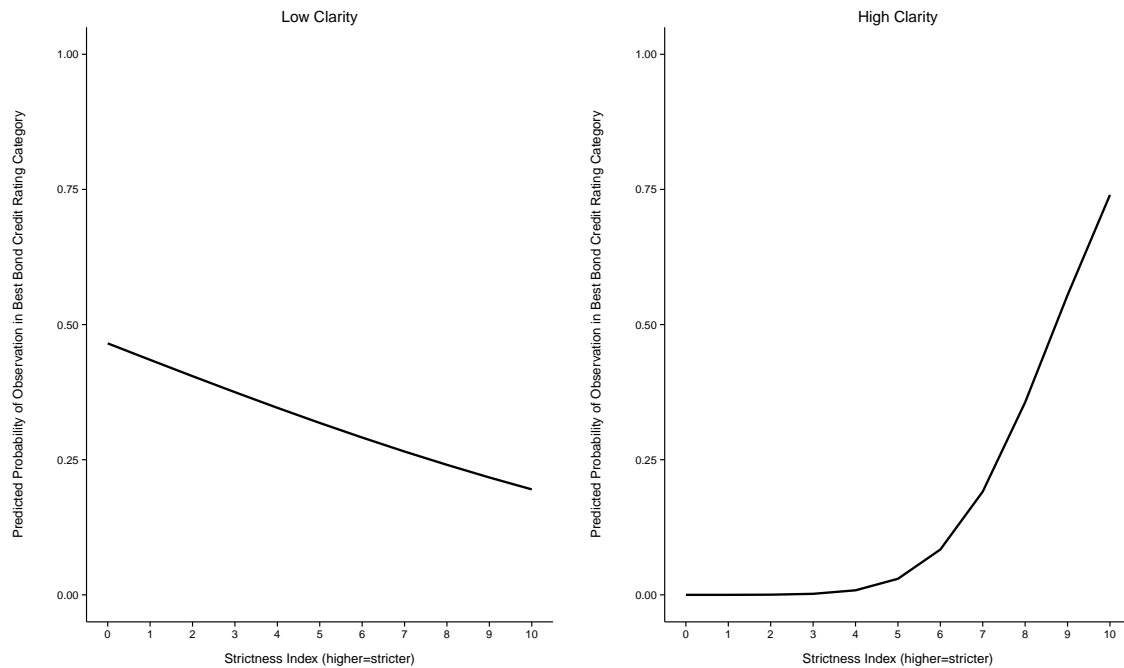


Figure 2 reveals how the probability of a bond getting the “best” credit rating changes at low and high levels of clarity as rule strictness increases, with all other variables at their means. If rule clarity is high (right plot), then increasing strictness does increase the likelihood of attaining the “best” credit rating. However, if rule clarity is low, then increasing strictness actually decreases the chances of obtaining the “best” credit rating. This suggests that the strictness of a rule does not offset the lack of clarity. Instead, if a rule is unclear, increasing strictness has the perverse effect of lowering the probability of getting the “best” credit rating.

Figure 2: Predicted Probability of “Best” Credit Rating as Strictness Changes at Low and High Levels of Clarity



Taken together, these results suggest the importance of clarity on the rule’s effectiveness. We would emphasize that the observation that state balanced budget rules in the US have ‘worked’ is entirely consistent with our model. State defaults have been extremely rare since the enactment of balanced rules in the mid-19th Century—indeed none have occurred since 1933 (Wallis and Weingast 2008). But all of these findings could be explained as a result of the role that state balanced budget rules play in coordinating decentralized punishment of states (or the threat of such punishment) by bond markets.

Finally, the actual experiences of state governments that come into conflict with balanced budget rules is more consistent with our ‘law as focal point’ causal argument than with the ‘law as threat of judicial sanction’ argument. Consider briefly the experience of the state of California in 2009, when the deadlocked legislature was unable to fulfill its mandate to pass a balanced budget, which led the state government to run out of cash and to issue IOUs to state employees, suppliers and other creditors. In reaction to this fiasco, bond

rating agencies sharply downgraded California's credit rating and the spread between the yield on its General Obligation and AAA rated municipal bonds reached an all-time high of 172 basis points (Lockyer 2009). In other words, when California temporarily violated its balanced budget rule, bond markets stepped in immediately and forcefully to punish the state by charging higher interest rates. California soon succumbed to the pressure and passed a balanced budget. Throughout this episode, there was no talk of litigation that might lead a court to settle the budget dispute and balance the budget for the deadlocked legislators. The shadow of the law, the specter of coercive judicial enforcement of balanced budget rules that supposedly gives force to state balanced budget rules was notable only in its absence. Indeed, if investors had expected that the courts would soon step in to enforce the state's balanced budget rules and to force politicians to balance the budget, there would have been no reason for the state's borrowing costs to spike. The very fact that borrowing costs spiked when the rule is violated is evidence against the 'law as threat of judicial sanction' argument. By contrast, the fact that borrowing costs spiked when the state was unable to pass a balanced budget is consistent with our argument that the balanced budget rule served as a focal point for decentralized enforcement by bond markets. Put another way, the bond markets could react the way they did because the balanced budget rule allowed them to identify California's fiscal situation and to coordinate a swift response.

New Structurally Balanced Budget Rules in the Eurozone

The eurozone sovereign debt crisis revealed the failure of the governance regime that had been put in place at the inception of the euro to prevent eurozone states from accumulating excessive deficits. As EU leaders reform eurozone governance in the wake of the crisis, they seek to reduce political discretion over fiscal policy, empowering courts to enforce balanced budget rules to ensure member state fiscal discipline. This approach is manifest in the Fiscal Compact Treaty, which requires eurozone governments and other signatories

to impose legally binding, ‘structurally balanced budget’ rules, to be enforced by national courts. However, the analysis of the impact of balanced budget rules we developed above suggests that the EU’s effort to judicialize fiscal policy through balanced budget provisions of the Fiscal Compact Treaty is unlikely to succeed.

To place the EU’s current approach in perspective, we must turn briefly back to the regime for eurozone governance initially established under the Maastricht Treaty. In the Maastricht Treaty, the EU put in place two devices intended to prevent member states from accumulating excessive debt. First, under the Stability and Growth Pact (SGP) states were required to limit their deficit and debt levels. Second, to protect against moral hazard and bolster market discipline, the Maastricht Treaty contained a ‘no bailout’ clause (Article 104b) stating that neither the Community nor any individual member state could bailout (i.e. assume the debts of) another member state. Ultimately, however, both pillars of the Maastricht regime broke down. The Stability and Growth Pact crumbled in the mid-2000s after Germany and France, with the support of other member states, managed to violate its provisions with impunity. The no bailout rule fell with the Greek crisis, when the EU—unwilling to countenance a disorderly Greek default—agreed to cooperate with the IMF on a bailout of Greece. Bailouts for Ireland and Portugal followed soon after, and in February 2011, EU leaders agreed to establish a permanent bailout fund, the European Stability Mechanism (ESM).

As the cornerstones of the Maastricht eurozone governance regime were crumbling, EU leaders moved rapidly—if rather haphazardly—to construct a new regime designed to limit the moral hazard of member states running up unsustainable debts and turning again and again to the EU for bailouts. In December 2011, EU lawmakers agreed to the so-called “Six-Pack” of economic governance reforms, which strengthened the European Commission’s powers to monitor member state fiscal performance and to sanction those that violated EU requirements (European Commission 2011). In February 2012, EU leaders went a step further, with twenty-five governments signing the Fiscal Compact Treaty. In part, the Com-

pact simply restated and raised the profile of measures already agreed to in the ‘Six-Pack’, but the Compact did change the EU’s approach in one crucial respect. Previous approaches to ensuring fiscal discipline had precluded a role for the judiciary and had relied on EU-level political institutions such as the Council and Commission. But the Compact Treaty sought to both judicialize and decentralize fiscal discipline, requiring all twenty-five signatory states to enshrine a balanced budget rule and an automatic correction mechanism (debt-brake) in domestic law and to enforce these rules through their national courts. In a sense, the Compact Treaty tried to create by fiat a system with important similarities to that found in the US, where 49 of the 50 states have embedded balanced budget rules in state law.

As discussed above, this approach to fiscal discipline has had considerable success in the US. Nevertheless, our analysis suggests that the Fiscal Compact Treaty’s approach to ensuring member state fiscal discipline will not work. To be fair, a number of the measures in the Compact Treaty and the Six-Pack—such as the strengthening of the Commission’s surveillance of national budgets—will enhance transparency and prevent the sort of fiscal deception that went on in Greece. These reforms will also make it easier for markets to discipline governments. However, other central elements of the new regime—those that focus on judicializing fiscal policy—are unlikely to function as hoped, in part because their design is based on a misunderstanding of the role law and courts play in maintaining fiscal discipline. Two sets of factors explain why the national balanced budget laws called for in the fiscal compact treaty are unlikely to work.

First, our argument suggests that balanced budget laws can work because they provide a focal point that enables investors to coordinate on when to punish governments for running excessive deficits—not because they establish a credible threat that the judiciary will step in to force governments to balance their budgets. From this perspective, the crucial attribute of a balanced budget rule is not the strength of its legal enforcement mechanisms, but rather its clarity. The clearer the rule in question, the more obvious it is when a government violates that rule and the better investors can coordinate on enforcing the rule (see Hypotheses 1 and

2 above). However, the “structurally balanced budget” rules called for in the Fiscal Compact Treaty are anything but clear. The Treaty focuses on the legal enforceability of the rules, but leaves the rules themselves extremely vague. Therefore, they are unlikely to help coordinate decentralized punishment of irresponsible governments.

Contrary to widespread reporting, the Fiscal Compact Treaty does not impose a clear-cut balanced budget rule on member states. Instead, the Treaty relies on the much more elastic concept of a structurally balanced budget and even then provides substantial discretion by allowing violations of the structural balanced budget rule in exceptional circumstances. A structurally balanced budget rule does *not* require a government to balance its budget every year, but rather requires that the budget be balanced across the business cycle. This allows for governments to engage in Keynesian countercyclical policies during economic downturns, but then requires them to make up for this by running surpluses during periods of growth. Treaty Article 3(1)(b) explains that a state’s budget will be considered to be ‘balanced’ if, “the annual structural balance of the general government is at its country-specific medium-term objective, as defined in the revised Stability and Growth Pact, with a lower limit of a structural deficit of 0.5% of the gross domestic product at market prices.”¹⁵ Article 3(1)(c) further allows that states “may temporarily deviate from their respective medium-term objective or the adjustment path towards it only in exceptional circumstances.” Precisely what constitutes a cyclically adjusted, structurally balanced budget is subject to interpretation and debate. Likewise, precisely what might constitute allowable ‘exceptional’ circumstances is open to interpretation. These vague concepts will not serve as clear focal points that could coordinate decentralized punishment by bond markets of excessive sovereign borrowing.

Supporters of the Treaty’s fiscal rules have made much of the fact that states are required to embed them in national law “through provisions of binding force and permanent character, preferably constitutional, or otherwise guaranteed to be fully respected and adhered to throughout the national budgetary processes” and to back them with an automatic “cor-

¹⁵States with lower total debt loads are allowed to run slightly higher structural deficits (Article 3(d)).

rection mechanism” (Art 3(2)). This legal enforceability might be important if it was the fear of legal enforcement that restrained government borrowing. But we suggest that fear of legal enforcement is not the causal mechanism through which balanced budget rules keep governments in check. Indeed, court rulings concerning fiscal policy are just as likely to undermine government efforts to cut deficits as they are to aid such efforts. If instead it is decentralized punishment by bond markets that discourages governments from violating fiscal rules, then the clarity of those rules is paramount. And that clarity is strikingly absent in the provisions of the Fiscal Compact Treaty.

Secondly, in the EU the background conditions that surround these balanced budget rules undermine the credibility of the rules. Scholars of fiscal federalism emphasize that market forces can only effectively discipline subnational borrowing if there is no perceived chance of a bailout by the central government or central bank (Bordo et al. 2011, p.6, 26; Hallerberg 2010). Thus, for instance, in the US, state level balanced budget rules have been able to restrain state deficits because the federal government had established a credible commitment not to bailout states. With the establishment of the ESM, there is now a permanent structure in place designed to provide bailouts to EU member states. And while there is always uncertainty around the availability of bailouts and the extent of private sector involvement, at minimum, the possibility of bailouts under the ESM is likely to reduce the effectiveness of market discipline to some extent.

Conclusion

Typically, law is understood as a sanctioning device, backed up by the threat of coercive legal enforcement. In this view, actors operate under the shadow of the law, and law acts as a deterrent to help achieved desired behavior. This article highlights another—but no less effective—function of law: law can act as a focal point for beliefs and facilitate decentralized enforcement. We argue that balanced budget rules work not because governments fear legal

enforcement, but because these rules allow bond markets to react more efficiently—by raising interest rates for instance—and thereby discipline the potentially profligate government. Balanced budget rules serve as a public signal that reveals information about the government’s fiscal situation and more importantly, provides a focal point around which bond markets can coordinate. The effectiveness of this expressive function of law, however, hinges on its clarity and precision. If balanced budget rules work by coordinating decentralized punishment by the bond markets, then clarity, not strictness, is the key feature of the rule. We demonstrate that in the US, state balanced budget rules have proven more effective where they had greater clarity, and that where rules are unclear, increasing the strictness of enforcement does not increase rules’ effectiveness. Our findings suggest that existing studies on the impact of state balanced budget suffer from omitted variable bias, overestimating the impact of strictness due to neglecting the impact of clarity. We show that in the EU, the ‘structurally balanced budget rules’ called for under the Fiscal Compact Treaty are far less clear than any of the rules found in US states, and conclude that we should not expect them to play a significant role in ensuring fiscal discipline in the eurozone. Balanced budget rules and other fiscal rules are increasingly popular around the world in countries struggling to limit their debt. Our analysis suggests that such rules are only likely to have the desired effect if great emphasis is placed on their clarity and not simply on their judicial enforceability.

Bibliography

- [1] Advisory Commission on Intergovernmental Relations. 1987. *Fiscal Discipline in the Federal System: National Reform and the Evidence of States*. Washington, DC: Advisory Commission on Intergovernmental Relations.
- [2] Alesina, Alberto, Ricardo Hausmann, Rudolf Hommes and Ernesto Stein. 1999. Budget Institutions and Fiscal Performance in Latin America. *Journal of Development Economics* 59(2): 253–273.
- [3] Alt, James, David Dreyer Lassen, and Shanna Rose. 2006. The Causes of Fiscal Transparency: Evidence from the American States. *EPRU Working Paper Series* 06-02, Economic Policy Research Unit (EPRU), University of Copenhagen, Department of Economics.
- [4] Bayoumi, Tamim, Morris Goldstein and Geoffrey Woglom. 1995. Do Credit Markets Discipline Sovereign Borrowers: Evidence from the States. *Journal of Money, Credit and Banking* 27(4): 1046–1059.
- [5] Bernoth, Kerstin and Guntram Wolff. 2006. Fool the Markets? Creating Accounting, Fiscal Transparency and Sovereign Risk Premia. *CESifo Working Paper* No. 1732. Available at www.SSRN.com
- [6] Bohn, Henning and Robert P. Inman. 1996. Balanced Budget Rules and Public Deficits: Evidence from the U.S. States. *NBER Working Paper Series* No. 5533, National Bureau of Economic Research.
- [7] Bordo, Michael, Agnieszka Markiewicz and Lars Jonung. 2011. A Fiscal Union for the Euro: Some Lessons from History. *NBER Working Paper* 17380, <http://www.nber.org/papers/w17380>

- [8] Briffault, Richard. 1996. *Balancing Acts: The Reality Behind State Balanced Budget Requirements*. New York, NY: The Twentieth Century Fund Press.
- [9] Briffault, Richard. 2003. The Disfavored Constitution: State Fiscal Limits and State Constitutional Law. *Rutgers Law Journal* 34: 907–957.
- [10] Briffault, Richard. 2008. Courts, Constitutions, and Public Finance: Some Recent Experiences from the States. In *Fiscal Challenges: An Interdisciplinary Approach to Budget Policy*. Elizabeth Garret, Elizabeth Graddy, Howell Jackson (eds). New York: Cambridge University Press, pp. 418–443.
- [11] Bunche, Beverly S. 1991. The Effect of Constitutional Debt Limits on State Governments' Use of Public Authorities. *Public Choice* 68: 57–69.
- [12] Capeci, John. 1991. Credit Risk, Credit Ratings, and Municipal Bond Yields. *National Tax Journal* 44(4): 41–56.
- [13] Carlsson, Hans and Eric van Damme. 1993. Global Games and Equilibrium Selection. *Econometrica* 61: 989–1018.
- [14] Claeys, Peter. 2008. Rules and their Effects on Fiscal Policy in Sweden. *Swedish Economic Policy Review* 15: 7–47.
- [15] Corsetti, Giancarlo and Nouriel Roubini. 1996. European versus American Perspectives on Balanced-Budget Rules. *American Economic Review* 86(2): 408–413.
- [16] Debrun, Xavier, Laurent Moulin, Alessandro Turrini, Joaquim Ayuso-i-Casals and Manmohan Kumar. 2008. Tied to the Mast? National Fiscal Rules in the European Union. *Economic Policy* 297–362.
- [17] Dewan, Torun and David P. Myatt. 2008. The Qualities of Leadership: Direction, Communication and Obfuscation. *American Political Science Review* 102(3): 351–368.
- [18] Dewan, Torun and David P. Myatt. 2012. On the Rhetorical Strategies of Leaders. *Journal of Theoretical Politics* 24(4): 1–30.
- [19] Eichengreen, Barry. 1992. Should the Maastricht Treaty be Saved? *Princeton Studies in International Finance* #74. Princeton, NJ: Princeton University.
- [20] Eichengreen, Barry and Jürgen von Hagen. 1996. Federalism, Fiscal Restraints and European Monetary Union. *American Economic Review* 86(2): 134–138.

- [21] Feld, Lars P., Alexander Kalb, Marc-Daniel Moessinger and Steffen Osterloh. 2011. Sovereign Bond Market Reactions to Fiscal Rules and No-Bailout Clauses—The Swiss Experience. Working Paper.
- [22] Frymer, Paul. 2003. Acting When Elected Officials Won't. *American Political Science Review* 97(3): 483–499.
- [23] Goldstein, Morris and Geoffrey Woglom. 1992. Market-Based Fiscal Discipline in Monetary Unions. In Matthew B. Canzoneri, Vittorio Grilli and Paul Masson eds. *Establishing a Central Bank: Issues in Europe and Lessons from the United States*. Cambridge, UK: Cambridge University Press.
- [24] Graber, Mark. 1993. The nonmajoritarian Difficulty. *Studies in American Political Development* 7: 35–73.
- [25] Hadfield, Gillian K. and Barry R. Weingast. 2011. Endogenous Institutions: Law as a Coordinating Device.
- [26] Hadfield, Gillian K. and Barry R. Weingast. 2012. What is Law? A Coordination Account of the Characteristics of Legal Order. *Harvard Journal of Legal Analysis* 4(2): 471–514.
- [27] Hadfield, Gillian K. and Barry R. Weingast. 2013. Law without the State: Legal Attributes and the Coordination of Decentralized Collective Punishment. *Journal of Law and Courts* 1(1).
- [28] Hallerberg, Mark. 2010. Fiscal Federalism Reforms in the European Union and the Greek Crisis. *European Union Politics* 12(1): 127–142.
- [29] Hallerberg, Mark, Rolf Strauch and Jürgen von Hagen. 2007. The Design of Fiscal Rules and Forms of Governance in European Union countries. *European Journal of Political Economy* 23(2): 338–359.
- [30] Hallerberg, Mark and Guntram B. Wolff. 2006. Fiscal Institutions, Fiscal Policy and Sovereign Risk Premia. *Deutsche Bundesbank Discussion Paper Series 1: Economic Studies*, No. 35.
- [31] Henning, C. Randall and Martin Kessler. 2012. Fiscal Federalism: US History for Architects of Europe's Fiscal Union. *Peterson Institute for International Economics*, Working Paper WP 12-1.

- [32] Iara, Anna and Guntram Wolff. 2010. Rules and Risk in the Euro Area. *Economic Papers* 433, December 2010. Brussels: European Commission, Economic and Financial Affairs Directorate General.
- [33] Inman, Robert. 1998. Do Balanced Budget Rules Work? US Experience and Possible Lessons for the EMU. *NBER Working Paper* No. 5838.
- [34] Inman, Robert. 2003. Transfers and Bailouts: Enforcing Local Fiscal Discipline with Lessons from U.S. Federalism. In J. Rodden, G. Eskeland and J. Litvack (eds.), *Fiscal Decentralization and the Challenge of Hard Budget Constraints*, pp.35–84
- [35] Johnson, Craig L. and Kenneth Kriz. 2005. Fiscal Institutions, Credit Ratings, and Borrowing Costs. *Public Budgeting and Finance* 25(1): 84–103.
- [36] Kelemen, R. Daniel. 2011. *Eurolegalism*. Cambridge, MA: Harvard University Press.
- [37] Kennedy, Suzanne and Janine Robbins. 2001. The Role of Fiscal Rules in Determining Fiscal Performance. *Canadian Department of Finance Working Paper* 2001–16.
- [38] Kiewiet, D. Roderick, and Kristin Szakaly. 1996. Constitutional Limitations on Borrowing. *Journal of Law, Economics, and Organization* 12(1): 62–97.
- [39] Liu, Lili and Steven B. Webb. 2011. Laws for Fiscal Responsibility for Subnational Discipline. *Policy Research Working Paper* 5587. The World Bank Poverty Reduction and Economic Management Network.
- [40] Liu, Pu and Anjan V. Thakor. 1984. Interest Yields, Credit Ratings, and Economic Characteristics of State Bonds. *Journal of Money, Credit, and Banking* 16(3): 344–351.
- [41] Lockyer, Bill. 2009. *Status Report on California's Bond Debt: Assembly Budget Hearing*. December 14, 2009. Available at <http://www.treasurer.ca.gov/debt.pdf>.
- [42] Lovell, George. 2003. *Legislative Deferrals*. New York: Cambridge University Press.
- [43] Lowry, Robert C. and James E. Alt. 2001. A Visible Hand? Bond Markets, Political Parties, Balanced Budget Laws, and State Government Debt. *Economics and Politics* 13(1): 49–72.
- [44] Lutz, Byron F. and Glenn Folette. 2012. Fiscal Rules: What does the American Experience Tell Us? *Finance and Economics Discussion Series* 2012–38. Board of Governors of the Federal Reserve System (U.S.).

- [45] McAdams, Richard H. 2000a. A Focal Point Theory of Expressive Law. *Virginia Law Review* 86: 1649–1729.
- [46] McAdams, Richard H. 2000b. An Attitudinal Theory of Expressive Law. *Oregon Law Review* 79: 339–390.
- [47] McNamara, Kathleen. 2011. Historicizing the Unique: Why the EMU Has No Fiscal Authority and Why it Matters. *Mortara Working Paper* 2011-2-12, September. Mortara Center, Georgetown University.
- [48] Morris, Stephen and Hyun Song Shin. 1998. Unique Equilibrium in a Model of Self-Fulfilling Currency Attacks. *American Economic Review* 88: 587–597.
- [49] Morris, Stephen and Hyun Song Shin. 2002. Social Value of Public Information. *American Economic Review* 92(5): 1521–1534.
- [50] Poterba, James M. 1994. State Responses to Fiscal Crises: The Effects of Budgetary Institutions and Politics. *Journal of Political Economy* 102(4): 799–821.
- [51] Poterba, James M. and Kim S. Rueben. 1997. State Fiscal Institutions and the U.S. Municipal Bond Market. *NBER Working Paper Series* No. 6237, National Bureau of Economic Research.
- [52] Reinhart, Carmen and Kenneth Rogoff. 2009. *This Time is Different*. Princeton: Princeton University Press.
- [53] Rodden, Jonathan. 2002. The Dilemma of Fiscal Federalism: Grants and Fiscal Performance around the World. *American Journal of Political Science* 46(3): 670–687.
- [54] Rodden, Jonathan. 2006. *Hamilton's Paradox: The Promise and Peril of Fiscal Federalism*. New York: Cambridge University Press.
- [55] von Hagen, Jürgen. 1991. A Note on the Empirical Effectiveness of Formal Fiscal Restraints. *Journal of Public Economics* 44(2):199–210.
- [56] Wallis, John. 2000. American Government Finance in the Long Run. *Journal of Economic Perspectives* 14(1): 61–82.
- [57] Wallis, John, Richard Sylla and Arthur Grinath III. 2004. Sovereign Debt and Repudiation. *NBER Working Paper* 10753. Available at www.nber.org/papers/w10753

- [58] Wallis, John, and Barry R. Weingast. 2008. Dysfunctional or Optimal Institutions: State Debt Limitations, the Structure of State and Local Governments, and the Finance of American Infrastructure. In Garret, Grady, and Jackson, eds. *Fiscal Challenges*. Cambridge University Press, 331-363.
- [59] Whittington, Keith. 2005. Interpose Your Friendly Hand: Political Supports for the Exercise of Judicial Review by the United States Supreme Court. *American Political Science Review* 99(4): 583-596.
- [60] Wibbels, Erik. 2000. Federalism and the Politics of Macroeconomic Policy and Performance. *American Journal of Political Science* 44(4): 687-702.
- [61] Yoo, John and Todd Gaziano. 2011. Just Say No to Judicial Enforcement of a Balanced-Budget Amendment. *National Review Online*, March 9. Available at: <http://www.aei.org/article/politics-and-public-opinion/legislative/just-say-no-to-judicial-enforcement-of-a-balanced-budget-amendment/>

Technical Appendix

Proposition 1. *There exists a linear equilibrium in the game, $b_i^* = \phi x_i + (1 - \phi)y$, where*

$$\phi = \frac{\beta(1 - \pi)}{\alpha + \beta(1 - \pi)} \quad (1)$$

Proof. Recall that buyer i 's utility function is:

$$u_i = [\underbrace{(1 - \pi)\theta}_{\text{concern for government's fiscal situation}} + \underbrace{\pi\mathcal{B}}_{\text{concern for other buyers' actions}}] b_i$$

Let $b_i(\mathcal{I}_i)$ be buyer i 's decision given her information set, \mathcal{I}_i . The information set \mathcal{I}_i consists of the government's public signal y and i 's private signal, x_i , i.e. the pair (y, x_i) that captures all information available to i .

The clarity of the public and private signal is α and β respectively, where

$$\alpha = \frac{1}{\sigma_y^2}$$

$$\beta = \frac{1}{\sigma_x^2}$$

Thus buyer i 's expectation of the government's fiscal situation, θ , is:

$$E_i(\theta) = \frac{\alpha y + \beta x_i}{\alpha + \beta}$$

where $E_i(\cdot)$ is the conditional expectation $E_i(\cdot|\mathcal{I}_i)$.

Suppose that the mass of buyers is following a linear strategy such that:

$$b_j(\mathcal{I}_j) = \phi x_j + (1 - \phi)y \quad (2)$$

Then buyer i 's conditional expectation of the average expected action across all buyers,

\mathcal{B} , is:

$$\begin{aligned} E_i(\mathcal{B}) &= \phi\left(\frac{\alpha y + \beta x_i}{\alpha + \beta}\right) + (1 - \phi)y \\ &= \left(\frac{\phi\beta}{\alpha + \beta}\right)x_i + \left(1 - \frac{\phi\beta}{\alpha + \beta}\right)y \end{aligned} \quad (3)$$

Substituting equation (3) into equation (2), buyer i 's optimal action is:

$$\begin{aligned} b_i(\mathcal{I}_i) &= (1 - \pi)E_i(\theta) + \pi E_i(\mathcal{B}) \\ &= (1 - \pi)\left(\frac{\alpha y + \alpha x_i}{\alpha + \beta}\right) + \pi\left(\left(\frac{\phi\beta}{\alpha + \beta}\right)x_i + \left(1 - \frac{\phi\beta}{\alpha + \beta}\right)y\right) \\ &= \left(\frac{\beta(\pi\phi + 1 - \pi)}{\alpha + \beta}\right)x_i + \left(1 - \frac{\beta(\pi\phi + 1 - \pi)}{\alpha + \beta}\right)y \end{aligned} \quad (4)$$

Comparing coefficients from equations (2) and (4), we have

$$\begin{aligned} \phi x_j + (1 - \phi)y &= \left(\frac{\beta(\pi\phi + 1 - \pi)}{\alpha + \beta}\right)x_i + \left(1 - \frac{\beta(\pi\phi + 1 - \pi)}{\alpha + \beta}\right)y \\ \phi &= \frac{\beta(\pi\phi + 1 - \pi)}{\alpha + \beta} \end{aligned}$$

Solving for ϕ , we get

$$\phi = \frac{\beta(1 - \pi)}{\alpha + \beta(1 - \pi)}$$

Consequently, b_i^* , the equilibrium strategy for buyer i , is:

$$\begin{aligned} b_i^*(\mathcal{I}_i) &= \frac{\alpha y + \beta(1 - \pi)x_i}{\alpha + \beta(1 - \pi)} \\ &= \phi x_i + (1 - \phi)y \end{aligned} \quad (5)$$

□

Proposition 2 (Morris and Shin 2002). *The equilibrium identified in proposition 1 is the unique equilibrium of the game.*

Proof. The proof follows from Morris and Shin (2002) and is presented in brief here.

Recall that buyer i 's best response is:

$$b_i^* = (1 - \pi)E_i(\theta) + \pi E_i(\mathcal{B})$$

Let $\bar{E}(\theta)$ be the average expectation of θ across all buyers. Substituting $\bar{E}(\theta)$ for $E_i(\mathcal{B})$,

$$\begin{aligned} b_i^* &= (1 - \pi)E_i(\theta) + \pi(1 - \pi)E_i(\bar{E}(\theta)) + \pi^2(1 - \pi)E_i(\bar{E}^2(\theta)) + \dots \\ &= (1 - \pi) \sum_{k=0}^{\infty} \pi^k E_i(\bar{E}^k(\theta)) \end{aligned} \quad (6)$$

To show that the infinite sum is bounded, we solve for $E_i(\bar{E}^k(\theta))$. To do this, note that buyer i 's expectation of θ is:

$$E_i(\theta) = \frac{\alpha y + \beta x_i}{\alpha + \beta}$$

Across all buyers, the average expectation of θ is

$$\bar{E}(\theta) = \int_0^1 E_i(\theta) \, di = \frac{\alpha y + \beta \theta}{\alpha + \beta}$$

Thus buyer i 's expectation of the average expectation of θ across buyers is:

$$\begin{aligned} E_i(\bar{E}(\theta)) &= E_i\left(\frac{\alpha y + \beta \theta}{\alpha + \beta}\right) \\ &= \frac{\alpha y + \beta\left(\frac{\alpha y + \beta x_i}{\alpha + \beta}\right)}{\alpha + \beta} \\ &= \frac{(\alpha^2 + 2\alpha\beta)y + \beta^2 x_i}{(\alpha + \beta)^2} \end{aligned}$$

and, $\bar{E}^2(\theta)$, the average expectation of the average expectation of θ is

$$\bar{E}^2(\theta) = \bar{E}(\bar{E}(\theta)) = \frac{(\alpha^2 + 2\alpha\beta)y + \beta^2\theta}{(\alpha + \beta)^2}$$

Morris and Shin (2002) show, by induction, the following lemma.

Lemma 1. For any k , $\bar{E}^k(\theta) = (1 - \gamma^k)y + \gamma^k(\theta)$ and $E_i(\bar{E}^k(\theta)) = (1 - \gamma^{k+1})y + \gamma^{k+1}x_i$, where $\gamma = \frac{\beta}{\alpha + \beta}$.

Substituting the result from **Lemma 1** into equation (6), we get

$$\begin{aligned} b_i^* &= (1 - \pi) \sum_{k=0}^{\infty} \pi^k [(1 - \gamma^{k+1})y + \gamma^{k+1}x_i] \\ &= (1 - \frac{\gamma(1 - \pi)}{1 - \gamma\pi})y + (\frac{\gamma(1 - \pi)}{1 - \gamma\pi})x_i \\ &= \frac{\alpha y + \beta(1 - \pi)x_i}{\alpha + \beta(1 - \pi)} \end{aligned} \tag{7}$$

Since equation (7) = equation (5), the linear equilibrium identified in proposition 1 is unique.

□