

DISCUSSION PAPER SERIES

DP13673

(v. 2)

WHEN GOVERNMENTS PROMISE TO PRIORITIZE PUBLIC DEBT: DO MARKETS CARE?

Mitu Gulati, Ugo Panizza, Mark Weidemaier and
Grace Willingham

**INTERNATIONAL MACROECONOMICS
AND FINANCE**

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Discussion Paper DP13673
First Published 14 April 2019
This Revision 15 April 2019

Centre for Economic Policy Research
33 Great Sutton Street, London EC1V 0DX, UK
Tel: +44 (0)20 7183 8801
www.cepr.org

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Abstract

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JEL Classification: E62, H62, H63, P16

Keywords: Sovereign debt, debt sustainability, Sovereign spreads

Mitu Gulati - gaurang@law.duke.edu
Duke University Law School,

Ugo Panizza - ugo.panizza@graduateinstitute.ch
The Graduate Institute Geneva and CEPR

Mark Weidemaier - weidemai@email.unc.edu
North Carolina School of Law

Grace Willingham - grace.willingham@lawnet.duke.edu
Duke University Law School,

When Governments Promise to Prioritize Public Debt: Do Markets Care?

Mitu Gulati,
Ugo Panizza,
W. Mark C. Weidemaier &
Gracie Willingham*

Abstract

During the European sovereign debt crisis of 2011-13, some nations faced with rising borrowing costs adopted commitments to treat bondholders as priority claimants. That is, if there was a shortage of funds, bondholders would be paid first. In this article, we analyze the prevalence and variety of these types of commitments and ask whether they impact borrowing costs. We examine a widely-touted reform at the height of the Euro sovereign debt crisis in 2011, in which Spain enshrined in its constitution a strong commitment to give absolute priority to public debt claimants. We find no evidence that this reform had any impact on Spanish sovereign bond yields. By contrast, our examination of the U.S. Commonwealth of Puerto Rico suggests that constitutional priority promises can have an impact, at least where the borrower government is subject to supervening law and legal institutions.

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* Duke University Law School, Graduate Institute (Department of International Economics), University of North Carolina School of Law, & Duke University Law School, respectively. The Fuller-Perdue grant from Duke University provided research support. For comments, thanks to Lee Buchheit and Mihalis Gousgounis. Thanks to Julieta Contreras for help with the data.

I. Introduction

In 2011, at the height of the Eurozone sovereign debt crisis, many countries had lost or risked losing access to capital markets. The crisis hit Portugal, Spain, Ireland and Greece particularly hard. The situation in Italy, never good, looked increasingly perilous and potentially threatened the Euro's existence. Eurozone countries undertook a number of steps to steady the market for government bonds. They adopted new contractual provisions designed to facilitate a collective restructuring of bond debt. They committed to maintain budget deficits within defined limits. And, to assuage investors' concerns about repayment, a subset of them gave bondholders a priority claim to state assets, elevating them over other potential claimants, including the country's own citizens and residents. These promises of super-priority have attracted little attention in the academic literature and are the focus of our inquiry.

Consider Section 135.3 of the Spanish Constitution, amended in 2011 at the height of the crisis (Diez Sanchez 2017; Sanchez-Barrilao 2013). As amended, the section read:

Loans to meet payment on the interest and capital of the State's Public Debt shall always be deemed to be included in budget expenditure and *their payment shall have absolute priority*. These appropriations may not be subject to amendment or modification as long as they conform to the terms of issue.¹

Or consider Greece. On April 4, 2012, immediately following its massive restructuring of its sovereign debt in March of that year (Zettelmeyer, Trebesch & Gulati 2013), the Greek government adopted legislation promising to give priority in the future to financial creditors holding public debt:

For the maintenance and strengthening of the fiscal stability, the [following] general principles that govern the fiscal regulations are instituted, related/referring to: (a) The servicing of the public debt at a priority, in order to maintain and strengthen fiscal stability ...²

¹ Section 135.3. Constitution of the Kingdom of Spain.

² Law 2362/1995, Article 1A, as amended April 10, 2012. This particular legal promise was reportedly urged by Germany (Spiegel & Hope 2012). Commentator, Tim Worstall, writing in *Forbes* (2012), writing in advance of the passage of this law, remarked:

These are harsher terms than the British Empire ever imposed, even backed up by gunboats and the Royal Navy... An "all good efforts" commitment to debt repayment is usually enough but an absolute one is simply unheard of. It does, quite literally, say that if there's an outbreak of plague that sweeps through the country (or any other disaster you might like to think of) then Greece has to repay the debts before offering health care to its own citizens at a time of national disaster.

European governments are not the only ones to travel this road. In the United States, the federal government operates under a legislatively-imposed debt limit. If the government reaches the limit, but Congress does not authorize new borrowing, there may be a default on the public debt. Professing concern for this risk, U.S. legislators have repeatedly advocated laws to prioritize payment of the federal debt over other spending priorities.³ Although these efforts have failed at the federal level, a handful of U.S. states and territories do have such priority rules in place.

At first cut, there is something odd about these commitments. One can view them as promises that, in a debt crisis, politicians will fall on their swords. Lacking funds to cover all obligations, the government claims that it will prioritize financial creditors rather than fund schools, police and fire departments, health care obligations, and the like. But politicians will struggle to explain why they are paying hedge funds in Connecticut while failing to provide basic services or to invest in domestic institutions that foster economic growth. A politician who insists on prioritizing financial creditors' claims may not remain in office for long. In this way, the political dynamics of representative government complicate the government's ability to commit to repay financial creditors (Scholl 2017).

Yet promises to prioritize public debt obligations claim some support from economic logic (e.g., Cooley & Marimon 2011; Dove 2012; Moldogaziev, Kioko & Hildreth 2017). If holders of public debt have first claim to government resources, politicians will have some incentive to conduct fiscal policy responsibly. Because of this, the argument goes, creditors will accept lower interest rates. In turn, lower borrowing costs give the government some insulation from the risk of financial crisis.

This economic logic, however, assumes that financial creditors believe the government will keep its promise to prioritize public debt. A promise that lacks credibility lacks value, and these promises are not self-enforcing. The government's domestic law created the priority in the first place. In a crisis, if politicians believe they will be ejected from office for favoring financial creditors, they may change or even ignore the law. Creditors affected by such a reversal may raise legal challenges, but typically must do so in the borrower's own legal system, which may prove unsympathetic (Vanberg & Gulati 2019). Even if foreign tribunals have jurisdiction over creditors' claims, they may lack power to give meaningful relief. Thus, some experts in sovereign debt markets, such as Buchheit and Gousgounis (2019), dismiss promises to give priority to financial creditors as lacking credibility.

Ultimately, the effect of commitments to prioritize public debt obligations must be determined empirically. In this paper, we investigate two questions inspired by Greece, Spain,

³ *See, e.g.*, 2013 CONG US HR 807 ("Full Faith and Credit Act"). The way this proposed legislation would work is that, if the statutory debt limit is reached, the Full Faith and Credit Act allows the United States Treasury to nevertheless issue new debt to pay principal and interest on the public debt (a form of priority). For more detail, see also 159 Cong. Rec. H2539-03).

Cyprus and other governments that have promised to put financial creditors at the front of the payment queue. First, we ask whether such promises are prevalent across jurisdictions and whether they vary in systematic ways. Second, we take a preliminary look at whether such promises meaningfully impact sovereign debt pricing—i.e., whether investors will in fact pay more for bonds backed by a promise of priority. Prior studies have examined these questions with regard to other commitments governments make regarding their public debt, including granting liens, undertaking to balance budgets, and imposing constraints on taxation.⁴ But we are aware of no research documenting the prevalence or impact of promises that affect debt priority.

This article takes a first step at filling that gap. Section II provides background on the broader literature regarding legal promises and credible commitment. Section III describes the results of a survey of the constitutions and fiscal laws of every country, describing the prevalence and variety of promises impacting the priority of public debt obligations. This section also shows that the distribution of these provisions is correlated with several country characteristics (such as the origin of the legal code, the protection of creditors' rights, and several debt sustainability parameters). The fact that the distribution of these promises is not random complicates any analysis of their impact on borrowing costs, as the correlation between such promises and fiscal rules could be driven by unobservable variables or by reverse causality. Section IV reports our empirical examination. It uses an event study approach to identify the causal impact of a subset of these rules on bond yields. In our tests we study a sovereign (Spain) and a sub-sovereign (Puerto Rico). As Puerto Rico is a political subdivision of the United States, it is subject to federal law and institutions that may prevent it from reneging on its commitments. Spain, instead, could change or revoke the promise in accordance with Spanish law. Hence, we expect that Puerto Rico's priority rule will be viewed as more credible than the Spanish rule. We show that the data bear out this assumption.

II. Credible Commitment and Sovereign Debt: Theory and Empirics

An extensive literature examines the relationship between commitment devices and sovereign borrowing costs. The relationship is complex. Governments often must borrow extensively—for example, to fund infrastructure investments and to smooth spending across economic cycles (of course, governments do not always borrow for good reasons, for a survey of the reasons why governments borrow, see Fatás et al., 2019). But when the borrower is a sovereign, creditors often lack the legal enforcement rights that, in a private lending relationship, help assure repayment. The sovereign's own law may govern its debt obligations,

⁴ These include promises to maintain a balanced budget and contractual provisions that waive sovereign immunity, submit to foreign law and the jurisdiction of foreign tribunals, and establish collective debt restructuring mechanisms (e.g., Heinemann, Osterloh & Kalb 2013; Feld et al. 2017; Heinemann, Moessinger & Yeter 2018; Ginsburg 2019).

and it can opportunistically change this law to the detriment of creditors. The sovereign's own courts may have primary or exclusive jurisdiction over creditor lawsuits. Even when a debt obligation is subject to foreign law and creditors have access to foreign courts, the law of foreign sovereign immunity may deny them effective remedies (Weidemaier 2014). Because of these unique aspects of sovereign debt, a central question in the literature is why lenders without meaningful legal remedies extend credit at all. To put the question in terms that foreground our inquiry: Given immunity from legal coercion, how can a sovereign government credibly demonstrate that it is able and willing to honor its commitments?

Broadly speaking, there are two answers (Panizza, Sturzenegger, & Zettelmeyer 2009; Aguiar & Amador 2014; Weidemaier & Gulati 2017). First, non-legal mechanisms such as reputational sanctions may deter sovereigns from renegeing on their debts (Tomz 2007). Under this view, sovereigns repay because they either want to preserve access to credit markets and must be viewed as trustworthy to do so or are afraid that defaulting will lead to some other less well-defined sanction or have a political cost. Second, a sovereign may subject itself to foreign institutions—or may foster domestic institutions—that can enforce fiscal discipline or constrain incentives to renege. For example, if investors do not trust the sovereign to maintain stable legal rules and doubt the independence of its courts, the sovereign may assuage these concerns by issuing debt governed by foreign law and enforceable in foreign courts. As noted, the law of foreign sovereign immunity limits the authority of these courts, but the sovereign can waive important protections. For example, if a sovereign waives “execution” immunity in the loan contract, courts in other countries will authorize creditors to attach at least some of the borrower's assets within the jurisdiction. Alternatively, if investors have faith in its domestic law and institutions, the sovereign might put in place legal rules that forbid expropriation and other forms of government opportunism.

The classic work on this topic comes from Douglas North and Barry Weingast (1989), who argued that a key driver of seventeenth century English economic growth was the development of institutions that strengthened protection for property rights. Because it could more readily persuade creditors that it would not appropriate property or repudiate debts, the government's ability to borrow surged (North & Weingast 1989; Acemoglu 2005). Later scholarship has challenged the specifics of North and Weingast's account (e.g., Sussman & Yafeh 2006; Coffman, Leonard, & Neal 2013). But the basic insight—that a sovereign's ability to borrow is in part a function of its ability to credibly commit to respect the property rights of those lending to it—has spawned a large literature examining the mechanisms by which sovereigns make commitments and the degree to which these mechanisms reduce borrowing costs (Oosterlinck 2013; 703-705).

As an initial matter, one might assume that creditors will always demand lower interest rates from a sovereign that commits to repayment. The assumption is complicated, however, by the fact that governments are not identically-situated with respect to their propensity to honor commitments. As a consequence, not all commitments have the same degree of

credibility. The impact of contractual or other commitment devices will vary as a function of political, macroeconomic, institutional, and other factors (Coffman, Leonard, & Neal 2013). Thus, the effect of a particular commitment device, in a particular context, must be determined empirically. Moreover, it would be a mistake to assume that the optimal strategy is for the sovereign to make an unwavering commitment to debt repayment; that commitment might subsequently backfire on both the government and its creditors. Put differently, the problem is one of time-inconsistency (Gaballo & Zetlin-Jones 2016). Assume that a sovereign irrevocably promises not to restructure a loan. To be sure, the promise might encourage fiscal prudence and increase the likelihood of repayment. But in a debt crisis, it might also backfire by preventing a restructuring that would spur economic growth to the benefit of all parties. The optimal policy will therefore strike an appropriate balance between *ex ante* commitment (to repay) and *ex post* flexibility (to restructure).

Numerous academic studies have examined the effect of commitment devices used in modern sovereign debt markets. Many of these devices are contractual. Perhaps the most prominent is the “collective action clause,” or CAC. A version of this clause appears in most “international” sovereign bonds—i.e., bonds governed by foreign law (such as English or New York law) and subject to the jurisdiction of foreign tribunals. In the Euro Area, since 2013, governments have also included CACs in bonds governed by their domestic law. CACs vary along a number of dimensions, but the clause’s core feature is that a bondholder supermajority may vote to restructure the loan and bind dissenters to the outcome (Weidemaier & Gulati 2014). Empirical studies on the pricing impact of CACs report mixed results. The general conclusion is that bonds with somewhat lower restructuring thresholds, which sacrifice some *ex ante* commitment to repay the debt for greater *ex post* flexibility to restructure it, have lower borrowing costs (or at least not higher costs).⁵

Other studies examine the impact of contract clauses that establish the governing law and currency of payment. Loans governed by the sovereign’s domestic law expose lenders to the risk that the law will change; loans denominated in the sovereign’s currency expose lenders to the risk of currency depreciation. Because of these risks, one might think that creditors would always accept lower interest when a loan is subject to foreign parameters. However, borrowing under foreign parameters also imposes costs on the sovereign, such as the cost of hedging currency risk and the loss of flexibility in responding to adverse economic conditions (Panizza & Hausmann 2011). Because of these costs, lenders might be content with domestic-law and currency instruments when they have other reasons to expect the sovereign to maintain a stable currency and to respect commitments.

⁵ Traditionally, many sovereign bonds could not be restructured without the assent of each affected bondholder. These bonds effectively required a unanimous restructuring vote. Over time, the voting threshold has been reduced so that restructuring requires the affirmative vote of somewhere between two-thirds and 85% of affected bondholders. Recent quantitative and qualitative treatments of this topic include Picarelli, Erce, and Jiang (2018); Carletti et al. (2018); and Gelpern, Gulati, & Zettelmeyer (2019).

The empirical research on local versus foreign parameters is consistent with this more nuanced picture. For wealthy, developed nations, borrowing under foreign parameters generally provides only a negligible reduction in borrowing costs. These nations borrow almost exclusively under local parameters. At the other end of the spectrum, the poorest and least developed nations can borrow on international markets only by issuing debt subject to foreign parameters. In between these poles, governments often pay a yield penalty for borrowing under local parameters, which is especially pronounced during crisis (Chamon, Schumacher & Trebesch 2018; Bradley et al. 2018).⁶

Another strand of the academic literature—one especially relevant to our inquiry—examines commitments embedded in the sovereign’s own law and institutions. As examples, consider fiscal rules such as balanced budget obligations, deficit limits, or maximum debt/GDP ratios (Poterba 1996; Eichengreen & Bayoumi 1994; Hong 2015; Ginsburg 2019).⁷ The Eurozone debt crisis has focused attention on such devices, many of which are mandated or strongly encouraged by Euro Area rules. The empirical literature suggests that, at least in some circumstances, such devices can work as commitment mechanisms (Heinemann, Osterloh, & Kalb 2014; Feld et al., 2017; Hatchondo, Martinez, & Roch 2015). Again, any inferences here have to be tempered by the fact that there is an inevitable trade-off between commitment and flexibility. Commitments embedded in local law may be perceived as less credible given the sovereign’s ability to change the law or influence domestic institutions. On the other hand, a sovereign with recourse to local law and institutions also has more flexibility to respond to a financial crisis, potentially to the benefit of creditors.

We also focus on a type of domestic fiscal rule: a commitment to prioritize public debt payments. These commitments have gained popularity as part of the crisis response in parts of the Euro Area but have received almost no academic scrutiny. In the sections to follow, we first document the prevalence and variety of these commitments around the world. That discussion will provide the groundwork for our subsequent empirical tests, which ask whether investors pay more for bonds issued by governments that have made such commitments.

⁶ A range of other commitment devices have also attracted attention, albeit to a lesser degree than CACs, governing law, and currency of payment. Scholars have examined waivers of sovereign immunity, promises to maintain a listing on a designated stock exchange or membership in the IMF, grants of collateral, pledges of revenues, promises to treat lenders equally with other creditors, clauses indexing repayment obligations to gold, and the effect of investment bankers and other potential reputational intermediaries. Examples include Eichengreen & Portes (1986); Obstfeld & Taylor (2003); Flandreau & Flores (2009); Vizcarra (2009); Mody & Saravia (2006); Alquist & Chabot (2011); Ivanov & Tooze (2011); Weidemaier (2014); Chabot & Santarosa (2017); de Fontenay, Meyer, & Gulati (2019); and Gehring & Lang (2018).

⁷ Relatedly, in the municipal context, scholars have examined, among other aspects, the eligibility to file for bankruptcy, bailout eligibility/likelihood, the impact of secured liens and limitations on the power to tax. See, e.g., Heppke-Falk & Wolff (2008); Lowry (2001); Johnson & Kriz (2005); Jenker & Lu (2014); Moldogaziev, Kioko & Hildreth (2017).

III. Promises of Priority: Prevalence and Variety

We focus on two attributes of a government's commitment to assign priority to its public debt. The first concerns the substantive nature of the commitment. The strongest form of commitment is what we have called a promise of super-priority. Here, the government explicitly commits to pay holders of public debt before any other claimant. Again, Section 135.3 of the Spanish Constitution, as amended in 2011, provides an example: "Loans to meet payment on the interest and capital of the State's Public Debt shall always be deemed to be included in budget expenditure and their payment shall have absolute priority."

Another commitment device is for the law to provide for the payment of public debt out of general funds, independent of any legislative appropriation (Buchheit & Gousgounis 2019). Typically, such rules state that the debt constitutes a "charge" on the government's "general" or "consolidated" fund. Such charges do not confer legal priority, but they remove the risk that the legislature will not appropriate money for debt service.⁸ This is as a weaker form of commitment than a promise of super-priority. For instance, a government might subsequently declare that other spending priorities, such as pensions for government workers, also constitute charges on the consolidated fund. The result would be to give pension claimants parity with public debt holders; a promise of super-priority forbids this.

The second attribute we focus on concerns the mechanism by which the government enshrines the commitment into domestic law. For example, a promise of super-priority might be incorporated into the borrower's constitution or enacted as legislation. As a general matter, it is harder for a government to change or ignore a constitutional requirement than a legislative one. Thus, constitutional commitments are generally regarded as more secure.

Our typology can be captured in a two-by-two table, which sorts priority commitments according to their substantive nature (super-priority or charge on consolidated fund) and legal mechanism (legislative or constitutional). In general, explicit, constitutional promises of super-priority represent the strongest commitments.⁹ Legislative promises that public debt will constitute a charge on the government's consolidated fund represent the weakest.

The typology is analytically useful, though stylized.¹⁰ In fact, the scope of an investor's rights may be unclear. For example, some governments assign priority to public debt obligations but arguably leave room to declare that other spending needs have equal or even greater priority. An example is the Greek legislation referenced earlier, which provides for the "servicing of the public debt at a priority." In Liberia, the Public Finance Management Act

⁸ This assumes that the government's general revenue stream is sufficient to pay the debt and that responsible officials will honor the pledge.

⁹ Again, it is an empirical question whether investors value such commitments, which seek to lock the government into debt repayment but sacrifice the ex post flexibility to respond to a debt crisis.

¹⁰ This is of course a simplified depiction. For example, a borrower's legal system might distinguish between legislative and administrative rules. The important point is that constitutional rules are generally viewed as more credible than rules created by other domestic legal mechanisms.

provides that “amounts due as interest and principal payments on the government debt shall be a priority payment of the general government.”¹¹ Because they do not define the universe of subordinate claims, such laws expose holders of public debt to the risk of competition with other claimants to the government’s limited resources.¹²

		Mechanism	
		Constitutional	Legislative
Substance	Explicit Priority	Strongest protection	Some protection
	Charge on consolidated fund	Some protection	Weakest protection

Our survey of laws suggests that countries rarely grant explicit super-priority to public debt obligations. This is especially true if we limit the category to unambiguous commitments. By our reading, only Spain has unequivocally made such a promise.¹³ Several other countries—Greece, Liberia, Cyprus, Bosnia and Herzegovina—confer on public debt obligations an ambiguous priority. In each of these countries, the law contemplates that some other claimants might enjoy equal or greater priority.¹⁴ Finally, Chapter 8, Section 118 of the Constitution of Trinidad and Tobago provides that public debt claims “shall be secured on the revenues and assets of Trinidad and Tobago.” Because no other claimant appears to enjoy such a lien, this provision arguably grants a super-priority to public debt holders. On the other hand, the Constitution does not expressly forbid the government to grant a similar lien to other claimants, nor does it expressly require the government to *pay* public debt claims before other claims.

The Appendix provides a full list of countries with detail on the prevalence and variety of these commitments to favor public debt claimants. Although we have focused our research on commitments made by countries, one can find similar commitments to prioritize public

¹¹ Liberia, Public Finance Management Act 2009, Part F, F.1 (10).

¹² As another example of how investors may have unclear rights, some laws blend the substantive protections provided by our typology. For instance, section 22(3) of Liberia’s Public Finance Management Act also provides that “Debt service payments shall be adequately budgeted for in the National Budget ... The Minister shall ensure that debt service payments are among first claims on resources in execution of the National Budget.” This language does not entitle public debt holders to be paid out of general funds but does appear to forbid a general legislative appropriation that does not provide for debt service.

¹³ Spanish Constitution, Article 135.3, as amended through 2011 (“The payment of interest and principal on the Public Administrations’ public debt shall have absolute priority over any other expenditure.”).

¹⁴ For details, see Appendix I.

debt, or to exempt debt service from the appropriations process, in the law of political subdivisions. In the U.S. context, for example, the Constitution of the Commonwealth of Puerto Rico provides:

In case the available revenues including surplus for any fiscal year are insufficient to meet the appropriations made for that year, *interest on the public debt and amortization thereof shall first be paid*, and other disbursements shall thereafter be made in accordance with the order of priorities established by law.¹⁵

Likewise, in 2012, Rhode Island passed legislation providing that holders of general obligation bonds issued by cities, towns, and districts would enjoy a “first lien” on the issuer’s ad valorem taxes and general fund revenues.¹⁶ Some observers praise these commitments, suggesting that U.S. states use super-priority rules to “guard against default and preserve their access to capital markets ... [despite] well-advertised budgetary problems” (Cooley & Marimon 2011). In the one prior empirical test of the pricing effects of these types of liens in the U.S. municipal context, Moldogaziev, Kioko & Hildreth (2017) find that these laws reduce borrowing costs by approximately nine basis points.

We do not know of other countries that explicitly commit to prioritizing public debt obligations. However, our research has uncovered fifty countries with legislative or constitutional provisions to the effect that public debt claims will constitute a charge on the government’s consolidated or general fund. Buchheit and Gousgounis (2019) posit that “provisions of this kind are often found in the constitutions of countries that had been colonies of Great Britain or otherwise had a close connection with Great Britain.” Our survey bears their assumption out. Among countries that charge public debt obligations against a consolidated fund, 80% were former British colonies or otherwise administered by the United Kingdom. Among countries without such pledges, only 15% had such a relationship to the United Kingdom.¹⁷

In Table 1, we explore these patterns in greater details. We merge our data with La Porta et al.’s (2008) classification of the legal traditions or origin in a sample of 187 countries and then check whether there are differences in the adoption of priority promises and charges on consolidated funds. Given that in our sample there are only 6 priority promises (two constitutional and four statutory), the statistical analysis does not yield any statistically significant pattern.¹⁸

¹⁵ Puerto Rico Constitution, Article VI, General Provisions, Section 8 (emphasis added).

¹⁶ R.I. Gen. Laws § 45-12-1.

¹⁷ For details, see Appendix I.

¹⁸ There seem to be more of such promises in countries with a British or German legal origin, but the difference across groups is never statistically significant.

We find a clearer pattern when we focus on weaker, but more common, creditor protections, such as constitutional charges on consolidated funds (we have 37 such provisions in our dataset). More than 50% of countries with British legal origin have such provisions, while only 3% of the remaining countries have such a provision (the difference between the two groups is statistically significant at the 1 percent confidence level). We find that the opposite is true when we focus on countries with a French legal origin. In this case, only 4% of countries have a charge on consolidated funds enshrined in their constitution against a 39% prevalence in the control group. The difference is again statistically significant at the 1% confidence level. We also find that such provisions are absent in countries with a German, Scandinavian, or Socialist legal origin

In Table 2 we probe further and regress a dummy variable that takes value one if a given country has adopted either a priority promise or a charge on consolidated funds over a set of country characteristics and macroeconomic variables. We start with a set of dummies tracking a country's legal origin (column 1 of Table 2; the excluded dummy is British legal origin; in this subsample, we do not have data for countries with a socialist legal origin). As already shown in Table 1, we find that priorities are less prevalent in countries that do not have a British legal origin. Specifically, the coefficients, which measure the difference with respect to countries with a British legal origin are always negative, statistically significant, and of similar magnitude (indicating that there are no significant differences among countries with French, German, and Scandinavian legal origin).

Next, we look at the correlation between the priority dummy and the index of creditors' protections computed by La Porta et al. (2008). We find that countries with some type of priority on sovereign debt are also countries with stronger domestic creditor protections (column 2 of Table 2). This suggests that countries that protect domestic creditors more are also more likely to protect foreign creditors.

Columns 3-5 of Table 2 focus on macroeconomic variables and show that the presence of priorities is positively correlated with GDP per capita and with a country's debt-to-GDP ratio, while column 5 shows that the priorities are negatively correlated with inflation. These findings are interesting as they suggest that countries that are more likely to face debt problems (as proxied by high levels of public debt) and that are less likely to wipe out the debt with high inflation (possibly because the debt is in foreign currency) are also the countries that are more likely to adopt priority clauses.

Finally, column 6 jointly controls for all variables described above and shows that legal origin and the debt-to-GDP ratio remain significantly correlated with the presence of priorities rules. Creditors' rights are no longer statistically significant in this regression, but this is expected as creditors' rights are closely correlated with legal origin (La Porta et al., 2008), and including both variables in the same regression can lead to multicollinearity problems.

The results of Tables 1 and 2 show that the adoption of priority clauses is non-random. Countries with a British legal tradition, with stronger creditors' rights, and higher debt levels

are more likely to adopt such provisions. This suggests that if one is interested in assessing the effect of these clauses on borrowing costs it is necessary to look at within country events and explore what happens around the adoption of the clause or around an event that makes the clause salient.

IV. The Effect of Priority on Yields: Empirical Tests

In this section, we examine how commitments to prioritize public debt impact a government's cost of capital. In the one prior empirical study examining priority promises in the U.S. municipality context, Moldogaziev, Kioko & Hildreth (2017) compared the relative borrowing costs of municipalities as a function of whether they had made such promises. As has been discussed in the literature analyzing the price impact of using CACs in sovereign bonds, this empirical strategy is limited by the fact that it compares yields for municipalities that vary in almost unlimited ways; thus, the strategy potentially suffers from an omitted variable problem (E.g., Carletti et al., 2019).

To remedy this empirical limitation and compare apples to apples, while isolating the effects of priority promises, we conduct an event study and limit our analysis to issuers for whom we can identify bond pairs, where each bond is backed by the same sovereign's credit but only one benefits from the commitment to prioritize public debt. We focus on the relative movements in yield spreads for the pair at the time the government establishes the commitment (the difference in difference). If such commitments matter, we would expect to observe a differential impact on yield spreads in the two bonds. It is not easy to find matched bond pairs where only one benefits from the sovereign's commitment. However, we have identified pairs for two sovereigns and their political subdivisions: Spain and the U.S. territory of Puerto Rico.

These bond issuers differ in important ways. Spain is a sovereign state whereas Puerto Rico is a part of the United States. Because Puerto Rico is a political subdivision of the United States, it is subject to supervening (federal) law and institutions that may constrain it from reneging on this commitment. Spain's constitutional priority rule, by contrast, can be changed or revoked in accordance with Spanish law. If such a change was applied retroactively to existing debt, an investor might bring a challenge in Spanish courts, or potentially in foreign courts or before international arbitration tribunals. Because Spain is a sovereign state, however, these tribunals would have little power to compel it to honor its commitments. Thus, our working assumption is that, all else equal, Puerto Rico's priority rule will be viewed as more credible than the Spanish rule.

The ability of a sovereign to revoke promises that it has made under its own laws is referred to as the "local law advantage" (Buchheit & Gulati 2018). And the contrasting abilities of Spain and Puerto Rico's to make promises to investors are illustrated by (a) the recent rejection by the U.S. federal courts of the Puerto Rican commonwealth's attempt to use that

local law advantage to pass a domestic bankruptcy law to help resolve its ongoing debt crisis (Gulati & Rasmussen 2017) and (b) on the other hand, the acquiescence of over a dozen tribunals in different jurisdictions (including the European Court of Human Rights) to Greece’s use of that same advantage to do something substantively very similar as Puerto Rico in terms of the insertion of retroactive Collective Action Clauses in its sovereign bonds in 2012 to deal with its crisis (Buchheit & Gulati 2018).

Although the priority promises made in the two cases are different in strength, with the Puerto Rican one being stronger than the Spanish one, because of the local law advantage that the Spanish government enjoys, the movement with both sets of bond pairs should be in the same direction. That is, if the government has made a credible commitment to assign priority to public debt claims, the yield of the member of the pair that benefits from this commitment should fall relative to the other member. If the promise is not credible, there should no differential movement between the members of the pair.

Below, we briefly describe the bond pairings we examine for the two issuers, Spain and Puerto Rico.

Spain

On September 7, 2011, the Spanish constitution was amended to confer super-priority on holders of the sovereign’s “Public Debt.” The goal was to assuage the concerns of jittery investors.¹⁹ We compare sovereign bonds issued by the government itself to bonds issued by a large state agency, *Instituto de Crédito Oficial (ICO)*, which the government has guaranteed. Both types of bond—sovereign-issued and sovereign-guaranteed—represent a claim against state resources, although in the case of guaranteed bonds the claim is contingent on non-payment by the bond issuer. But only sovereign bonds clearly meet the definition of “Public Debt.” Although the constitution does not define this term, state guarantees and other contingent liabilities are typically excluded from calculations of government debt (e.g., Eurostat 2011), except when the issuer benefiting from the guarantee is so penurious that the state’s obligation is no longer contingent (at least as a practical matter).²⁰ To quote Eurostat’s explanation of public debt statistics, and the exclusion of government guarantees from

¹⁹ As some commentators (Abad & Galante 2011, p.4) wrote of the Spanish absolute priority promise:

By de facto eliminating the possibility of a default by any of the public administrations, it is – we think – the part of the reform with the biggest potential to both mitigate investors’ concerns over the Spanish government’s ability to service its debt and also to minimise contagion effects. Fiscal problems would become sovereign political problems and not threats to the stability of the monetary union [citation omitted]. We believe that explaining and publicising this measure, with the same emphasis with which the fiscal rules have been announced, would result in investors lowering their expectations of default risk. We think prioritising debt service payments (and doing so in a credible way) has the potential to stabilise government bond yields at current levels...

²⁰ This happened with Greece in 2010 (Eurostat 2010).

calculations of public debt amounts: “Countries were additionally asked about the amount of government guarantees. These guarantees are not part of government gross debt, as they are contingent liabilities. They should not be added to the Maastricht debt.”²¹

Thus, although it is conceivable that the state-guaranteed debt might fall within the definition of “Public Debt,” there is serious doubt. If super-priority matters, this doubt should be reflected in yield spreads.

Puerto Rico

In Puerto Rico, we compare general obligation bonds issued by the Commonwealth itself to bonds from COFINA, an entity set up by the Puerto Rican government do borrowing that was explicitly backed by a first claim on the sales tax revenues of the Commonwealth. This comparison to COFINA bonds should work particularly well for our purposes because those bonds have, in their contracts, an arguably conflicting promise with the priority promise under the constitution for government’s direct bonds (usually referred to as “General Obligation” or “GO” bonds). This conflict exists because one of the primary sources of government revenues is the sales tax. And promising that to a specific set of bondholders under than the GO ones arguably undermines the constitutional promise to give first priority to the GOs.

To conduct our tests, we focus on January 30, 2018, when the judge overseeing Puerto Rico’s bankruptcy proceeding, dismissed a lawsuit by holders of general obligation bonds. These bondholders sought declaratory and injunctive relief directing the Commonwealth to pay their bonds in accordance with their alleged priority. Such a declaration would have helped the GO bonds, by confirming their priority claim, and hurt the COFINA bonds, by undermining their claim on the sales tax revenues. Although the judge’s dismissal of the lawsuit on January 30, 2018 did not address the merits of these claims, it was viewed by many market participants as a signal that the Constitutional priority would not necessarily be respected (Chappatta 2018; Brown 2018). Among other reasons, the decision was perceived to increase the power of the federally-appointed Financial Oversight and Management Board to allocate the Commonwealth’s scarce resources. We would expect this decision to reduce the yield spread differential between Puerto Rico’s GO bonds and the COFINA bonds, assuming that holders of general obligation bonds had previously viewed the constitutional pledge as credible.

²¹

https://ec.europa.eu/eurostat/statistics-explained/index.php/Structure_of_government_debt#Government_guarantees_as_a_percentage_of_GDP

IV.a Empirical Tests and Results

Spain

To test whether the amendment to the Spanish constitution of September 7, 2011 had an effect of Spanish borrowing costs, we collected data on the yields of a large number of sovereign bonds issued by the government itself and bonds issued by the *Instituto de Crédito Oficial* (ICO).²² Next, we matched sovereign and ICO bonds with similar maturity and characteristics (we focused on plain vanilla bonds), and chose two ten-year bonds issued in 2009 (February 2009 for the sovereign and May 2009 for ICO). These were the only two matched bonds in our sample with complete daily data and which did not mature within 2 years of the event we want to study.

Figure 1 plots the yield to maturity (top panels) and the spread (defined as the difference between ICO and sovereign yields, bottom panels) of these two bonds for three different periods: (i) the whole sample (May 2009-February 2019, top and bottom left panels); (ii) a one-year window around the constitutional amendment (March 2011-March 2012, mid panels); and (iii) a 90-day window around the constitutional amendment (July 2011-October 2011, right panels).

The top left panel shows that the two yields are closely correlated over the life of the two bonds confirming that the ICO yield is a good benchmark for the sovereign yield.

The vertical black line in the figure marks the date of the constitutional amendment: the mid and top right panels of Figure 1 show that there was small drop in the yields of the two bonds around this date (i.e., risk for investors reduced). However, the yields increased again few days after the amendment. More interestingly, the bottom panels suggest that the constitutional amendment had no effect on the spread between the two bonds.

Table 3 regresses the sovereign yield over the ICO yield. Column 1 shows that there is a close correlation between the two yields: the coefficient is precisely estimated and the R-squared is close to one. There is, however, a potential issue with the regressions of Table 3. As standard stationarity tests show that the two series have a unit root, the correlation illustrated in column 1 could be spurious.²³ To address this issue, we test for cointegration. As

²² We collected data on 110 sovereign bonds issued between 2007 and 2018 and with maturity ranging between 2014 and 2027 and on 36 ICO bond issued between 2007 and 2018 and with maturity ranging between 2012 and 2023. All bond data were sourced from Datastream

²³ In the case of the sovereign bond yield the Phillips-Perron statistics is -0.9 and the test does not reject the null of a unit root with a p-value of 0.88, in the case of the ICO bond yield, the statistics is -1.04 and the test does not reject the null of a unit root with a p-value of 0.86. In both cases, we reject the presence of a unit root when we apply the test to the first difference of the yield (the test statistics are -1934 and -2513, respectively).

we do not reject the hypothesis that there is a long run relationship between sovereign and ICO yields, we conclude that the correlation is not spurious.²⁴

Next, we augment the model with a dummy that takes value one after the constitutional change and find that, controlling for ICO yields, the constitutional amendment reduced sovereign yields by approximately 10 basis points (column 2 of Table 3). While small, this effect seems in line with the idea that the constitutional amendment had an effect on Spanish borrowing costs. There are two issues with this result. The first has to do with the, already mentioned, non-stationarity of the series. The second is related to the fact that the constitutional amendment might be picking up the effect of the reactivation of the SMP program, which happened just one month before the amendment. In fact, column 3 of Table 3 shows that a dummy that takes value one after the reactivation of the SMP is associated with a 12 basis points reduction in sovereign yields (always controlling for the ICO yield). When we put the two dummies together in a horserace, we find that the SMP dummy has a negative coefficient, suggesting a 33 basis points reduction in sovereign yields, while the amendment dummy is *positive* and statistically significant, suggesting that, controlling for ICO yields and SMP reactivation, sovereign yields *increased* by approximately 22 basis points after the introduction of the amendment (column 4 of Table 3). That said, this latter result – that the priority law made the bonds less likely to be paid – strikes us as implausible and should be taken with a grain of salt as it is based on a regression of non-stationary variables and compares the pre September 2011 period with the remaining 8 years of data. However, what we do have so far is zero indication of any reduction of yields as a result of the passage of the Spanish priority promise.

To deal with the stationarity issues, we start by running a set of regressions in first differences for the whole sample and then concentrate our analysis on a one-year window around the constitutional amendment. In these regressions, the amendment and SMP dummies only take value one on the date of the event.

Columns 1 and 5 of Table 4 show that changes in sovereign yields are closely correlated with changes in ICO yields, both in the full and smaller sample. Since the first difference of the yield is stationary, these results confirm that the correlation between sovereign and ICO yields is not spurious. This is important because the Johansen rank test rejects cointegration between sovereign and ICO yields when we restrict the analysis to a one-year window around the constitutional amendment (more on this below).

When we focus on the full sample, we find that, conditional on changes in ICO yields, sovereign yields dropped by 6 basis points on the day of the constitutional amendment (column 2, Table 4) and by 57 basis points on the day of SMP reactivation (column 3, Table 4). These results are robust to jointly controlling for the two events (column 4, Table 4).

²⁴ The trace statistics for rank the null of rank 0 is 22.27 which is above the critical values of 15.4 (5%) and 20.0 (1%), and the trace statistics for the null of rank 1 is 0.39, below the critical values of 3.76 (5%) and 6.65 (1%).

However, if we limit the sample to a one-year window around the constitutional amendment, we find that only the SMP reactivation remains significantly correlated with sovereign yields (columns 6-8, Table 4).

As the results differ when we focus on a one-year window around the episode, we further explore the properties of the series around this episode (a period when sovereign yields were much higher than in the rest of the sample).²⁵

Interestingly, the series do not seem to be cointegrated when we focus on the one-year window around the amendment.²⁶ This could be due to the fact that one year of data are not sufficient to test for a long run relationship. It could also be due to a large shock that moved the variables out of equilibrium and took time to adjust through the error correction properties of the cointegrating relationship. We test for this possibility by using the Gregory and Hansen (1996) cointegration test which allows for an unknown structural break in the cointegration relationship. The Gregory and Hansen test confirmed the presence of cointegration also in the one-year window around the constitutional amendment and, interestingly, identified a break on August 17, 2011: 10 days after SMP reactivation and 20 days before the constitutional amendment.

To better understand the dynamic around the two events, we augment the equation of column 8, Table 4 with a full set of lags and leads around the two episodes. Formally, we estimate, the following model:

$$\Delta SOV_t = \alpha + \beta \Delta ICO_t + \sum_{i=-10}^{10} \gamma_i L^i(AMD_t) + \sum_{i=-10}^{10} \delta_i L^i(SMP)_t + \varepsilon_t \quad (1)$$

Where ΔSOV_t is the daily change in sovereign yields, ΔICO_t is the daily change in ICO yields, AMD_t is a dummy variable that takes value one on the day of the constitutional amendment, SMP_t is a dummy variable that takes value one on the day of the SMP reactivation, and L^i is the lag operator. With this set up, γ_i and δ_i estimate the behavior of sovereign yields (conditional on ICO yields) ten periods before and after the two events (since there are 5 trading days per week, 10 periods correspond to two weeks).

Figure 2 plots the results of these coefficients, when the model is estimated for the one-year window around the constitutional amendment. It shows that the change in yields is never significantly different from the sample mean in the four weeks around the constitutional amendment (bottom panel) but that, conditional on ICO yields, sovereign yields drop significantly on the day of SMP reactivation and also on the day after SMP reactivation (Figure 3, shows that the results are robust to estimating the model using the full sample of data).

²⁵ The average value of the sovereign yield in the full sample is 2.3%, in the one-year window around the constitutional amendment it was 5.1%.

²⁶ The trace statistics for the null of rank 0 is 14.9, which is below the critical value at 1% and 5% (15.41 and 20.04, respectively)

While these results are consistent with the idea that the constitutional amendment had no effect on sovereign spreads, a natural question to ask is whether the degree to which this amendment was fully anticipated by the market ahead of time and hence incorporated into sovereign yields well before the time windows that we examine. We do not think this is the case because the result of the vote on the constitutional agreement was uncertain until the very last few days before the vote (indeed, the underlying sovereign crisis was evolving at a fast pace and in unexpected ways).²⁷ However, we probe further and test for this hypothesis by estimating Equation (1) setting $\delta_i = 0$ and allowing for 20 leads and lags of the constitutional amendment. Figure 4 shows that even in this expanded window there was no statistically significant change in sovereign yields. Note that this window (but also those of Figures 2 and 3) includes the day (August 26, T-8 in the Figure) on which the two largest Spanish parties (PSOE and PP) agreed on the constitutional amendment.

Puerto Rico

As for Spain, we started by collecting data for a large number of general obligation (GO), Government Development Bank (GDB), and COFINA bonds. However, for the GDB and GO bonds, the series for both prices and yields that we could find in Datastream were problematic, as they had many missing observations and large jumps. This was particularly the case for GDB bonds for which we could not find complete series for the 2017-2018 period.

As a consequence of the data problems, we use the S&P Municipal Bond Puerto Rico General Obligation Index, which aggregates data from 30 General Obligation Bonds with a total par value of 1.3 billions and an average maturity of 10 years, instead of an individual GO bond.²⁸ Unfortunately, there is no index that aggregates the bonds issued by the Government Development Bank. For COFINA, however, we were able to find a long-maturity bond with adequate data for all trading days over 2011-19.

Figure 5 reports the yields of the General Obligation bond index and of the COFINA bond mentioned above. Note that, in the case of Puerto Rico, our hypothesis is different from that that we tested for Spain. In the case of Spain, we expected that a promise of priority (if credible) would lead to a reduction in yields for the senior bond. For Puerto Rico, we expect that, if the market viewed the constitutional priority of GO bonds as credible, then GO and COFINA bonds will move in opposite directions upon news of the court's ruling. As explained earlier, this is because the GO bondholders were seeking a ruling that their priority promise trumped the grant of a dedicated payment stream from sales tax revenues to the COFINA bonds. There is reason to think that investors interpreted the court's dismissal of

²⁷ For details, see for instance, Abad & Hernández Galante (2011) and <http://www.loc.gov/law/foreign-news/article/spain-proposed-constitutional-amendment-to-include-debt-ceiling-provision/>

²⁸ <https://us.spindices.com/indices/fixed-income/sp-municipal-bond-puerto-rico-general-obligation-index>

that lawsuit to signal that the constitutional priority would not necessarily be respected. If so, the yields of the GO bonds should rise and those of the COFINAs should fall.

Given that our analysis of these Puerto Rican bonds was when the Commonwealth was in the midst of a severe debt crisis, we also mark, in Figure 5, a series of other major events relating to expected recoveries on the bonds. Other than the specific event that we focus on, having to do with the priority promise, we draw the other nine events from press accounts of the Puerto Rican debt crisis. Of the ten events we look at in the 2011-19 period, three should impact the GO and COFINA bonds differently and the other seven should impact them similarly. We describe these events in turn, starting with the ones that should impact the GO and COFINA bonds differently.

The three events that should impact the GO and COFINA bonds differently are: (1) The passage of the PROMESA legislation, that put in place restructuring mechanisms for the Puerto Rican sovereign bonds, but were unlikely to impact the COFINA bonds that had a dedicated stream of pledged revenues (akin to a collateral protection); (2) The court decision dismissing the lawsuit by GO bondholders for a declaration that they, and not the COFINA holders, had the primary claim to the tax revenues backing the COFINA bonds (this is the event that we study in greater detail); and (3) the proposal on the use of sales tax revenues to also repay bonds (including General Obligation) on June 7 2018. These are marked as events 5, 8 and 9 on Figure 5.

Figure 5 shows a decoupling of the yields of the GO and COFINA bonds in each of these cases. Most relevant here though is what is marked on Figure 5 as event 8. Here, where the federal court dismisses the lawsuit by GO bondholders, we should see the GO and COFINA bonds move in opposite directions. And that is what we see.

The other seven events, that we expected to impact the bonds similarly, are (1) the default of the city of Detroit (end of Treasury put) on July 18, 2013; (2) the loss of investment-grade rating by Puerto-Rico's General Obligation Bonds on February 4, 2014; (3) the signing into law of Puerto Rico Public Corporation Debt Enforcement and Recovery Act" on June 28, 2014; (4) Governor's Padilla statement, on June 28, 2015, that "the debt is not payable.", (5) Governor Rosselló's request that the Oversight Board files in federal district court for debt relief under PROMESA on May 3, 2017; (6) President Trump's statement that "They owe a lot of money to your friends on Wall Street. We're going to have to wipe that out." on October 3, 2017; and (7) the deal between Puerto Rico and bondholders and the federal court ruling that affirmed the budgetary powers of an oversight board on August 9, 2018.

Given the large number of structural breaks, we do not conduct formal stationarity tests, but regress the GOB yield on the COFINA yield, both in level and first differences over different subsamples. The regressions confirm the visual impression that there is a tight correlation between the two yields until mid 2015 (until about when the Governor finally announces that the "debt is not payable"), but that the change in yields decouples after that (compare columns 2 and 3 of the bottom panel of Table 5 with columns 4 and 5 of the same

panel of Table 5). Specifically, after a big spike in the GO bond's yield upon announcement of PROMESA and the restructuring mechanisms that were going to be retroactively incorporated into all the bonds, the yields of the GO bonds move below those of COFINA. This happens presumably because there is a realization that the pledge of revenues to the COFINA bonds is legally suspect in light of the priority promise to the GO bonds. That leads to the legal battle that results in event 8 on Figure 5 (January 30, 2018), which is the specific focus of our inquiry.

As explained above this decision should lead to an increase in the yield of General Obligation Bonds and a reduction in the yields of the COFINA bonds. We test this hypothesis estimating a model similar to that of Equation (1) where the dependent variable is the change in the yield of the General Obligation bond index and the explanatory variables are the change in the yield of the COFINA bond and a set of dummies tracking the evolution of the GO yields in a twenty trading day windows around the court decision of January 30, 2018. The top panel of Figure 6 shows that, conditional on COFINA yields, the yield of the GO bond index increased by approximately 100 basis points in the two days after the court decision, and then decreased by 50 basis points three days after. The bottom panel of the figure shows that we obtain similar results if we control for the GDB yields. Taken together, these results indicate that the court decision did lead to a repricing of Puerto Rico's general obligation bonds with an effect of approximately 50 basis points in the three days that followed the decision.

V. Conclusion

Making priority promises in domestic constitutions or local laws has been a popular strategy for a number of politicians and policy makers in recent years, and particularly so during the recent European sovereign debt crisis. Both logic and empirics, we would argue, suggest that there is the need for substantially more skepticism about the effectiveness of such promises in ameliorating borrowing costs during crisis times.

Our results indicate that there is little evidence that the strongest of the priority promises made by any state in our data, Spain, had any impact in terms of lowering sovereign borrowing costs. And this was in the midst of a serious crisis, when such matters should have been highly salient to the markets. As the results for Puerto Rico suggest though – and it was also in the midst of a debt crisis -- we cannot reject the possibility that these promises work sometimes; but perhaps only for sub sovereigns who lack the local law advantage.

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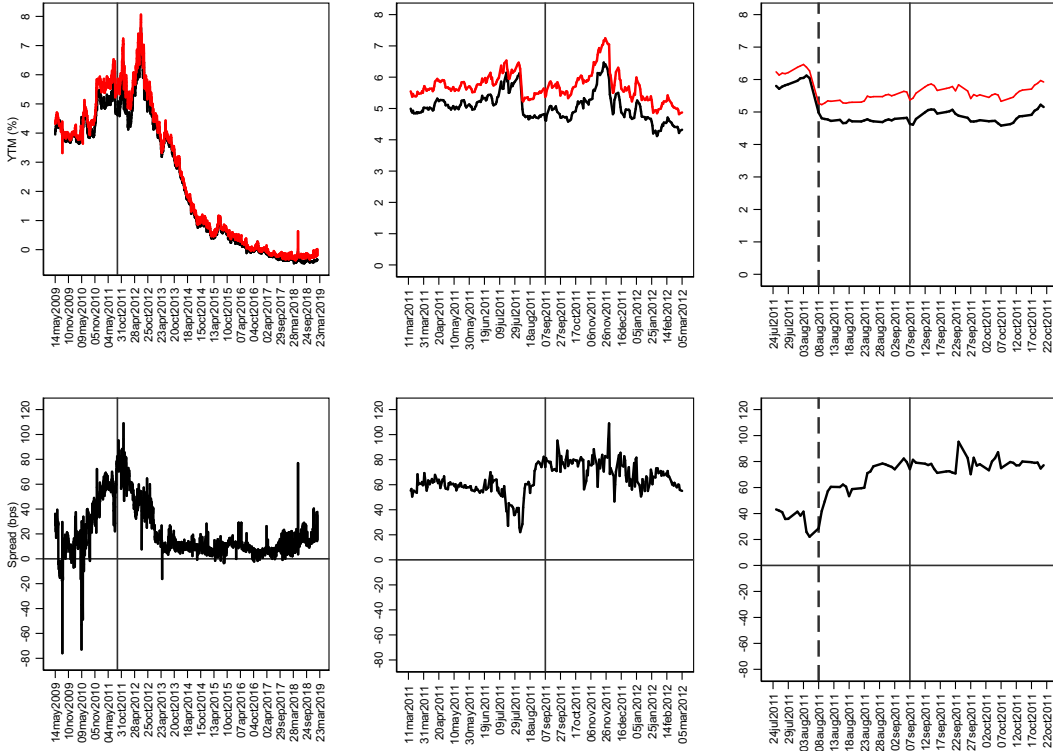
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Figure 1: Yields of Spanish Government Bonds and Bonds issued by the Instituto de Credito Oficial



The top three panels of the figure plot the yield to maturity of the 10-year Spanish government bond issued in February 2009 (the black line) and a 10-year Instituto de Credito Oficial bond issued in May 2009 (red line). The top left panel uses all available data (2009-2019) and the other two panels focus on a one-year (mid panel) and a 90-day (right panel) window around September 7 2011 (represented by the black vertical line). The dashed line shows the date of the reactivation of the ECB's Securities Markets Programme (SMP) on August 7, 2011. The bottom panels plot the spread (in basis points) between the two bonds

Figure 2: Effect of Constitutional Amendment and SMP Reactivation on Spanish Sovereign Yields

This figure plots the value of γ_i (bottom panel) and δ_i (top panel) obtained by estimating Equation (1) on a one year window around September 7, 2011. The dots are the point estimates and the spikes are 95% confidence intervals. T is the day of the episode and the lags and forwards correspond to trading periods (5 trading days per week).

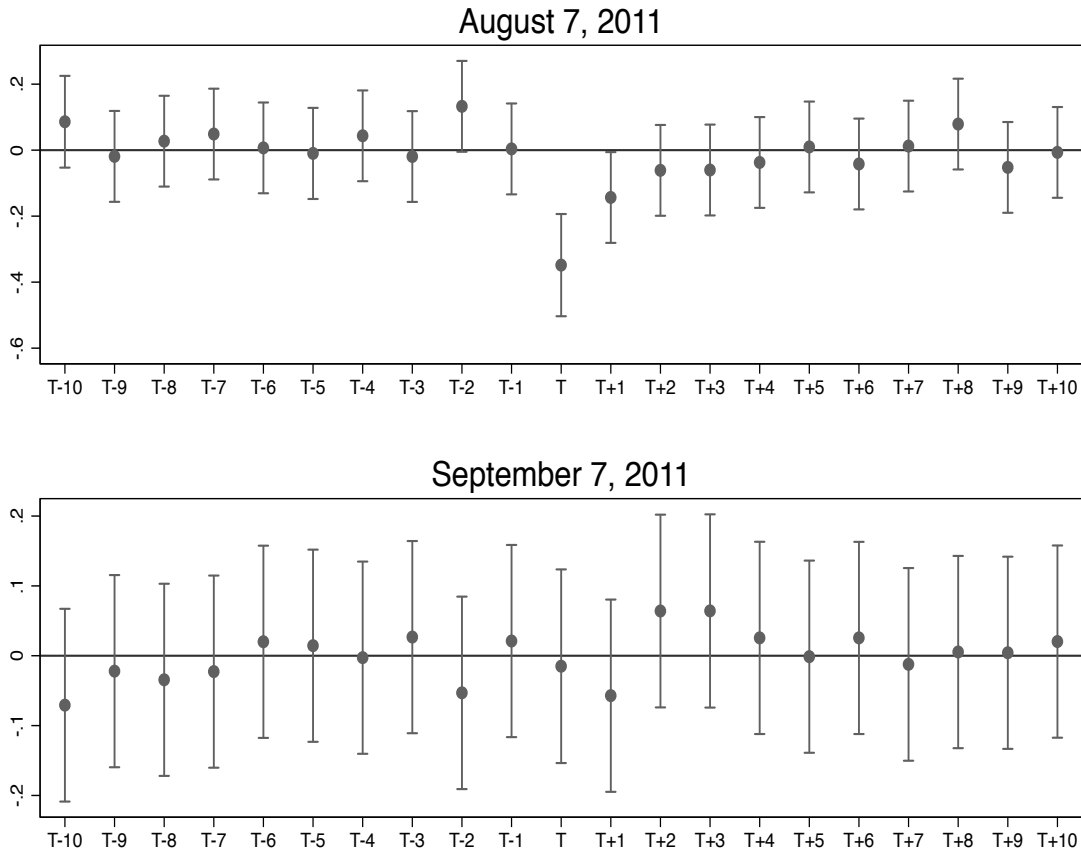
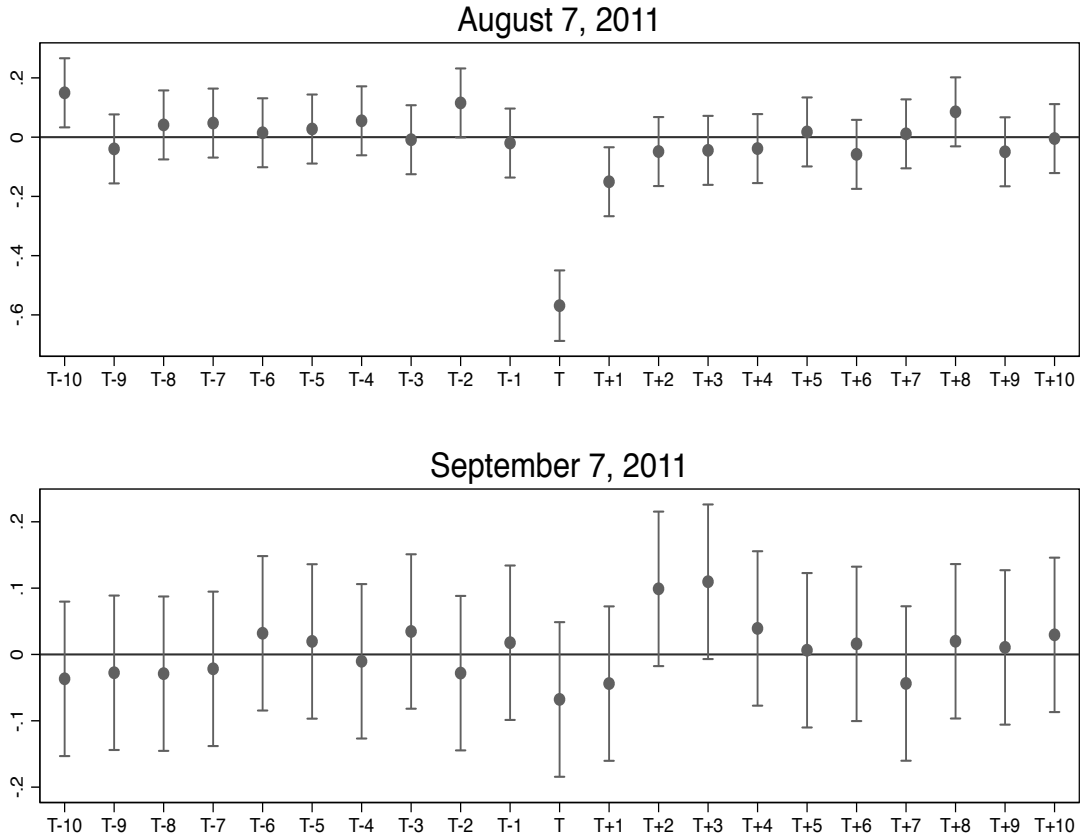


Figure 3: Effect of Constitutional Amendment and SMP Reactivation on Spanish Sovereign Yields (2009-2019)

This figure plots the value of γ_i (bottom panel) and δ_i (top panel) obtained by estimating Equation (1) using data for the full 2009-2019 period. The dots are the point estimates and the spikes are 95% confidence intervals. T is the day of the episode and the lags and forwards correspond to trading periods (5 trading days per week).



**Figure 4: Effect of Constitutional Amendment on Spanish Sovereign Yields:
expanded window**

This figure plots the values of γ_i by setting and $\delta_i = 0$ but allowing 20 lags and leads in the estimation of γ_i . The regression uses data for on a one year window around September 7, 2011. The dots are the point estimates and the spikes are 95% confidence intervals. T is the day of the episode and the lags and forwards correspond to trading periods (5 trading days per week).

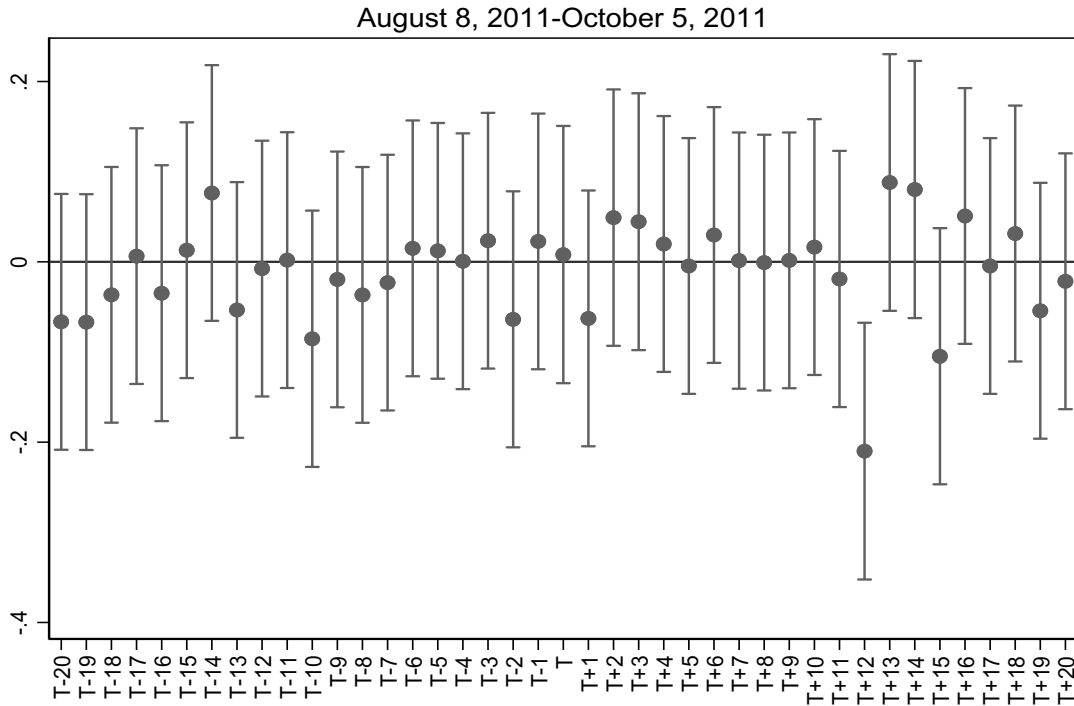


Figure 5: Yields of Puerto Rico's General Obligation Bonds and COFINA Bonds

This figure plots the yield of the S&P Index of Puerto Rico's General Obligation Bonds (black line) and that of 2009-57 COFINA bond (red line). The top right panel reports data for the full sample (2011-19); the top left panel focuses on the pre-default period (2011-14), the bottom panel focus on recent years. The dashed vertical lines plot the following events: (1) the default of the city of Detroit (end of Treasury put) on July 18, 2013; (2) the loss of investment-grade rating by Puerto-Rico's General Obligation Bonds on February 4, 2014; (3) the signing into law of Puerto Rico Public Corporation Debt Enforcement and Recovery Act" on June 28, 2014; (4) Governor's Padilla statement that "the debt is not payable" on June 28, 2015; (5) Signing of PROMESA on June 30, 2016; (6) Governor Rosselló asks the Oversight Board to file in federal district court for debt relief under PROMESA on May 3, 2017; (7) President Trump statement that "They owe a lot of money to your friends on Wall Street. We're going to have to wipe that out." on October 3, 2017; (8) The judge overseeing Puerto Rico's bankruptcy proceeding, dismisses a lawsuit by holders of general obligation bonds on January 30, 2018; (9) Proposal on the use of sales taxes to repay bonds (including General Obligation) on June 7 2018; (10) Deal between Puerto Rico and bondholders and federal court ruling that affirmed the budgetary powers of an oversight board on August 9, 2018.

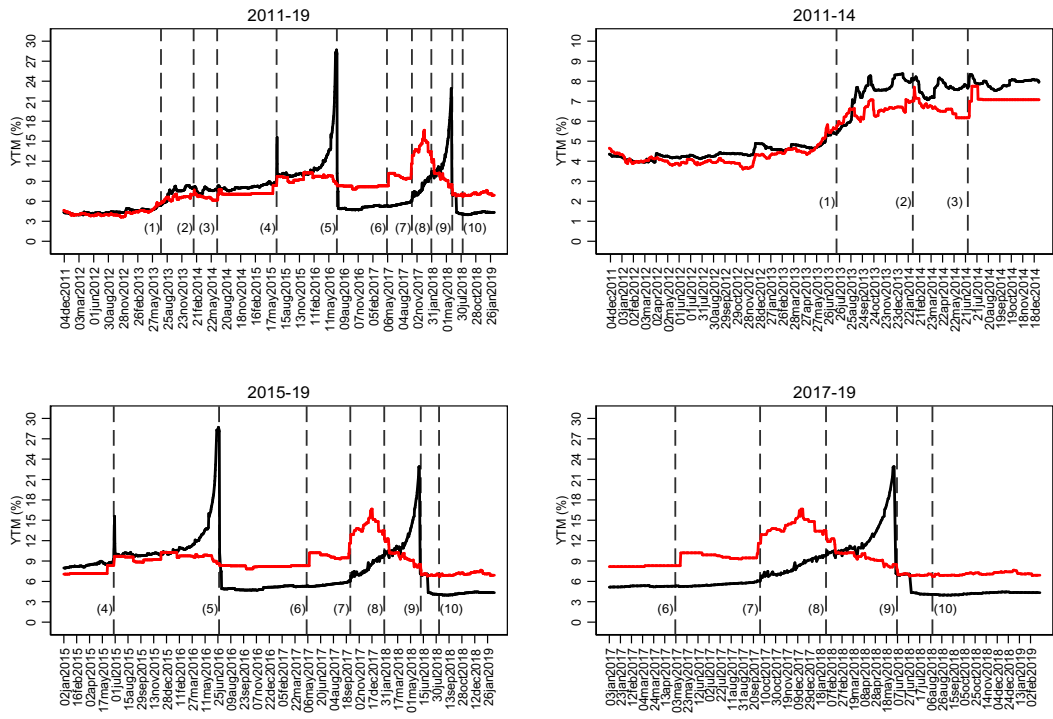


Figure 6: Effect of the January 30, 2018 court decision on the yield of General Obligation Bonds

This figure plots the change in the yields of General Obligation Bonds conditional on the change in yields of COFINA's Bonds (top panel) and Government development bank bonds (bottom panel) around January 30, 2018.

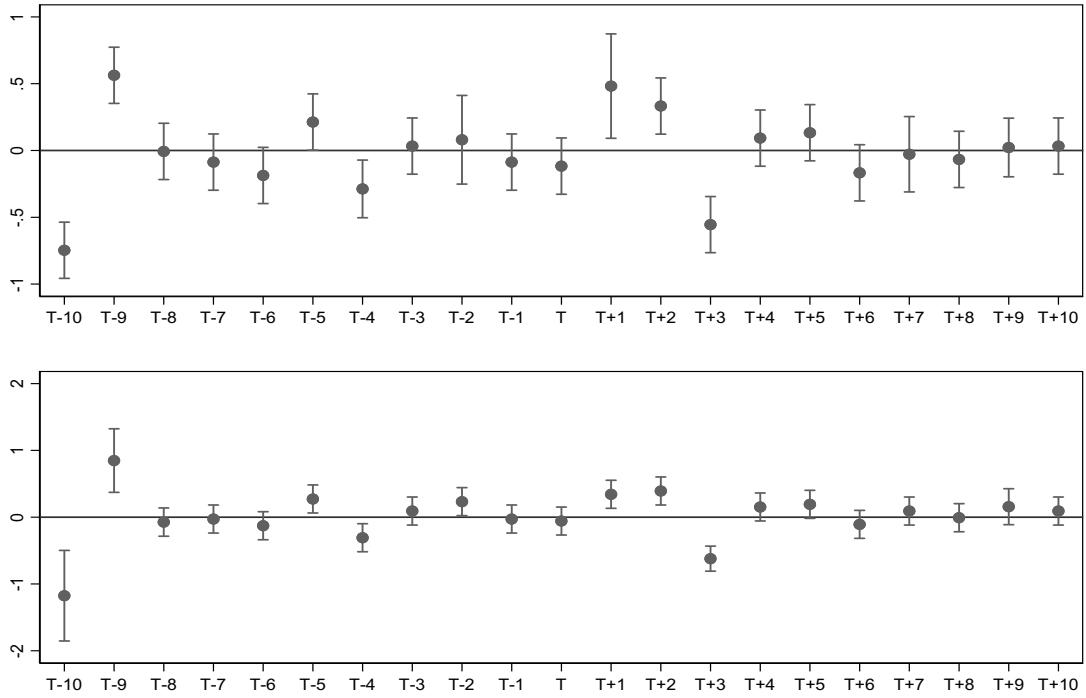


Table 1: Priority promises and Legal Origin

	Priority Promise						“Charge” on Consolidated Fund (Constitutional)		All		
	Constitutional		Statutory		All						
	N Obs	%	N	%	N	%	N	%	N		
All	187	1.1%	2	2.2%	4	3.2%	6	20.0%	37	23.5%	44
Distribution by Legal Origin											
UK	61		0.8%		3.0%		4.9%		55.7%		60.6%
Other	126		1.6%		1.5%		2.3%		3.1%		5.5%
Diff			0.8%		1.7%		2.5%		52.5%		55.0%
			(0.016)		(0.022)		(0.027)		(0.049)***		(0.055)***
French	99		1.0%		1.0%		2.0%		4.0%		6.1%
Other	88		1.1%		3.4%		4.5%		39.0%		43.1%
Diff			-0.1%		-2.0%		-3.2%		-20.0%		-37.0%
			(0.015)		(0.01)		(0.026)		(0.029)***		(0.058)***
German	20		0.0%		5.0%		5.0%		0.0%		5.0%
Other	167		1.1%		1.7%		2.9%		23.0%		2600.0%
Diff			-1.1%		3.0%		-2.0%		-23.0%		-24.0%
			(0.024)		(0.034)		(0.041)		(0.09)***		(0.10)**
Scandinavian	5		0.0%		0.0%		0.0%		0.0%		0.0%
Other	182		1.1%		2.2%		3.2%		20.8%		24.0%
Diff			-1.1%		-2.2%		-3.2%		-20.8%		-24.0%
			(0.04)		(0.07)		(0.08)		(0.18)		(0.198)
Socialist	2		0.0%		0.0%		0.0%		0.0%		0.0%
Other	185		1.1%		2.2%		3.2%		20.8%		24.0%
Diff			-11.0%		2.2%		-3.2%		-20.8%		-24.0%
			(0.07)		(0.10)		(0.12)		(0.28)		(0.31)

Table 2: The correlates of Superpriorities

This table reports a set of cross-country regressions (estimated as linear probability models) where the dependent variable is a dummy that take value one if the country has adopted either a priority promise or a charge on consolidated funds. The explanatory variables are: (i) a set of dummies for countries with a commercial code with French legal origin (FRENCH), German Legal origin (GERMAN), and Scandinavian Legal Origin (SCAND). The excluded dummy is UK Legal Origin (in the sample there are no countries with socialist legal origin); (ii) the La Porta et al. (2008) index of creditors' rights (CR); (iii) the log of GDP per capita in the year 2000 (GDP PC); (iv) the median public debt-to-GDP ratio over 1980-2016 (Debt-to-GDP); and (v) the log of median inflation over 1980-2017 (INF).

	(1)	(2)	(3)	(4)	(5)	(6)
FRENCH	-0.569*** (0.0937)					-0.560*** (0.095)
GERMAN	-0.544*** (0.106)					-0.511*** (0.109)
SCAND	-0.600*** (0.0910)					-0.599*** (0.088)
CR		0.046* (0.027)				-0.008 (0.023)
GDP PC			0.079** (0.033)			0.035 (0.024)
Debt-to-GDP				0.0025* (0.0013)		0.002** (0.001)
INF					-0.015** (0.007)	-0.006 (0.004)
Constant	0.600*** (0.0910)	0.098* (0.052)	-0.486* (0.267)	0.061 (0.063)	0.248*** (0.055)	0.217 (0.256)
Observations	116	116	116	116	116	116
R-squared	0.414	0.019	0.057	0.030	0.011	0.461

Table 3: Sovereign and ICO Bond Yields

This table reports a set of regression where the explanatory variable is the yield of a 10 year Spanish sovereign bond issued in February 2009 and the explanatory variables are the yield of a 10-year ICO bond issued in May 2009 (ICO Yield), a dummy that takes value 1 after the constitutional amendment of September 7 2011 (Amendment), and a dummy that takes value one after the reactivation of the SMP on August 7 2011 (SMP). The regressions cover the whole sample (2009-2019)

	(1)	(2)	(3)	(4)
ICO Yield	0.941*** (0.001)	0.931*** (0.002)	0.930*** (0.002)	0.932*** (0.002)
Amendment		-0.103*** (0.011)		0.215*** (0.028)
SMP			-0.121*** (0.011)	-0.329*** (0.028)
Constant	-0.060*** (0.003)	0.0424*** (0.011)	0.059*** (0.011)	0.052*** (0.011)
Observations	2,544	2,544	2,544	2,544
R-squared	0.995	0.996	0.996	0.996

Robust standard errors in parenthesis *** means statistically significant at the 1% confidence level.

Table 4: Changes in Sovereign and ICO Bond Yields

This table reports a set of regression where the explanatory variable is the change in the yield of a 10 year Spanish sovereign bond issued in February 2009 and the explanatory variables are the change of the yield of a 10-year ICO bond issued in May 2009 (ICO Yield), a dummy that takes value 1 the day of the constitutional amendment (September 7 2011, Amendment), and a dummy that takes value one the day of the reactivation of the SMP (August 7 2011, SMP). The first four columns cover the whole sample (2009-2019), the last three columns focus on a one year window around September 2011.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
□ ICO Yield	0.519*** (0.047)	0.519*** (0.047)	0.496*** (0.042)	0.495*** (0.042)	0.792*** (0.074)	0.793*** (0.075)	0.725*** (0.0537)	0.725*** (0.055)
Amendment		- 0.063*** (0.012)		- 0.069*** (0.010)		0.0045 (0.019)		-0.013 (0.014)
SMP			- 0.570*** (0.042)	- 0.571*** (0.042)			- 0.341*** (0.0538)	- 0.342*** (0.055)
Constant	-0.0008 (0.001)	-0.0008 (0.001)	-0.0006 (0.001)	-0.0006 (0.001)	-0.0006 (0.004)	-0.0007 (0.004)	0.0005 (0.004)	0.0005 (0.004)
Observations	2543	2,543	2,543	2,543	256	256	256	256
R-squared	0.411	0.411	0.430	0.431	0.724	0.724	0.745	0.745
Period	2009-2019				March 2011-March 2013			

Robust standard errors in parenthesis. *** means statistically significant at the 1% confidence level.

Table 5: Puerto Rico's General Obligation and COFINA Yields

This table where the dependent variable is the yield of the S&P Index of Puerto Rico's General Obligation Bonds and the explanatory variable the yield of the 2009-57 COFINA bond. The top panel reports regressions in levels and the bottom panel regressions in first differences. Column 1 uses data for the full sample, columns 2-5 use different subsamples.

	(1)	(2)	(3)	(4)	(5)
	Level regressions				
GDB Yield	0.633*** (0.0257)	1.175*** (0.0259)	1.219*** (0.0102)	0.525*** (0.0443)	0.495*** (0.0306)
Constant	2.368*** (0.155)	-0.507*** (0.110)	-0.665*** (0.0493)	3.231*** (0.415)	2.097*** (0.342)
Observations	1,804	521	771	1,033	532
R-squared	0.224	0.885	0.931	0.067	0.137
	First difference regressions				
□ GDB Yield	0.483* (0.291)	0.235*** (0.0666)	0.134*** (0.0382)	0.536 (0.336)	0.113 (0.0702)
Constant	-0.000618 (0.0147)	0.00675*** (0.00246)	0.00428** (0.00210)	-0.00345 (0.0255)	-0.00127 (0.0315)
Observations	1,803	520	770	1,033	532
R-squared	0.011	0.055	0.031	0.012	0.001
Sample	2011-19	2011-13	2011-14	2015-19	2016-19

Appendix 1

Countries with some form of priority

(omits countries for which we found no commitment to prioritize public debt)

Country	Priority Promise		"Charge" on Consolidated Fund		Country	Priority Promise		"Charge" on Consolidated Fund	
	Constitutional	Statutory	Constitutional	Statutory		Constitutional	Statutory	Constitutional	Statutory
Antigua and Barbuda			Y		Malta			Y	
Bahamas			Y		Marshall Islands			Y	
Bangladesh			Y		Mauritius			Y	
Barbados			Y		Nepal			Y	
Belize			Y		Pakistan			Y	
Bosnia and Herzegovina		Y			Saint Kitts and Nevis			Y	
Botswana			Y		Saint Lucia			Y	
Brunei			Y		Saint Vincent and the Grenadines			Y	
Canada			Y		Seychelles			Y	
Cyprus		Y	Y		Singapore			Y	
Dominica			Y		Solomon Islands			Y	
Fiji			Y		Spain	Y			
Ghana			Y		Sri Lanka			Y	
Greece	-	Y			Sudan, South			Y	
Grenada			Y		Swaziland			Y	
Guyana			Y		Tanzania			Y	
Honduras			Y		The Gambia			Y	
India			Y		Trinidad and Tobago	Y			
Jamaica			Y		Tuvalu				Y
Kenya			Y		Uganda			Y	
Kiribati			Y		United Kingdom			Y	
Lesotho			Y		Zambia			Y	
Liberia	-	Y			Zimbabwe			Y	
Malawi			Y						
Malaysia			Y						