Collective Action Clauses in International Sovereign Bond Contracts and Their Effect on Spreads at Issuance *

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Abstract

This paper analyzes the impact of collective action clauses on the cost of borrowing for sovereigns. Specifically, the thesis focuses on majority restructuring provisions, which define the qualifying majority of bondholders that can modify the financial terms of the bonds. The 2012 Greek restructuring and the ruling in U.S. courts against Argentina's appeal to avoid paying holdout creditors have reignited the interest over the use and design of these clauses. I find that countries perceived to be less corrupt and countries more exposed to exogenous shocks, such as countries with high dependency on commodity exports, are more likely to have lower voting thresholds. I then document that voting requirements have, on average, a statistically significant positive effect on spreads at issuance. However, this effect is not uniform across different categories of borrowers, with lower-rated sovereigns benefiting the most. Additionally, I show that these lower rated issuers benefit incrementally more after 2003. From a policy perspective, the results imply that market participants favor these contractual changes and that the current push for further contractual reforms will likely be beneficial.

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1 Introduction

Sovereign debt restructuring processes are generally viewed as being long, painful, and costly. Following a wave of defaults in emerging markets in the mid-1990s, policymakers and academics began debating the best practices and arrangements needed to reduce the costs of prolonged sovereign debt restructuring episodes, given the new architecture of the global financial system. Recent events, such as the Greek debt crisis and the U.S. court ruling requiring Argentina to pay holdout hedge funds, have reignited this debate.

Several factors that make the orderly restructuring of sovereign debt very difficult have been identified. Among the most important one was the perceived lack of a coordination mechanism for private bondholders during restructuring. Over time, two main solutions have been proposed. The first is the so-called "contractual" solution, in which various clauses are introduced into bond contracts aimed at resolving collective action problems following a sovereign default. The most debated type of such collective action clauses (CAC) is the so-called "modification" (or "majority restructuring") clause, which allows a qualified majority of bondholders to accept a restructuring proposal and bind all other bondholders to it. The second is the so-called "statutory" solution, which is more akin to an international bankruptcy court proceeding.

In 1996, the G-10, concerned about the inefficiencies in the existing process and the prospect of "mega-bailouts", commissioned a report to find better ways of handling sovereign debt crises. Produced by the deputies of various central banks and known informally as the "Rey Report," the report argued that the statutory sovereign bankruptcy solution was neither feasible nor appropriate for several reasons. First, sovereign debtors did not have a need in the past for stronger legal protection against their creditors. Second, they could not be compelled to submit to the jurisdiction of a bankruptcy forum. Third, due to important differences in national legislations and the diverse objectives of individual countries regarding bankruptcy proceedings, negotiations to create such a bankruptcy court would inevitably be long and cumbersome, since they would require a very broad political consensus (which was deemed very unlikely). Finally, the report argued that similar results could in principle be achieved in ways that would not require fundamental reforms. The report suggested that the contractual approach was preferable: The use of collective action clauses could ensure that the "rights of the supermajority are respected and prevent a small minority of dissident creditors from pursuing disruptive litigation".

Investors initially dismissed the conclusions of the report.[1] Partly due to investor reluctance toward the contractual solution, in November 2001, the International Monetary Fund's (IMF) first managing director, Anne Krueger, proposed that sovereign debt crises be subject

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[1]An excerpt from the Rey Report mentions that "market participants opposed any change to the present structure of bond contracts. The general view among the respondents was that bonds represent a simple promise by the borrower to pay, and their attractiveness as an investment vehicle reflects their character as easily transferable and difficult-to-restructure securities."

to a sovereign bankruptcy regime administered by the IMF. She was soon followed by other officials in her call for the creation of a so-called "Sovereign Debt Restructuring Mechanism." However, U.S. officials, such as U.S. Undersecretary of the Treasury for International Affairs John Taylor, argued that contractual innovations were preferable and had the potential to make restructurings less costly and more predictable.

After 2003, and in light of these various proposals, there was a widespread adoption of majority restructuring clauses (MRC) in most sovereign bond contracts. What followed was a period of relative calm. Das et al. (2012) find that most debt renegotiations have been less disputed and more quickly resolved since the beginning of the 2000s. This period of relative peacefulness was abruptly interrupted by the Greek debt crisis. Governments, international institutions, and investors had to accept a new reality: Whereas in the late 1990s and early 2000s the most pressing sovereign debt issues were related to the need for debt restructuring and relief in developing countries, today the world must deal with potential defaults and the restructuring of debts in relatively rich countries. The generous treatment of holdout debtholders once again reignited the debate surrounding CAC.

As a result, in recent years new policy proposals concerning CAC have been formulated. For example, a provision of the European Stability Mechanism Treaty requires all new Euro-area government securities with a maturity above one year issued on or after January 1st, 2013, to include standardized and identical collective action clauses. More recently, the IMF (in October 2014) and the International Capital Market Association (in August 2014) published reports suggesting more contractual reforms designed to address the difficulties of the restructuring process.[2] Both reports emphasized the role of CAC while acknowledging the limitations of the current contractual framework in limiting holdout creditors' ability to establish a blocking position in individual bond series, and both also proposed additional reforms.[3]

In light of Argentina's recent problems with holdout creditors, the U.N. General Assembly adopted on September 19, 2014, a draft resolution calling for the establishment of a "multilateral legal framework for a sovereign debt restructuring process" to supplement existing remedies, such as CAC.[4]

In this paper, I explore the benefits of including contractual provisions designed to improve bondholders' coordination. I evaluate the willingness to pay of investors, as measured by the interest spreads at issuance on international sovereign bonds, in exchange for additional covenant protection. The main focus is on majority restructuring clauses and specifically on

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[2]The ICMA is an influential organization representing a wide range of institutional investors, law firms, and professional advisers.

[3]Such as the inclusion of "aggregation clauses" that allow bondholders to change the financial terms by a vote across all issues instead of separate votes on each issue.

[4]The resolution was passed with 124 in favor, 11 opposing, and 41 abstentions. The U.S., U.K, Germany, Japan, and other developed countries were among those voting against. The U.S. argued that there is no need for regulation on a statutory level, since collective action clauses and a contractual approach to debt disputes settled in the courts of the country whose laws govern the contract are enough.

the voting thresholds required to change the financial terms of the bonds.

The existing empirical literature has produced mixed results, which is not surprising since the analysis is not straightforward. One first needs to control for specific issue and issuer characteristics and global conditions. Moreover, the choice of clauses included in the bond contracts is most likely endogenous. Early studies, using data prior to 2005, relied on the governing law of the bond contracts to evaluate investors' perceptions of CAC. These papers compared the interest rate spreads on bonds that usually include such clauses (for example, those issued under English and Japanese laws) with those on bonds that usually do not include such clauses (for example, those issued under New York or German law).[5] While some researchers find no significant pricing effects, others find that the inclusion of CAC increase the borrowing costs of financially weak borrowers (as captured by their credit ratings). Using a detailed dataset of various clauses, in a recent study, Bradley and Gulati (2013) arrive at the opposite conclusion: Not only are CAC important for bond pricing but they also reduce the cost of borrowing (in some specifications) for the more vulnerable sovereigns.

I contribute to the existing literature in several ways. First, I analyze some of the potential determinants of the observed voting thresholds required to change the financial terms of bonds. I posit that a debtor country could ask for debt relief either because it lacks economic resources to repay, or because it lacks the willingness to repay even when it is capable of doing so. Further, I assume that all sovereigns would like low voting thresholds in order to be able to reduce the cost of a possible future restructuring. For investors, the main question is whether they can distinguish between governments that are more likely to be unwilling rather than unable to repay. Investors give borrowers more lenience when they think that the borrowers ask for relief only when they are truly unable to pay. My hypothesis is that bondholders would likely offer different conditions to the different types of issuers. I use good governance (as measured by a corruption or similar indices) to proxy for the perceived honesty of the borrower. I find that less corrupt countries are more likely to have lower voting thresholds (i.e, these countries find it relatively easier to get relief). Additionally, in order to measure the exposure to exogenous shocks that the borrower cannot do anything about, such as shifts in global commodity markets, I use the ratio of commodity exports to total exports. I find that countries that are more dependent on commodity exports are more likely to have lower thresholds.[6]

Second, after correcting for endogeneity, I show that MRC (as captured by various voting requirements) do have a significant impact on interest spreads at launch. I document that lower-rated issuers, such as those whose bonds are rated "non-investment grade", are the ones

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[5]This analysis can be problematic given that some bonds issued in New York did contain majority restructuring clauses while some English law bonds did not. Moreover, the existence of other clauses that interact with these clauses could make the comparison misleading.

[6]Note that the setup of this model is different from the one of Eichengreen and Mody (2004). In their model, the authors assume that the sovereign chooses the voting thresholds (as proxied by the choice of governing law in the bond contracts). Although compelling, I rule out the signaling argument.

that benefit from lower threshold requirements.[7] Moreover, I show that the effect is relatively more important after 2003. Finally, I examine the relative effect on spreads of different bond contracts, defined as bundles of of observed combinations of all collective action clauses. I find that contracts that perform relatively better include MRC most of the time.

From a policy perspective, the results suggest that market participants favor these contractual changes and that the current push for further contractual reforms will likely be beneficial. However, even though it may be beneficial to standardize the types of collective action clauses included in bond contracts, it is not clear that a standardization of voting thresholds will equally benefit all countries.

The rest of the project is organized as follows. Section 2 provides a short history of sovereign borrowing. Section 3 describes the debt restructuring process, with a focus on the legal aspects of sovereign debt restructuring, governing law, and collective action clauses. Section 4 presents the literature review. Section 5 provides the description of the data. Section 6 describes the empirical results. Section 7 concludes.

2   Sovereign borrowing

During the nineteenth century the world experienced a large-scale financial globalization and integration. International sovereign lending greatly expanded and Europe became the world's banker, lending capital around the world. The first well-documented surge of sovereign bond borrowing in modern times took place at the beginning of this century (Feis (1930)). This period is marked by wave-like patterns of international lending and default (Jochen (2006)). The main capital exporter was Great Britain, followed by France and Germany. London emerged as an important financial center and by the second part of the nineteenth century was the undisputed international financial center. The initial wave involved the newly independent Latin American countries in the 1820s. Bonds issued by Colombia, Chile, Brazil, and Peru among others, were traded in the burgeoning international capital markets of London and Amsterdam. By the end of the decade most of these loans were in default. Della Paolera and Taylor (2012) assert that, of the various loan defaults of the 1820s, only the Brazilian issue was quickly resolved in 1829, while others remained in default for decades, with restructuring attempts frequently subject to failure as well.

After two more lending booms in the mid 1830s and 1850–60s, starting in the 1870s and until the beginning of World War I, the world experienced what is known as the "Golden Age" of sovereign lending. The extent of financial integration and the size of capital flows, especially those geared toward emerging markets, were not matched for almost another century.[8] Short-term lending consisted mainly of trade finance and interbank credit lines, while long-term lending consisted primarily of sovereign bonds. London was the most active bond market

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[7]In few specifications, I find that mid-rated sovereigns benefit too.

[8]See Lindert and Morton (1988) and Bordo et al. (1998).

and the pound sterling the most common currency of denomination of these bonds.[9] An important development in these markets was the 1868 creation in London of the Corporation of Foreign Bondholders (CFB), which was reorganized in 1898 by the Foreign Bondholders Corporation Act.[10] The CFB had two important missions: to provide information about borrowing countries to investors and, in the event of a default or restructuring, to facilitate bondholder coordination and the negotiation process.

World War I put an end to this unprecedented period of financial integration. The events that followed triggered a series of defaults in Central and South American countries, Central and Eastern European countries, and other countries such as Russia, Spain, China, Greece, Turkey, and Germany (see Eichengreen and Portes (1990) and Reinhart and Rogoff (2011)). Unlike previous episodes of sovereign defaults, debt renegotiations were rare, leaving investors to carry the burden of significant losses. Borrowing in international sovereign bond markets was almost nonexistent during and between the two world wars.

After the Bretton-Woods conference, the sovereign lending scene changed significantly and started to be dominated by multilateral lenders (such as the IMF and the newly created development banks) and bilateral sovereign lending. To deal with defaults and debt restructurings, bilateral lenders organized themselves in 1956 into the so-called "Paris Club".[11]

During the 1970s and 1980s, oil-exporting countries such as Saudi Arabia, Qatar and Kuwait amassed large amounts of so-called "petrodollars" which were then invested abroad or lent on international capital markets. This "petrodollar recycling" took place through private-sector financial markets and helped strengthen the Eurodollar market.[12] Commercial banks in the U.S. and Europe were the main beneficiaries of these funds. In turn, they channeled these funds to developing countries with good growth prospects (O'Malley (2014)).[13] Most of the lending consisted of syndicated bank loans. As in previous episodes, the increase in sovereign lending was soon followed by an increase in the number of defaults. The "London Club" provided the stage for negotiation between commercial banks and governments during debt renegotiations. Despite the name, the London Club is not a well-organized statutory

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[9]Fishlow (1985) provides some interesting statistics from that period: Britain was the largest source of foreign capital with an average annual investment of 5% of GDP between 1873-1913 and the total trade value in the London market was around half of Britain's GDP. In addition Mauro et al. (2002) find that this period experienced fewer sovereign crises and global panics than the post-1990 period.

[10]The Council comprised representatives of the London Chamber of Commerce, the bankers, and of the private and institutional bondholders.

[11]The Paris Club is an informal group of official creditors whose main goal is to coordinate and find feasible solutions whenever debtor countries experience payment difficulties. The Club provides debt relief in the form of rescheduling or reduction of debt.

[12]The possibility that the US might freeze foreign accounts caused some oil exporters to use Eurodollar accounts more often in place of normal U.S. bank deposits.

[13]Usually towards countries with primary commodity resources or "good" industrial projects such as Brazil, Mexico, Korea, Indonesia, etc.

institution, but rather an ad hoc grouping of commercial banks. The term loosely describes the case-by-case restructuring procedures developed during this period between the committee formed by the banks (commonly referred to as the "Bank Advisory Committee") and developing-country governments (Das et al. (2012)).[14]

By the end of the 1980s, many developing countries had been in default on some of their syndicated loans for almost a decade. The creditors, mostly commercial banks, agreed with debtor countries to provide short-term liquidity relief and debt rescheduling but not cuts in the principal. The US Treasury Secretary, Nicholas Brady, proposed a plan to convert these loans (mostly to Latin American countries) into a variety of new bonds. The Brady bonds initiative was the first step toward the revival of sovereign bond markets. The increase in global financial integration and the liberalization of financial accounts started what came to be known as the second modern era of global finance. Brady bonds quickened investors' appetite for emerging market sovereign bonds. Issuance of these bonds in international capital markets picked up gradually through the 1990s, with liquidity in these markets rapidly increasing. Many emerging markets found renewed access to bond markets.

Defaults did not take long to appear. The Mexican "Tesobono Crisis" of 1994–1995, which also affected Argentina, was the first crisis involving international sovereign bond markets since the 1930s. However, the crisis was swiftly dealt with, increasing investors' optimism and causing capital to flow once again to emerging markets. The later part of the 1990s was plagued by a multitude of sovereign debt crises: the Asian Crisis of 1996–97 and the Russian Crisis 1997–98, followed by crises in Brazil, Pakistan, Ecuador, Ukraine, and Turkey, and culminating with the 2001 Argentinean Crisis, which at the time was the largest sovereign default ever.[15]

One characteristic of this period was the relative lack of bondholder coordination mechanisms, especially for bond issues in New York jurisdiction. In the early 2000s, two solutions were put forward: the contractual solution (i.e inclusion of CAC in bond contracts) and the statutory solution (i.e a treaty-based solution akin to a bankruptcy court). The push for the former has so far succeeded, with most sovereign bonds issued after 2003 in important jurisdictions, such as New York or England, including contractual provisions aimed at ameliorating the coordination among private creditors.

After the 2001 Argentinean default, many feared that severe contagion would hit other emerging market economies. However, only Uruguay was seriously affected. Large capital outflows occurred during the 2002–2003 period, impacting the peso and the banking system and creating an overhang of public debt. With the support of the IMF, Uruguay, together with representatives of the bondholders, developed and successfully proceeded with an exchange offer in 2003 covering most of its debt. In an interesting development, starting in the early 2000s many European and later Latin American countries saw a rapid development of domestic

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[14]Interestingly most meetings of the Bank Advisory Committee were held in New York and not London.

[15]See Bordo et al. (2001), Barkbu et al. (2011), and Das et al. (2012) for more details.

bond markets.[16] Emerging and developed economies increasingly resort to these bonds to raise funds.

During the first decade of the twenty first century more developing countries restructured their bonds, especially following the global financial crisis of 2008.[17] In most cases, the perception among officials was that there had been adequate creditor participation in renegotiations. An interesting case of default during this period is the one involving Ecuador in 2008. This is one of the few documented cases of opportunistic default by a sovereign. First, Ecuador used the default threat to depress bond prices in the secondary market, then bought bonds back through various friendly institutions (such as the Banco del Pacifico). After default had been declared in December 2008, Ecuador launched an inverse auction for the defaulted papers. With most bonds held by "friendly" investors, the remaining bondholders liquidated their positions. The need for liquidity following the massive withdrawals after the Lehman Brothers bankruptcy also contributed to the rapid sell-off (Levy-Yeyati (Levy-Yeyati)).

Following the global financial crisis, many European governments saw their fiscal positions deteriorate fast. In May 2010, Greece was the first Eurozone country to request official financial assistance, with Ireland following in November 2010 and Portugal in May 2011. On May 2, 2010, Eurozone ministers and the IMF agreed to a €110 billion, three-year loan package for Greece. In 2011, Eurozone governments and the IMF were forced to revise their bailout plan. Official sector creditors, together with major international banks, agreed on a 53.5% bond write-down, to be applied to around €200 billion of Greek bonds. On February 21, 2012, Eurozone finance ministers approved Greece's second bailout program. The offer was directed at all privately held sovereign bonds issued prior to 2012, with a total face value of €195.7 billion, as well as 36 sovereign-guaranteed bonds issued by public enterprises with a face value of just under €10 billion (Zettelmeyer et al. (2013)). Hailed by many as a success at the time, it is to date also the largest consensual sovereign debt restructuring using private sector involvement (the so-called "PSI model"). However, the Greek restructuring is quite unique in the sovereign debt literature. In contrast to emerging market debt, which is typically issued under foreign law (and most frequently in foreign currency), the bulk of Greece's debt was issued in domestic currency under domestic law.[18] The program involved the exchange of old bonds governed mostly by Greek law with new bonds governed by English law.[19] Whereas Greek-law bonds had a very high participation rate, foreign-law bonds had a participation rate of around 71% and most holdouts were paid in full, reigniting the discussion over the use of CAC to secure creditor participation and expedite negotiations (Zettelmeyer et al.

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[16]Here, the term "domestic" refers to the legal definition of markets which focuses on the governing law.

[17]For a detailed analysis see Das et al. (2012).

[18]Greece was bankrupt in its own currency but unable to inflate its debts away since it was a member of the Eurozone.

[19]Most of the old bonds were amended unilaterally through an act of Parliament. The bonds were retrofitted with CAC which required the approval of 50% of the face value and a quorum of two-thirds of the face value to take part in the vote (Zettelmeyer et al. (2013)).

(2013)). Soon after the exchange was concluded, Greece entered a period of high political uncertainty with the rise of the radical left political party Syriza. The prices of the new bonds plummeted. The bonds were trading at around 20 cents on a Euro, signaling a renewed belief that Greece would exit the Eurozone. In late November, the Eurogroup gave the green light for a debt buyback scheme and offered debt relief to Greece through various modalities. The buyback involved €31.9 billion of new bonds in exchange for €11.3 billion six-month EFSF (European Financial Stability Facility) notes (Xafa (2014)). Even with the relief provided by the exchange and buyback, in 2015 Greece started negotiating a new bailout worth up to €86 billion. The Greek episode represents a major development in sovereign bond markets, since it shifted attention from the restructuring of developing countries' debt to that of developed countries.

3   Sovereign debt restructuring

Even though sovereign debt crises are often the result of macroeconomic volatility, poor macroeconomic policies, banking crises, or political and institutional factors in the borrowing country (Das et al. (2012)), they might also be the result of external shocks (such as commodity price volatility), sudden changes in capital flows (due to changing borrowing costs in international markets), and even natural disasters. Since defaults and subsequent debt restructurings are generally considered costly and inefficient (Eichengreen (2003)), many have called for a changes aimed at improving this process and reducing the costs associated with it.

In this section, I analyze the debt restructuring process, with a strong emphasis on its legal aspect. The debt issued by sovereigns generally differs from that issued by private companies. Perhaps the most important difference is the limited ability of creditors to enforce the contracts, due to sovereign immunity and to the limited scope for the attachment of the sovereign's assets. Furthermore, the typical sovereign borrower issues many types of bonds, often in different legal jurisdictions. These bonds are held not only by a large variety of institutional investors but sometimes also by retail investors. This makes potential negotiations of a debt restructuring difficult because it is costly to reach out and communicate with a dispersed group of creditors, and because there are a number of "collective action problems" associated creditors coordination.

Wright (2011) identifies three types of collective action problems. The first concerns the public-good nature of debt relief: If a group of creditors offers relief, the remaining creditors have an incentive to "free ride" on the offer made by the other creditors. The second problem is the existence of a holdout incentive during the restructuring process. For example, if a contract requires unanimous consent to change the financial conditions of the bond, and if all creditors but one agree to renegotiation, the last creditor has an incentive to delay the agreement in the hope that he will be repaid in full. Finally, the third collective action problem is the potential for free riding on negotiation costs, which can delay the restructuring. Many observers argue

that the inefficiencies in sovereign debt restructurings are mostly due to creditor holdouts and litigation. However, some economists point out that a reduction in these costs can affect the incentives of sovereigns to borrow appropriately and avoid default in the future. This section first briefly describes the key elements of the restructuring process and then addresses its legal aspects.

3.1 Key elements in sovereign debt restructuring

What is a sovereign debt restructuring? While there is no universally accepted definition, Das et al. (2012) define it as "an exchange of outstanding sovereign debt instruments, such as loans or bonds, for new debt instruments or cash through a legal process." A restructuring generally involves a reduction in the face value of the bonds, a lengthening of maturities, and a reduction of the interest rate. Here, it is important to distinguish between a distressed exchange and an exchange from routine liability management operations. Also, although default and debt restructurings are two closely related concepts, they are not identical. A default usually occurs when the government does not make payment (either interest or principal) beyond a grace period; all sovereign bond contracts contain a clause that identifies all possible "events of default" (which can differ from contract to contract). But not all defaults are followed by restructurings since they can be "cured" if the sovereign resumes payments.

The restructuring process usually follows a default or an announcement by the sovereign of its intention to restructure its debt.[20] Before starting the negotiations, the government needs to verify the legal and financial terms and other characteristics of its total debt claims. Once the government has a clear picture of its outstanding debt, it can initiate negotiations on the restructuring terms with its creditors. The negotiations provide an opportunity for the government to communicate financial data and its plans to manage the debt. The sovereign must also convince the lenders that without a restructuring default is unavoidable. After a restructuring offer is made to the creditors, they decide whether to accept or reject it. During this phase, creditor coordination problems are the most serious. If accepted, the debt exchange can potentially put the country's debt back on a sustainable path.[21]

3.2 The legal aspects of sovereign debt restructuring

Governments issue sovereign bonds to raise funds from investors in both domestic and international bond markets. Sovereign bonds are usually issued under the following legal documents: a *fiscal agency agreement* or *trust agreement*, which regulates the relationship between the sovereign and the fiscal agent or the trustee; a *contract* describing the terms and conditions that apply to the bond; a *prospectus* which discloses the relevant information about the issue

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[20]Das et al. (2012) argue that in recent years there were few preemptive debt restructurings, where outstanding instruments are exchanged before the government misses a payment.

[21]See Das et al. (2012) for a more detailed analysis of the different phases of the debt restructuring process.

and the issuer of the bond; and a *registration statement*, which is a public document that is filed with the securities regulatory agency in the market where the bonds are placed (such as the SEC in the US).

The bond contract includes a clause specifying the "governing law" and the place(s) of performance of the bonds, as well as other clauses that predefine certain procedures in the event of a breach in the contractual agreement. The governing law clause and the additional legal provisions of the bond contract play a crucial role in the debt restructuring process, as they specify not only the particular country (state) whose laws will be used to interpret the agreement and the jurisdiction(s) where the dispute will be resolved, but also how creditors will be represented in these negotiations and their individual and collective rights.

3.2.1 Sovereign immunity and legal enforcement

In many respects, sovereign bonds are similar to tradable debt instruments issued by private borrowers. However, they do differ in other, important ways. First, unlike private companies, sovereign countries cannot be dissolved in case of default (gunboat diplomacy is no longer an accepted practice in international affairs). Second, while during a private default a court-appointed trustee will liquidate all of the company's assets and distribute the proceeds to satisfy claims in order of priority (and bonds have priority over equity claims), when a sovereign country defaults the control usually remains with the government, that is with the "management."[22] Third, and perhaps most importantly, whereas private borrowers face a credible threat of legal action and enforcement (i.e liquidation of assets) in case of default a sovereign will most likely be faced with different choices and challenges, mainly as a result of the doctrine of "sovereign immunity". History shows that, when faced with the prospect of non-payment or high haircuts, bondholders have mainly relied until recently either on informal sanctions, such as denying future credit and higher yields in the future. In a few instances, they have convinced powerful governments to use diplomatic channels or military force to persuade the defaulting government to resume payments or agree to a restructuring more favorable from the point of private debtholders. Mitchener and Weidenmier (2010) provide examples of such "super-sanctions" from the 1870–1913 period.

The lack of credible legal action and enforcement is especially problematic for bonds governed by the sovereign's own domestic laws. For example, the courts might be unwilling to enforce the contract, or the legislature might change the law so the courts would no longer be unable to enforce the original contract, or the government can just instruct the courts to rule in its favor by invoking sovereign immunity. This can partially explain the relative lack of bond issuance under domestic law, especially by emerging and developing countries (Panizza et al. (2009)).

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[22]However, in the recent case of the Greek restructuring, one can argue that effective control remained with the so-called Troika, i.e. the European Commission, the International Monetary Fund and the European Central Bank.

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However, even for bonds issued under a law other than that of the sovereign, there are relatively few reliable means of legal action and, especially, of enforcement of court decisions. For most of the twentieth century, the doctrine of (absolute) "sovereign immunity" precluded a lawsuit against a sovereign without the sovereign's consent in either the country's domestic courts or foreign courts (such as New York and England, where the bonds were issued).[23] After the 1950s, with the start of the "Cold War" and the increasing role of governments in commercial activities in communist countries, there was a push in the US and UK to weaken this doctrine. Both the U.S. and the U.K. enacted laws recognizing a new "restrictive doctrine," which recognizes a sovereign's immunity with respect to acts of state but not with respect to commercial acts, such as debt issuance.[24] Thus, under this new restrictive theory of immunity, private bondholders gained limited rights to sue foreign sovereigns in national courts and enforce judgment.

In some instances, using their newly acquired rights, debtholders tried to obtain favorable judgments in courts when sovereigns broke the debt contract. However, sovereigns resorted to other principles of international law to avoid these lawsuits in the 1980s and 1990s. One is the so-called "act of state doctrine" which, unlike sovereign immunity, concerns the "justiciability of the acts of foreign governments." The other is the "international comity" doctrine which is based on "neighborliness and mutual respect". Both defenses have been struck down by subsequent resolutions of U.S. courts (Panizza et al. (2009)).

Today, sovereigns can be effectively sued in case of a breach of the bonds' contractual agreements. Weidenmier (2014) posits that "the shift from the absolute to the restrictive theory of sovereign immunity was nothing short of a doctrinal revolution," but argues that even in the new regime investors do not have meaningful rights, i.e the ability to enforce court orders and seize assets to repay debts.[25] Naturally, the next question is whether, in the event of default, and after obtaining a favorable court judgment, meaningful enforcement is feasible.

Panizza et al. (2009) analyze a series of landmark cases in which holdout creditors succeeded in enforcing repayment.[26] They posit that the settlements were either the result of

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[23]The doctrine of absolute sovereign immunity precludes a lawsuit against a sovereign country without its consent. In domestic law, the doctrine is based on the idea that the agent that makes the laws is not bound by them. Internationally, this principle can be derived from the equality of sovereign nations under international law. See Panizza et al. (2009) and Weidenmier (2014) for detailed analyses.

[24]The two acts are the Foreign Sovereign Immunity Act (FSIA) of 1976 in the US and the State Immunity Act of 1978 in the UK. The definition of a sovereign in these acts is broader, since it includes not only bond issuances by the sovereign itself but also its instrumentalities. In some well-publicized cases, US courts ruled that bond issuance is a commercial action and missing a payment of a bond is sufficient to satisfy requirement which allows a private bondholder to take a sovereign to court.

[25]Weidenmier (2014) argues that even with the more restrictive interpretation of sovereign immunity bondholders will most likely find it impossible to seize assets of the defaulting country, since the country can easily move these assets outside the jurisdiction of foreign courts

[26]Allied Bank International v. Banco Credito Agricola de Cartago in 1981, CIBC Bank and Trust Co. Ltd. v. Banco Central do Brasil in 1995, and the famous Elliott Associates v. Banco de la Nacin in 1998.

reputational concerns or of credible threats to attach international asserts or interfere with the sovereigns international trade.

More recently, in June 2014, the US Supreme Court rejected Argentina's appeal against the ruling of the Second Circuit Court in favour of the hedge fund NML Capital and against Argentina. According to this ruling, Argentina cannot make interest payments on exchanged bonds.[27] The decision was based on the so-called "pari pass" clause (in the old bond contracts), which stipulated that Argentina cannot treat issues of its bonds differently and has to make payments on old bonds before making interest payments on new ones. Argentina refused to pay the bondholders, and technically it is again in default. However, many argue that holdout creditors have proven to be less of a concern than the officials feared back in 1996 and continue to fear even today. Roubini and Setser (2004) and Bi et al. (2011) argue that legal innovations such as minimum participation thresholds and defensive exit consents, helped coordinate creditors and avoid litigation.

3.2.2 The role of governing law

When a sovereign country finds itself under financial stress and is unable to service its debt, ideally, it would engage its creditors in negotiations for debt relief according to a predetermined, orderly procedure. The sovereign debt restructuring process poses many challenges, especially because of the aforementioned legal and enforcement problems. When deciding to issue debt, one of the first legal considerations is what law will govern the issue. In a major law article on this subject, Gruson and Reisner (1984) argue that "it is particularly dangerous to have a loan agreement with a sovereign borrower governed by the law of the borrower because it is within its own power to change that law and frustrate the rights of the lender."

Wood (2007) observes that the fundamental issue in debt finance where choice of law comes into play is discharge – i.e, what constitutes performance of the obligation and what constitutes defenses to payment. One problem in the US used to be that the Uniform Commercial Code only allowed contractual parties to select a governing law to which there is a "reasonable connection". For example, it would have been very hard for Argentina to issue a Eurobond, place it in European markets, and choose New York law as the governing law of the issue. This legal technicality made it hard for sovereigns to issue debt in New York, making London the main center for international debt until 1990s. To allow New York to compete more effectively with London as a major site for international transactions, in 1984 a section in the New York's General Obligations Law brought the New York law closer to English law in terms of allowing third parties with no connection to the US to be able to use it as the governing law. Lindley and Lefever (2013) provide a detailed discussion on the choice of law in sovereign debt.

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[27] After the 2001 default, Argentina made an exchange offer to bondholders in 2005 according to which it offered new bonds at around 30 cents on the dollar. Some investors, "the holdouts," were not persuaded and took Argentina to court

3.2.3 Collective action clauses

The term "Collective Action Clauses"(CAC) refers to a variety of (bond) contractual clauses aimed at improving the bondholder coordination problems described in a previous section and facilitating negotiations during sovereign debt restructurings.[28] The *majority restructuring clause* is perhaps the most widely analyzed. Other clauses include *acceleration and non-acceleration* , *aggregation* , *representation*, *disfranchisement clauses*, *aggregation clauses*. Many of these clauses are not recent innovations – some have been around for more than a century, while other clauses were introduced more recently in these contracts. MRC were widely used in the 1980s and beyond in sovereign bonds governed by English law.[29]

Majority restructuring (or majority action) provisions

Corporate and sovereign bonds issued in the early 1800s were seen as freestanding debt instruments. This meant that each individual bondholder had to agree to changing the terms of his bonds, and in the event of missed payments each could freely undertake individual legal actions against the issuer. As a result, issuers experiencing temporary liquidity problems were forced into bankruptcy unless they secured the approval of each bondholder to restructure their debt. Some creditors used this threat to obtain preferential settlements. In response to this, majority restructuring provisions were first introduced in corporate bonds issued under English law in late 1870s. Buchheit et al. (2002) provide a detailed history of these clauses.

Although the design of these clauses can vary, they do share some common features. Most bonds allow the issuer to call a meeting to propose a change in the terms of the bonds. Bondholders (usually at least 10%) can also instruct the fiscal agent or the trustee to call a meeting. After a meeting is called, bondholders are given adequate notice about the date, time, and location of the meeting and the proposals to be discussed.

Most importantly, majority restructuring clauses specify the qualified majority of bondholders needed to implement proposals related to "Reserved Matters." Once approved, the changes are binding for all holders of that issue. "Reserved matters" generally refer to proposals that would change the issue's financial terms (such as coupon payment, maturity, principal reduction, and currency).[30] Majority restructuring clauses have long been a common feature of sovereign bonds governed by English and Japanese laws, and since 2003 they are commonly

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[28]For detailed descriptions of some of the clauses see Liu (2002) and Gulati and Weidenmier (2014).

[29]For a detailed history of CAC see Gulati and Weidenmier (2014).

[30]Bond contracts that include these clauses call for either a vote of bondholders at an actual physical meeting (though bondholders can vote either in person of by proxy) or by "written resolution" (the voting threshold can be the same or higher in this case). "Reserved Matters" can also include proposals to change quorum requirements at meetings or for written resolutions, change the definition of the events that constitute default, etc. It should be noted that some contracts, even if they allow for modifications with less than unanimity, can still include "Matters requiring unanimity." One such proposal that still requires unanimity in most bonds is changing the governing law of the bonds.

found in New York law issues.[31]

These clauses usually specify not only voting requirements but also quorum requirements to pass a resolution related to "Reserved Matters" at a duly convened meeting of bondholders. If at the first meeting the quorum requirement is not met, then the clauses specify new quorum and voting requirements for any subsequent meetings. For example, throughout the 1990s the most commonly found voting requirement to pass a resolution related to "Reserved Matters" in English-law bonds was 75%. However, at the first meeting, the quorum requirement could have been 50%, for example. This implies that, in principle, 37.5% of the bondholders could have changed the financial terms of the bonds. For subsequent meetings, these minima are usually lower (some English-law bonds allow a minority of as low as 12.5% to change these terms – interestingly the bonds were issued under a Euro Medium-Term Note Programme by Argentina). When these clauses were widely introduced in New York bonds, they generally required a super-majority of 75% of the bondholders to change the terms at any meeting. In recent years, these clauses were used successfully in several debt restructurings such as Ukraine (2000), Moldova (2002) and Uruguay (2003).

Majority enforcement (or non-accelerating) provisions

The key components of the majority enforcement clauses are the acceleration and reverse-acceleration of the bond payments, the initiation of legal proceedings and the sharing of the proceeds from litigation.

Bond contracts contain a section in which the events that can trigger a default are enumerated and explained. The list of such "events of default" has changed over time, but some of the most commonly are when the sovereign fails to pay the coupon or principal, the sovereign defaults on another debt (cross-default), the sovereign's IMF membership is cancelled, the issuer places a moratorium on debt repayment, the sovereign contests the validity of the notes, or the issuer denies any of its obligations under the notes. If such events occur, bondholders have the right to declare the bonds immediately due and payable – i.e, to accelerate the payments (coupons and principal) of the bond. The ability to accelerate the payment of the bond is crucial for bondholders, since otherwise there is less incentive to initiate legal action against the sovereign. Some bonds allow each individual bondholder to accelerate its own payments, whereas other bonds may require a certain qualifying percentage of bondholders to approve such an acceleration (25% is the most commonly used percentage).

The enforcement rights of bondholders (acceleration, initiation of legal proceedings, and sharing) are closely related to the type of agreement governing the bond. Bonds can be issued

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[31]Some law scholars speculate that the reluctance to include such clauses in bond contracts governed by New York law prior to 2003 has its roots in the US Trust and Indenture Act of 1939 which specifies that no bondholder may be forced to cede any claims she has under a bond contract. The legislative history of the act suggests that the regulators were concerned that restructuring provisions would allow corporate insiders to gain control of a bond issue and reach a deal with the issuer that is not favorable to small bondholders. However, the act refers to corporate bonds and does not apply to sovereign bonds.

under a fiscal agency agreement, trustee deed (English law) or trustee indenture (New York law). A trustee deed or indenture is a contract between the issuer and the trustee that specifies the extent to which the trustee is compelled to serve the interests of the bondholders. A trust is a typical Anglo-American legal instrument; it does not exist in the same form under German law. However, there are legal instruments under German law that have developed from the Anglo-American trust that demonstrate certain similarities, especially regarding the duties of the trust. For example, similarly to an English bond trustee, a German trustee can exercise its rights by unilateral declaration and enforce the bondholders' rights against the issuer.

A fiscal agency agreement, on the other hand, is an arrangement between the issuer and the fiscal agent. The fiscal fiscal agent, typically a bank, performs mostly administrative functions, such as relaying information to the bondholders, receiving coupon payments from the debtor, and distributing those payments to creditors. The fiscal agent works solely for the issuer and does not have any obligations in terms of protecting the interests of bondholders. A fiscal agency agreement (FAA) can specify either an individual or collective right to accelerate.[32] In addition, for bonds issued under a FAA, there is no requirement for sharing the proceeds from litigation.

Under a trustee deed, the trustee can be instructed to act by a fraction of the bondholders or choose on its own to accelerate the bonds in the event of default. However, only the trustee can decide to initiate litigation against the sovereign, and all proceeds are shared among all bondholders.[33] The trustee indenture allows the trustee to accelerate payments at its own initiative or as instructed by a specified proportion of bondholders, and in some instances bondholders retain the individual right to accelerate.[34] Only the trustee can initiate legal proceedings against the sovereign, and there is no implied sharing requirement.[35] Although German-law bonds can have a trustee, in most instances each individual bondholder retains the right to instruct the trustee to accelerate her bonds. There is no mention of sharing. Initiation of litigation rests with the trustee.

Finally, some bond contracts allow for a majority of bondholders (usually 50%) to rescind acceleration (or reverse-accelerate the bonds). This clause can potentially be very valuable, since it may deter litigation during the negotiation phase if the bondholders that requested the acceleration do not represent the will of the majority. More details about these clauses are provided in Section 5.

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[32]Some FAA allow for individual acceleration for certain events of default and require a qualifying percentage for others.

[33]If the trustee fails to take action after being instructed, then each bondholder can accelerate and start litigation.

[34]All bonds in my sample governed by a trustee indenture require that a collective of bondholders instruct the trustee to accelerate.

[35]Haseler (2012) analyzes collective versus individual enforcement rights in sovereign bonds.

Other collective action clauses: written resolution, representation, disfranchise-ment, vote exclusion and aggregation clauses

In addition to majority enforcement and restructuring clauses, bond contracts usually include other clauses that can improve the bondholder coordination problem. In recent years, a new clause named "written resolution", allows for a vote in writing to change the financial conditions of the bonds instead of one at a meeting of the bondholders. Representation clauses lay down the conditions (in terms of voting requirements, for example) for a bondholder committee to be formed. If the bond is issued under a trustee agreement (section 5.4 explains in detail this type of arrangement) then the contract also specifies what decisions the trustee can take on behalf of the bondholders. Some bonds also include clauses that specify whether the bonds held by the sovereign or any of its instrumentalities are counted towards quorum and voting requirements. Most bonds after 2000 disenfranchise these type of bondholders. In recent years, some issues have included so-called "aggregation" or "cross series modification" clauses. These clauses not only specify a minimum qualified majority for each bond issue but also a minimum voting requirement for all outstanding issues to change the financial terms. This clause is aimed at improving coordination across different bond issues for the same sovereign.

4 Literature review

A significant body of literature examines the use of CAC provisions in sovereign bond contracts to improve the debt restructuring process. As mentioned above, bondholder coordination problems can lead to creditor holdouts and litigation. The typical holdout situation consists of an individual creditor refusing to take part in the bond exchange. Their strategy is to not participate in the exchange and sue the sovereign at a later date for an amount greater than they would have received from the exchange.[36]

Collective action clauses aim at dealing with these types of problems. First, majority enforcement clauses can prevent litigation to accelerate bond payments by "rogue" investors and give the sovereign more time to design the exchange. Second, majority restructuring clauses allow a qualified majority to enforce new financial terms that bind all bondholders. This section first summarizes some of the findings of the theoretical literature. However, the emphasis is placed on the important findings of the empirical literature.

Most theoretical papers related to debt restructuring and collective action clauses focus on the following fundamental policy question: "What is the best way to reorganize and improve the process of sovereign restructuring and debt renegotiation, such that the costs faced by all parties involved during such process decrease?" The answer is not straightforward since one needs first to identify the inefficiencies and then explain how the proposal changes the

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[36]In many instances the holdouts are distressed debt funds which buy the debt at a heavily discounted price in secondary markets.

incentives of the borrowers and lenders to deal with these inefficiencies. Debt renegotiations are complicated and costly to implement ex-post, but they may give sovereigns incentives to borrow efficiently ex-ante.[37] Buchheit et al. (2002) argue that "majority action clauses are thus viewed in the same light as prenuptial agreements: extraordinarily useful at the end, but distinctly unromantic at the beginning."

Rogoff and Zettelmeyer (2002) describe the evolution of ideas on international bankruptcy between the late 1970s and 2001, when IMF Managing Deputy Director Anne Krueger proposed the "Sovereign Debt Restructuring Mechanism." They classify the main types of policy proposals - changes in official policies, changes in debt contracts, and changes in laws and treaties at the national and international level - and the inefficiencies that motivate them (deadweight losses and moral hazard). They argue that the existing process at that time imposed deadweight losses on both debtors and creditors, since information asymmetries can lead to costly wars of attrition between them. Even if negotiations advance, coordination problems may delay the negotiation process. In the meantime, countries lose access to international capital markets, which may cause great stress in the real economy; the woes may then spread to the banking sector, further accentuating the losses. These costs could be reduced in theory, if the parties could rapidly agree on restructuring terms that would put the economy back on a sustainable path. Creditors also face steep costs since they are stuck with illiquid assets. If the international community views defaults as unacceptable, the IMF might feel pressure to provide emergency lending which can then be used to pay the creditors creating a moral hazard problem.

Kletzer (2004) develops a model of sovereign debt renegotiation in which a risk averse borrower faces a pool of risk neutral investors. The sovereign's faces a stochastic income each period and chooses whether to pay the creditors or not - the country's endowment is assumed to be immune from judicial seizure. He finds that the introduction of CAC in debt contracts allows bondholders to internalize the mutual gains from renegotiation. However, he also shows that a coordination problem between the holders of different bond issues can endanger the debt restructuring process. "Super-collective action clauses," which allow a qualified majority of bondholders of all outstanding bond series to change the financial terms of the bonds, overriding holdouts in individual series. Haldane et al. (2005) develop a theoretical model to analyze the merits of different proposals aimed improving the bond restructuring process. In their setup, inefficiencies can arise due to intra-creditor coordination problems (a holdout by some creditors from the offer) and an inefficient policy adjustment by the debtor due the existence of the holdouts. These problems are more severe the lower the legal fees of the creditors and the greater their heterogeneity. They find that, the introduction of collective action clauses provides the first best solution and can solve the intra-creditor problem if all parties involved have complete information. International bankruptcy courts are unnecessary.

Pitchford and Wright develop a series of models aimed at explaining delays in restructuring debts and their consequences for both creditors and debtors. Pitchford and Wright (2008)

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[37]Dooley (2000) and Shleifer (2003) make such arguments.

develop a model of bargaining among creditors and debtors and then combine it with a model of sovereign borrowing. Using their bargaining model, they find that delays in debt restructuring can be explained by a combination of the bondholder's free riding and strategic holdout incentives.[38] They argue that CAC have the potential to reduce but not eliminate these delays. In another study, Pitchford and Wright (2012) develop a model of negotiation that incorporates key features of the contractual environment of sovereign debt restructuring and renegotiation processes.[39]. Their model is able to generate in equilibrium two of the collective action problems that delay the renegotiation process: a "strategic holdout" effect and a "free-rider" effect. In this setup, CAC have an ambiguous effect, since the increase in delays due to the free rider effect can dominate the decrease due to the decline in the holdout effect, even when the negotiation costs are small. Haldane et al. (2004) study the optimal thresholds set by countries that choose to introduce CAC in their bond contracts (note that in their setup, the debtor, not the creditor chooses the voting thresholds). They find that different countries will choose different voting thresholds based on their risk aversion and creditworthiness. Two main findings emerge from their analysis. The more risk adverse the sovereign is, the lower the CAC thresholds, and the higher the creditworthiness of risk averse debtor is, the lower the voting thresholds.

Starting in the late 1990s, a number of researchers have tried to quantify the effects of introducing CAC in bond contracts. Generally, these studies compare the interest rate spreads on bonds that include such clauses (for example those governed by English and Japanese laws) with those on bonds that do not include such clauses (for example those governed by New York and German laws). If the spreads are higher for bonds governed by the English law (controlling for all other differences), this indicates that investors do not value the ex post benefits of CAC and may instead fear an increase in opportunistic defaults.

These studies focus on the bond yields on both primary and secondary markets and include sovereign, quasi-sovereign, and even private bonds. Most use the interest spread as their endogenous variable and use sovereign-specific, issue-specific, and global-conditions variables as controls. With few exceptions, they all use the issuing law as a proxy for the existence of CAC in bond contracts. This approach is fairly accurate if the only focus is the existence of majority restructuring clauses, although some New York law bonds did include CAC even before 2003 and some British law bonds did not include them. However, if the researcher wants to distinguish between different clauses aimed at alleviating different types of coordination problems, this approach is problematic.

Tsatsaronis (1999) was the first important study to analyze the effects of CAC on sovereign

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[38]A minority of bondholders have a motivation not to participate in debt renegotiation and restructuring in order to litigate at a later date and get better settlements. Each creditor has an incentive to free-ride on the efforts of other bondholders to avoid paying the negotiation costs.

[39]They call this a "weak contractual environment" which is characterized among others by the inability of sovereign to commit to contracts, lack of market access for the debtor until it settles its debts, large transaction costs for creditor during a restructuring and ineffective creditor coordination

bond yields in primary markets. His sample included more than 260 sovereign bonds governed by New York, English, and German laws between 1990 and 1999. He used the issuing laws as rough proxies for the presence of CAC and found that the yields on New York law bonds are lower than English law bonds at the 10% significance level in some specifications but not significant in others. He concluded that better evidence should come later as investors weight the merits of these clauses.

Eichengreen and Mody (2004) collect data on more than 3,000 international corporate and sovereign bonds issued by emerging markets between 1991 and 2000 under English, New York, and other laws for which they generally know whether bond contracts include or not CAC. The authors acknowledge that the choice of governing law might be endogenous and the observed sample might be biased, since not all the borrowers are in the market at all times. To solve these problems, they use the following methodology. They first estimate a multinomial logit model of the choice of governing law and construct a fitted probability that a particular bond is governed by one of these laws. In the second stage, they use this fitted probability as a proxy for the choice of law and estimate a sample selection model á la Heckman (1979) to explain interest rate spreads. In their simplest model, they find a negative coefficient on the English law variable but it is not significantly different from zero. Another innovation of the paper is distinguishing between borrowers not only by governing law but also by their credit rating. In their main specification they run separate regressions on different credit ratings. Their results suggest that when issuing under laws that are likely to include CAC, more credit-worthy issuers get a discount, while low-quality issuers pay a premium. They also do a robustness check and consider only sovereign bonds. The results are similar, but the effects are less pronounced.

Becker et al. (2003) use both primary and secondary market data from over 2,400 bonds issued between 1990 and 2000. They argue that secondary market data is less subject to selectivity or endogeneity problems and is more accurate. However, using secondary market data is also quite problematic, since most bonds do not have highly liquid markets.[40] They do not find any evidence to support the hypothesis that the use of CAC has increased borrowing costs for lower-rated issuers who are susceptible to moral hazard concerns. They then select two dates, one in 1998 and one in 2000, for their secondary market data analysis. They select June 1998 in order to capture the pricing of bonds prior to the Russian crisis and the bond restructurings of Pakistan, Ecuador and Ukraine, and then June 2000 to capture the pricing after these events. Their results imply that any increase in borrowing costs from increased moral hazard when CAC are used are outweighed by the benefits associated with less costly restructuring. They do not find any evidence in support of Eichengreen and Mody (2004) finding that lower rated sovereigns pay a premium for borrowing under English law with CAC. Gugiatti and Richards (2003) use the same methodology as Becker et al. (2003) for a

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[40]There is an ample literature in finance showing that when secondary corporate bond markets are illiquid, the default premium is strongly related to measures of bond liquidity making the distinction between risk and liquidity premia difficult (Edwards et al. (2007) and Bao et al. (2011))

sample that spanned the post-2003 Mexican issue, the first significant bond issue under New York law which included CAC. A negative coefficient for bonds issued under English-law bonds is the only statistically significant estimate they find, which disappears once the interaction term between the law and rating is introduced in the model.

Eichengreen et al. (2003) provide an important contribution to the literature on CAC. First, they develop a theoretical model of bond renegotiation, providing the framework for the earlier findings in Eichengreen and Mody (2004). The model predicts that the cost of using CAC depends on the amount of private information of the borrower (degree of moral hazard) rather than its credit quality (although the two are related, since lower moral hazard leads to higher credit rating). Next, they repeat the sampling of secondary market data in Gugiatti and Richards (2003) at four additional points in time, hoping to obtain more robust coefficients. This allows them to test whether the credit rating scale at which CAC becomes important shifts over time depending on market participants' sentiment (proxied by the Emerging Markets Bond Index). They run random effects regressions and find that the interaction term between the rating and the use of CAC is positive and significant at 10%; i.e, the low-rated issuers pay a penalty for using CAC. Next, they introduce in their specification a triple interaction term between credit ratings, the existence of CAC, and the market sentiment proxy. Their results suggest that when the attitude of investors toward emerging markets is negative, all but the highly rated issuers are penalized for introducing CAC; and when the attitude is positive, all but the lowest-rated issuers pay lower spreads if they introduce CAC.

Bardozzetti and Dottori (2013) take advantage of a new feature in Bloomberg that allows them to identify the existence of modification clauses. They collect secondary market data on both national and regional government bond issues from March 2007 to April 2011. Their sample consists of 292 bonds with either fixed, floating, or zero coupon and various embedded options such as puttable, callable or bullet bonds.[41] They find a U-shaped relationship between yields and the existence of CAC: The inclusion of CAC has little impact for the highest- and lowest-rated issuers, while issuers in the middle of the rating scale benefit from a discount when incorporating CAC.

A recently published study by Bradley and Gulati (2013) uses the most complete data set to date on different clauses embodied in sovereign contracts aimed at solving collective action problems. This is the closest data set to the one I use for this study. Although they analyze the merits of a number of clauses, their main focus is on the majority enforcement clauses, and specifically on the minimum number of votes required to modify the financial terms of bond contracts. They find that the presence of these clauses decreases the cost of capital especially for the financially weak sovereign issuers.[42] These results differ from those

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[41]Puttable bonds are bonds with an embedded put option: The holder has the right but not the obligation to demand early repayment of the principal. Callable bonds are bonds that can be redeemed by the issuer prior to its maturity. Bullet bonds are discount bonds that are non-callable.

[42]They do not interact collective action clauses with credit rating, but instead consider separate regressions using developing and developed countries. They run most of their regressions separately for bonds governed

in Eichengreen and Mody (2004). The authors do not consider the issue of endogeneity of the voting thresholds nor the sample selection bias. Moreover, they compute the spreads as the difference between the yield on the bond (denominated in different currencies) and the US Treasury bond with the same maturity, and use dummy variables to control for the currency of denomination. This approach is problematic since currency risk most likely varied during their sampling period. They find that the spreads on sovereign bonds issued under New York law after 2003 decrease. The results for English law bonds are even stronger (i.e. a strong positive relationship is found between spreads and minimum percentage required to modify financial terms in bonds). The implicit assumption behind their explanations is that the introduction of CAC leads to fewer bailouts (an assumption that is common in the literature). However, the Greek restructuring experience of 2012 tells a different story. The Troika agreed to a €130 bailout only if Greece obtained a significant haircut from private creditors (PSI model). The existence of CAC coupled with PSI could make it more likely for bailouts to happen since richer nations will be able to sell the need for the bailout to their taxpayers if a defaulting sovereign and its creditors bear some of the pain. Finally, they run a series of regressions by interacting one by one various clauses with MRC and find evidence significant coefficients on some of the interaction terms, suggesting that various clauses complement or substitute each other.

5   Data sources and description

The main database used in this study is THOMSON ONE (formerly THOMSON ONE Banker) which has an extensive collection of bond prospectuses and circulars. While these documents are not the actual bond contracts, they are extensively used by prospective investors for additional information. Additional disclosure documents were collected from official websites, such as the Ministry of Finance or the central bank of the issuing country. Some of these documents are available as image "pdf" versions of scanned documents, and therefore are not searchable. I collected most of the data manually. Any error in data collection is mine. To supplement the information on different bond issues, to collect benchmark interest rates, and to collect data pertaining to global conditions I use Bloomberg, Dealogic, MERGENT FISD, Moody's, and FRED. To compute the ratio of commodity exports to total exports I collect data from UNCTAD Statistics and IMF eLibrary. For country governance indicators I use the World Bank and Transparency International databases.

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by the English or New York law. This reduces significantly the number of observations and the precision of their estimates.

5.1 General description of the sample

Table 1 provides a general description of the international sovereign bonds included in the final sample.[43] Floating-rates, convertible and inflation-indexed bonds are excluded as the relationship between their risk and the fundamentals requires a separate analysis.

The bonds were issued between January 1, 1990, and November 30, 2013. Overall, there are 1,395 sovereign bonds issued by 89 different countries.[44] Sweden, Mexico, Italy, Brazil, and Turkey are among the largest issuers in terms of total value (in US dollar). More than 60% of the bonds were issued by developing countries. The bonds were issued in 35 different currencies, with US dollar-denominated issues representing around 55% of all issues, followed by Euro-denominated issues with 17% of all issues. On average, there were 58 bond issues per year. The largest number of bonds (97) were issued in 2002, and the highest volume occurred in 2013. The average maturity of the bonds is 9.4 year. I collect data on the number of *lead and co-lead managers* involved in each bond issue. On average, 9 banks participate in each issue but as many as 49 banks can be part of the underwriting syndicate.

Countries can issue bonds under different debt programs. For example, some sovereigns choose to issue under a *Euro Medium Term Notes* (EMTN) programme. This program is intended primarily for securities offerings outside the United States, and particularly in Europe. EMTN are issued directly to the market with maturities of less than ten years, and they are offered continuously rather than all at once like a bond issue. With EMTN, the issuer maintains a standardized document (known as a program) that can be transferred across all issues. In the U.S., sovereigns can issue bonds under Rule 415, which allows them to offer and sell securities to the public without a separate prospectus for each act of offering (this is also known as shelf-registration). I create a dummy variable for issues that fall into these two types of issuances to capture the fact that these issues can be offered quickly when funds are needed or market conditions are favorable. More than 50% of the bonds in my sample are issued in this way.

Most bond prospectuses do not specify the yield to maturity nor the spread at launch. However, the yield can be computed from the available information on the issue: issue and maturity dates, coupon rate, coupon frequency, and price. I assume the 30/360 US days count convention when calculating yields. I construct the spread by subtracting from the yield to maturity at issuance the yield on a "risk-free" bond of comparable maturity. I follow Eichengreen and Mody (2004) and choose the risk-free rate depending on the currency in which the bond is issued. For example, I use the US Treasury bond rate for US dollar issues, the German

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[43]Most bonds have a fixed coupon rate. Nine bonds feature step-up or step-down coupon payments, and seven bonds have zero coupon payment. Eight bonds have amortization schedules during their last three years, and all have long maturities. These bonds were included because it is straight forward to compute the yield at issuance.

[44]Most bonds are issued by the country's government with two exception: Cuban bonds are issued by the Banco Central de Cuba and Japanese bonds are issued by the Development Bank of Japan and are fully guaranteed by the Japanese government.

government bond rate for DM and Euro-denominated bonds, the UK government bond rate for British-pound denominated issues, etc. For bonds issued in currencies of emerging market economies, I use as a benchmark the interest rate on bonds in the same currency and similar maturities issued by one of the AAA-rated supranational agencies (International Bank for Reconstruction and Development, World Bank, International Finance Corporation, European Bank for Reconstruction and Development, and the Inter-American Development Bank).[45]

Figure 1 shows the average spread by year for the entire sample and separately for developing and developed countries. The average spread for the entire sample period is 227.50. The spreads on bonds issued by developing countries increased sharply in the late 1990s and the beginning of the 2000s.[46] After a period of decline, spreads on these bonds sharply increased again in 2008 with the start of the U.S. financial crisis.

5.2 General contractual variables

Sovereign governments issue bonds under a Fiscal Agency Agreement(FAA), Trust Deed (under English law), or Trust Indenture (under New York law).[47]

A fiscal agency agreement is the simplest arrangement that an issuer can use. The fiscal agent, typically a bank, performs mostly administrative functions, such as relaying information to the bondholders, receiving coupon payments from the debtor, and distributing those payments to the creditors. The fiscal agent works solely for the issuer and does not have any obligations in terms of protecting the interests of bondholders.

A trustee deed or indenture is a contract between the issuer and the trustee that specifies the extent to which the trustee is compelled to serve the interests of the bondholders. The trustee must ensure the issuer's compliance with the terms of the bonds. Thus, the existence of a trustee can partially solve the problem of coordination among bondholders in the event of a restructuring. I code the existence of a trustee using a dummy variable. To capture whether the proceeds from litigation are shared or not I created a dummy variable called *Sharing*.[48]

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[45]Matching maturities has proven to be more difficult for bonds issued in "exotic" currencies.

[46]Although the average is always positive, spreads can take negative values because of the way they were computed. For example, highly rated Scandinavian countries can issue in JPY or ITL at interest lower than the Japanese or Italian governments can. This can also be caused by the lack of benchmark bonds with a close maturity. For example, the US did not continuously issued 20 and 30 year Treasury bonds during this period. For a small sub-sample of bonds, I was able to find the spread at launch and compared it to the one I computed. The spreads are very similar.

[47]Interestingly, I found two examples where a sovereign issued under a fiscal agency agreement and appointed a trustee.

[48]I do not make a distinction between the two type of trustee agreements, although they are different on some dimensions. For example, under a trustee deed, the trustee or a specified percentage of bondholders can accelerate the bonds. Under a trustee indenture, in some cases each individual bondholder retains the ability to accelerate their own bonds. Moreover, under a trustee deed, the proceedings of litigation must be shared on a pro-rata basis , whereas under a trustee indenture, the bondholder that litigates does not have to share

All bonds in the sample are issued under one of the following law jurisdictions: English, New York, German and Japanese. Table 2 shows that around 48% of the bonds in the sample were issued under English law, 43% under New York law, 8% under German law and less than 1% under Japanese law. Starting in 2005 all bonds were issued either under English or New York law. Thirty-four countries issued bonds in more than one law. I construct four different dummy variables - English, New York, Germany and Japan - for each governing law.

In my sample, 246 (or 17.6%) of the bonds were issued under a trustee agreement, whereas 1,149 bonds were issued under a fiscal agency agreement (Table 4). More than half of the German-law bonds, 11% of the English-law bonds, and 10% of the New York-law bonds appointed a trustee. I create a dummy variable $FAA/Trustee$ which takes a value of 1 if the bond is issued under a trustee agreement and 0 otherwise.

5.3   Collective action clauses

Majority restructuring variables

The majority restructuring provisions are usually contained in the section of the prospectus called "Meetings of Noteholders, Modification and Waiver." The section details the information pertaining to meeting and voting requirements to pass "extraordinary resolutions" concerning both "reserved matters" or "non-Reserved Matters".[49]

"Reserved matters" refer to proposals, amendments, or modifications that would change the payment terms of the bond (date, currency, amount, interest, etc), the voting requirement at meetings or certain definitions (such as "extraordinary resolution" and "bonds outstanding"). From this section of the prospectuses, I collect the following information: quorum requirements at first meeting and any subsequent meeting, voting requirements to pass an extraordinary resolution, and written resolution requirements. These variables are very important since they describe the way bond contracts deal with collective action problems.

Out of 1395 bonds, 1003 (or 72%) allow for the modification of financial terms with less than unanimity, while the remaining 28% of the bonds have unanimity requirements. Bonds allowing for majority restructuring were issued under English law (62%), under New York law (32%), and under Japanese law (1%). All bonds issued under German law have unanimity requirements. With the exception of two bonds, all issues under English law contain these clauses (all Japanese bonds contain them, too). Figure 2 shows the the distribution of bonds with majority and unanimity requirements by year both in terms of number and volume (in USD).

To compute the minimum percentage of votes required to change a "reserved matter," I use both quorum and voting requirements. If both are available, I compute the minimum voting

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the proceeds.

[49]These usually refer to non-financial matters, and most bonds governed by English and New York law allow a simple majority of bondholders to remove all attractive non-financial covenants from the bonds

requirement as the product of the quorum and percentage vote requirement. For example, if the quorum requirement is 50% and the voting requirement is 75%, then in principle 37.5% of the bondholders can change the terms of the issue. However, some bonds only specify quorum requirements. Among these bonds, some clearly define the minim percentage of votes required as the full quorum, while others make no specific reference to the percentage of votes required. In the latter case, I assume that the quorum requirement is also the minimum voting requirement.[50] Similarly, I use the quorum and voting requirements at any subsequent meeting to compute the absolute minimum percentage of bondholders that can change the terms of the bonds.

More recently, bond contracts allow the option of using a "written resolution" instead of an "extraordinary resolution" (which must be passed at a meeting of the noteholders). A "written resolution" means a resolution in writing signed by or on behalf of the bondholders. I follow Bradley and Gulati (2013): If a written resolution is permitted I use the minimum required by it. Otherwise I use the minimum voting computed as explained above. I create a dummy variable "Written" that takes a value of 1 if a written resolution is allowed and 0 otherwise. Figure 4 shows the distributions of minimum voting requirements at the first and subsequent meetings both un-adjusted and adjusted for written resolutions.

At the first meeting, the un-adjusted minimum voting requirement for bonds that include CAC varies from 33.33% to 85%, while the adjusted varies between 37.5% and 90%. At any subsequent meeting, the un-adjusted minimum voting requirements vary from 12.5% to 85%, while the adjusted vary between 12.5% and 90%. Most New York-law bonds that include CAC require a super-majority (75% or 85%) of bondholders to approve any change to the bond terms both at the first and any subsequent meetings. For English-law bonds, there is substantially more variation in the voting requirements. Panels A and B in Figure 5 provide a breakdown of voting requirements by governing law at the first and subsequent meetings.

Majority enforcement variables

Majority enforcement clauses, or acceleration provisions, provide information on acceleration, reverse acceleration, initiation of legal proceedings, and sharing of proceeds from litigation. Such clauses exist in bonds both with and without majority restructuring clauses.

Bond contracts typically define a set of events (called "events of default") that can trigger the acceleration of bond payments. There is variation both in time and across bonds in what bond contracts define as events of default, although in recent years it seems that there is a convergence of the definitions used.[51] As mentioned previously, after such events, depending

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[50]For 144 bonds under both English and New York laws, there is no information on quorum or voting requirements. Their prospectuses mention that the percentages are specified in the "Fiscal Agency Agreement" which is I could not find.

[51]Examples of such events are non-payment, breach of other obligations by the issuer, cross-acceleration (if other debt is accelerated), and IMF membership is cancelled.

on the contractual terms, any bondholder or group of bondholders can declare the bonds immediately due and payable.

Acceleration refers to the ability of individual bondholders to declare the bond immediately payable if any one of the mentioned "events of default" has occurred. The ability to accelerate the bond is crucial for bondholders; otherwise there is less incentive to initiate legal action against the sovereign. In my sample, around 44% of bond contracts allow individual bondholders to declare the bond due and payable, 40% require a minimum percentage of bondholders to accelerate the bond, and approximately 16% allow both individual and collective acceleration rights under events of default (see Table 3).

Panel B from the same table provides summary statistics for the percentages of bondholders needed to accelerate the bonds by laws. The majority of bonds that require collective acceleration require a minimum of 25%. Almost half of the bonds issued under English law - which contain collective action clauses - give individual rights to accelerate. For New York-law bonds with unanimity action clauses (UAC), 67.2% require collective acceleration, and for New York-law bonds with majority restructuring clauses, 87.5% require a percentage of the bondholders for acceleration. Most German law bonds allow for individual acceleration. For the entire sample, around half of the bonds with UAC and 42% of the bonds with CAC allow for individual acceleration (see Panel D in Table 3).

All bonds in the sample allow for individual and/or collective acceleration. However, only a sub-sample allows for a qualified majority of bondholders to rescind acceleration (the voting threshold varies from 50% to 75%). This is an important feature of majority enforcement clauses, since it can make attempts by rogue investors to litigate unprofitable. Panel C in Table 3 shows that 64% of the bonds issued under New York law allow for reverse acceleration and only 32% of the bonds issued under English law allow it. Japanese and German-law bonds do not allow for reverse acceleration. For the entire sample, 30% of the bonds with UAC allow for collective acceleration and reverse acceleration (in large part because of German law bonds), while for bonds that have CAC the proportion is 48.5% (Table 3).

Finally, bonds issued under a "trustee deed" also require sharing of any proceeds from litigation among all bondholders. To capture the various aspects of majority acceleration clauses I create three dummy variables: "Acceleration" (equals 1 if collective acceleration is required and 0 otherwise), "Rev/Accel" (equals 1 if reverse acceleration is allowed), and "Sharing" (if the proceeds from litigation must be shared.

Other clauses

One major problem during restructuring episodes is the absence of a representative who can speak and act on behalf of bondholders. Whereas in the case of bonds issued under a trust agreement the trustee has fiduciary duties vis-á-vis bondholders, under a fiscal agency agreement - under which most bonds are issued - the fiscal agent does not represent the interests of bondholders. Starting in the mid-2000s, some bond contracts began featuring a clause that allowed bondholders to elect a representative committee that would protect their

interest following a credit event. In my sample, 146 bonds allow for such a committee (89% of these bonds are governed by the English law). It must be noted that certain quorums and voting requirements must be met in order for such committees to be formed.

Some bond issues include a *vote exclusion* clause. According to this provision, certain types of bondholders are excluded for the purpose of calculating the amount of outstanding bonds and cannot vote on proposals regarding "reserved matters." The "disenfranchised" bonds are those controlled by the issuer itself, the central bank of the country, or by other government agencies. Panel C in Table **??** shows that 77% of the bonds that allow for modifications of reserved matters disenfranchise some bondholders. Bonds issued under New York law after the introduction of CACs have a very clear definition of the notes controlled by the issuer or by any "public sector instrumentality."

Here is a typical definition found in a New York-law bond:

" ... public sector instrumentality means any department, ministry or agency of the government of Senegal or any corporation, trust, financial institution or other entity owned or controlled by the government of [country]and control means the power, directly or indirectly, through the ownership of voting securities or other ownership interests or otherwise, to direct the management of or elect or appoint a majority of the board of directors or other persons performing similar functions in lieu of, or in addition to, the board of directors of a corporation, trust, financial institution or other entity."

Less that 5% of the bonds with CAC governed by New York law do not disfranchise the issuer. English-law bonds, in contrast, do not always mention voting exclusions for certain bondholders, which can be interpreted as allowing voting by the issuer if it buys back part of its own bonds. However, many English-law bonds, even though they do not necessarily mention vote exclusion directly, do it indirectly. Bond prospectuses usually have a section in which additional information is provided with regard to early purchases by the issuer of its own bonds. Whenever it is mentioned in the prospectus that bonds purchased by the issuer are cancelled, I treat it as a vote exclusion.

Here is an example taken from an English law bond: *" The Issuer may at any time purchase Notes (provided that all unmatured Coupons appertaining to the Notes are purchased with the Notes) in any manner and at any price ... All Notes which are (a) redeemed or (b) purchased by or on behalf of the Issuer will forthwith be cancelled, together with all relative unmatured Coupons attached to the Notes or surrendered with the Notes, and accordingly may not be reissued or resold."*

Starting in 2003, some sovereign bond contracts began to feature a new clause called *Cross series modification* (or *Super CAC*) that is designed to enhance bondholders' coordination not only within an issue but also across issues. To date, 7 countries have adopted them in some of their issues (Table **??**). Of the 38 issues that include this clause, 16 are issued under English law, while the remaining 22 are issued under New York law. These provisions add to the majority action requirements for each individual bond series, a provision that governs the modification of the terms of all outstanding bonds. For example, to approve a

change in relation to a reserved matter, starting in 2010, bonds issued by Finland require the affirmative vote of no less than 75% of the aggregate principal amount of all series affected and the affirmative vote of no less than 66.66% of each individual series affected.

To capture these clauses I create the following dummy variables: "Committee" (equal to 1 if a bondholders' committee can be formed), "VoteExc" (equal to 1 if the bond contract disfranchises the sovereign) and "SuperCAC" (equal to 1 if the bond contract includes an aggregation clause).

In summary, I consider the following contractual clauses aimed at resolving various collective action problems: majority restructuring clauses (MRC), written resolution clauses ($Written$), disfranchisement clauses ($VoteExc$), bondholders' committee clauses ($Committee$), aggregation clauses ($SuperCAC$), trustee agreement($FAA/Trust$), acceleration clauses ($Accel$), reverse acceleration clauses (Acc/Rev), and sharing clauses ($Sharing$).[52]

Table 4 provides the frequency (Panel A) and conditional frequency (Panel B) of these contractual clauses while Table ?? provides the pairwise correlation between these contractual clauses. In the full sample, the most frequent clauses are the MRC (72%), acceleration (56%), disfranchisement (56%) and reverse acceleration (43%). As previously observed, most bonds governed by English law include majority restructuring clauses, while around half of the bonds issued under New York law include them. Prior to 2003, many "non-investment" grade borrowers issued bonds with unanimity action clauses. As a result, "investment" grade bond contracts include MRC more often than "non-investment" grade contracts. In terms of aggregation clauses, proportionally more bonds issued by developing countries require collective acceleration and allow for collective reverse acceleration than bonds issued by developed countries.

In Panel B, I present conditional frequencies based on the clauses listed in the first column. We can observe that around 50% of the bonds that include MRC allow for a written resolution, 76% disfranchise the issuer, 15% allow for the formation of a bondholders' committee, and only 4% contain an aggregation clause. Around 70% of bonds issued under a trustee agreement contain MRC, while only 39% of the same bonds allow for (collective) reverse acceleration. More than half of the bond contracts that contain aggregation clauses are issued under a trustee agreement. Around 77% bonds that require collective acceleration allow for reverse acceleration and around 10% include a sharing clause. The highest correlation between these clauses are those between MRC and disfranchisement, acceleration and reverse acceleration, and disfranchisement and written resolution.

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[52]The existence of a trustee is not technically a clause. However, in theory, it should improve bondholders' coordination in case of a restructuring.

5.4 Country specific and global conditions variables

Credit ratings

I start with the credit ratings from Standard & Poor. If S&P does not rate a certain issuer, I use Moody's or Fitch. Ratings from each credit rating agency are mapped into a numerical variable starting from 0 for the worst rating and increasing by 1 for each notch toward the best rating. I further group the bonds into the following categories: prime (AAA), high grade (AA+, AA, AA-), upper-medium grade (A+, A, A-), lower medium grade (BBB+, BBB, BBB-), non-investment grade speculative (BB+, BB, BB-), highly speculative (B+, B, B-) and extremely speculative (CCC+ and below). Due to the small number of bonds rated CCC+ and below I group together the last two categories.

At the beginning of 1990s, most of the issues (issuers) were very highly rated. In the mid 1990s there was a rapid increase in the issuance of non-investment grade bonds which lasted until the mid-2000s. After the mid-2000s, there was again an increase in the issues considered investment grade, although the distribution by different subcategories is much different than in the early 1990s (Figure 3).

Other variables

Commodity exports, total exports, and debt-to-GDP

From the statistical section of the United Nations Conference on Trade and Development, I collect country-level annual data for total exports and commodity exports and imports. I supplement the collection, whenever possible, with data from the IMF's International Financial Statistics (IFS) database and Global Financial Data. From the World Bank and IFS databases ,I collect data debt to GDP.

Governance variables

I collect data on a corruption perception index from Transparency International and on various governance indicators from the World Bank. Since 1995, the World Bank has reported aggregate and individual governance indicators for over 200 economies and for six dimensions of governance: Voice and Accountability, Political Stability and Absence of Violence, Government Effectiveness, Regulatory Quality, Rule of Law, Control of Corruption.

Global conditions

In order to capture global conditions, such as changes in aggregate risk aversion, world interest rates, and liquidity, I collect several variables.[53] To measure global risk aversion I consider both the VIX index and the spread between corporate bonds with a Moody's rating of Baa

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[53]See Eichengreen and Mody (1998), Hilscher and Nosbusch (2010), and Csonto and Ivaschenko (2013).

and Aaa. The Chicago Board Options Exchange Volatility Index (VIX) measures the implied volatility of S&P index options. Both are expected to be positively correlated with spreads. I use the yield on 10-year US Treasury notes as a proxy for the world interest rate. Finally, I use the TED spread to capture changes in aggregate liquidity. The TED spread is the difference between the interest rates on interbank loans and on short-term U.S. government debt.

6   Empirical Analysis

In the empirical section, I explore the effects of including collective action clauses on bond spreads at launch. More precisely, I focus on the restructuring provisions that identify the qualifying majority of bondholders that is able to change the financial terms of the bonds. In these analyses, I control for issue- and country-specific characteristics, global conditions, and also for various contractual clauses that can be included in these bonds.

I address potential endogeneity concerns that might arise if voting thresholds depend on anticipated bond yields, by using a two-stage estimation method. Due to data limitations, this analysis only includes two-thirds of the observations.[54]

6.1   The choice of voting requirements and the spread at issuance

In this section, I deal with the possibility that voting thresholds depend on anticipated bond yields. I address this issue using a two-stage estimation method in the spirit of Eichengreen and Mody (2004). In the first stage, I estimate an ordered logistic regression.[55] The outcome measure is the choice of voting thresholds. I argue that bonds with different voting thresholds can be ordered in terms of their "ease" to restructure: Those whose contracts specify low voting thresholds are relatively easier to restructure, while those whose contracts specify higher requirement are increasingly more difficult to restructure. I compute predicted values for the voting thresholds and use them in the second stage to estimate two sets of regressions. First, I allow all coefficients to differ by credit quality (the unrestricted specification). Second, I allow the coefficients on voting thresholds to differ by credit quality but constrain the other coefficients to be equal across groups (the restricted specification). The latter specification provides additional statistical power to the estimation given the relatively small sample size of each of credit rating category. Due to data availability, the original sample size is reduced by approximately 30%, partially because relevant variables are only available starting in 1995.

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[54]I re-estimate the baseline specification by taking advantage of the full sample of observations while ignoring potential endogeneity issues. These results can be provided upon request

[55]Eichengreen and Mody (2004) use a multinomial logit model to predict the choice of law. I performed a similar analysis using a multinomial logistic regression instead and most results are qualitatively similar to those from the ordered logistic regression.

6.1.1 Choice of voting thresholds

The ordered logistic estimation is based on several important assumptions. I conjecture that all sovereigns would like to be able to reduce the costs associated with a possible future debt restructuring. In other words, all sovereigns would like to have low voting requirements to change the financial terms of a bond issue. Nevertheless, a debtor country could default either because it lacks economic resources to repay when it is willing to do so, or because it lacks the willingness to repay when it is capable to do so. Investors would like to give borrowers more lenience when they think that the borrowers ask for relief only when they are truly unable to pay. Consequently, I assume that investors are likely to offer different contractual conditions to different types of issuers.

The main question is whether lenders can distinguish between governments that opportunistically seek debt relief even if they are able to repay and governments that are unable to pay due to events beyond their control. I use different measures of good governance to proxy for the honesty of the borrower. In the main specification, I use a corruption perception index from Transparency International that takes a value from 0 to 10.[56] The higher the index, the less corrupt the country is perceived to be. I expect countries that are perceived to be less corrupt to enjoy lower voting thresholds (since the likelihood of these countries to be unwilling but able to pay is lower) - i.e, the coefficient on the corruption variable in the ordered logistics model should be negative and significant.

Additionally, I use the dependency on commodity exports as a measure for a country's exposure to exogenous shocks. Countries with higher commodity exports to total exports ratios are more exposed to shocks that they cannot do anything about, such as shifts in global commodity markets. I expect bonds issued by countries with relatively higher exposure to such external shocks to have lower voting thresholds - i.e, the coefficient on the ratio of commodity exports to total exports should be negative and significant.

It should be noted that this specification rules out the signaling hypothesis advanced by Eichengreen and Mody (2004), according to which countries, by choosing the governing law (which they use a as a proxy for the easiness to restructure), send different signals. For example, in their model, choosing US law signals a stronger commitment to repay.

Interestingly, two recent episodes of default by Ecuador (in 1999 and 2008) illustrate both the inability and the unwillingness to pay of a sovereign. In the late 1990s, Ecuador's main exports were oil and bananas, which together accounted for close to 59% of their exports (Hatchondo et al. (2007)). Falling commodity prices led to a deterioration of the country's macroeconomic conditions and a subsequent default on Brady bonds in 1999. In contrast, Ecuador in 2008 provides one of the best examples of opportunistic defaults in recent history, one triggered by the unwillingness rather than inability to pay. In a recent work, Levy-Yeyati (Levy-Yeyati) explains how Ecuador used the default threat to depress bond prices

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[56]Using the World Bank's corruption index and political stability index yields similar results. The choice is mainly based on data availability.

in secondary markets, only to buy them back at bargain prices through various "friendly" financial intermediaries (such as Banco de Pacifico).[57] After default was declared in December 2008, Ecuador launched an inverse auction for the defaulted papers, with the outstanding debt largely in friendly hands and the remaining bondholders forced to liquidate their positions.

In addition to the above-mentioned variables, in the reported regression I also control for (other) clauses included in bond contracts and for the nationality of the lead managers. The latter categorical variables are used as instrumental variables in the two-step procedure, since they are not correlated with the yield but are potentially correlated with the choice of thresholds. They capture the possibility that bond contracts are partially artifacts of the market structure and products of long-term relationships between participants (as some legal school scholars argue). Finally, since there are few observations for some categories of voting thresholds, and since it is hard to argue that the minimum voting threshold variable is continuous, I combine the observations into three main categories: 50% whenever the minimum voting requirement is less or equal to 66.66%, 75% if it is greater than or equal to 75% and less than 99% and finally 100% if the contract requires unanimity.

The results are presented in Table 5. The coefficients are in terms of log-odds. For example, the interpretation of the coefficient on the *Corruption* variable is the following: a one unit increase in the corruption index (the higher the value, the lower the perceived corruption) results in a -0.115 unit decrease in the log-odds of being in a higher voting bin. In other words, countries that are perceived to be less corrupt are less likely to be in a higher voting category (the higher the voting category, the more difficult to restructure). As expected, a higher ratio of $CommodityExports/TotalExports$ results in a lower probability of being in a higher voting category; everything else equal, countries that are more likely to be unable to pay, are more likely to have a lower voting threshold.

Interestingly, many of the coefficients on other clauses are statistically significant. These additional features of bond contracts are aimed at improving bondholders' coordination problems and complement the majority restructuring clauses (e.g. the existence of a trustee ($FAA/Trustee$) or a bondholders' committee (*Committee*)). I find that bond contracts which have a trustee or bondholders committee are more likely to be in a higher voting category. These results are rather expected since lower voting thresholds are less needed in these cases. The existence of aggregation clauses ($SuperCAC$) makes lower voting thresholds more likely. This suggests that bond contracts that improve the coordination among all creditors (i.e, all bond issues of the sovereign), are also more likely to have lower voting thresholds for individual bond issues. And bond contracts that disfranchise the sovereign (and any public sector instrumentality) are less likely to be in a high voting category.

I also perform two tests, one similar to the Hausman test for endogeneity and an F-test for the relevance of the instruments. The Hausman test corroborates the possibility of

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[57]Debt repudiation was part of President Rafael Correa's 2006 presidential platform. The global financial crisis of 2008 further contributed to the increase in the panic among the investors and to the success of the buyback.

endogeneity, while the F-test confirms that the instruments are jointly significantly different from zero at the 1% level.

6.1.2   The effect of different voting thresholds on the spread

In this section, I analyze the effect of different voting thresholds on the spread at issuance. In order to address any potential endogeneity issue, I replace the actual voting thresholds with the predicted values from the ordered logistic regression and I perform two main types of analyses. I start by considering a specification that allows the coefficients on voting thresholds to vary by creditworthiness but constrains all the other coefficients to be equal across groups (the restricted specification). Next, I use a general specification that allows all coefficients to differ by credit quality. Although the first analysis is more restrictive, it provides more statistical power to the estimates given the relatively small number of bonds in different credit rating categories (the unrestricted specification).

I group the credit ratings of the bonds into six main categories: AAA (prime), AA (high grade), A (upper medium grade), BBB (lower medium grade), BB (non-investment grade speculative) and B and lower (highly and extremely speculative). I also consider two broader categories of ratings: "Investment grade bonds" (bonds with credit ratings of BBB or higher), and "Non-investment grade bonds" (bonds with credit ratings of BB and lower). In the baseline specification, I restrict the coefficients on all variables except for those on the credit ratings to be equal across credit ratings groups. In addition to the voting requirements and issuer-specific variables (i.e, credit ratings in this part), unless otherwise specified, I control for other contractual clauses ($FAA/Trust$, $VoteExc$, $Committee$, $SuperCAC$, $Sharing$, $Accel$ and Acc/Rev), the governing law ($English$, $NewYork$, $Germany$, and $Japan$), issue-specific variables ($Programme/Shelf$, $Amount$, $Maturity$, $NumberBanks$, and $Exchange$), and global conditions (TED, VIX, and $TNote10y$). A detailed description of each variable can be found in the previous section. In addition, all regressions include year fixed effects to control for unobservable characteristics that affect all bonds issued within the same year.

For comparison, I also provide the estimates from the same regressions without correcting for endogeneity. In these regressions, the variable of interest $Vote$ identifies the minimum voting threshold (at the second and any subsequent meetings) required to change the financial terms of the bonds. Theoretically, this is the minimum percentage of bondholders who can approve new terms and make these terms bind for all other bondholders.

Table 6 presents the results of the baseline specification with controlling for other clauses (columns (1) and (3)) and without correcting for endogeneity (columns (2) and (4)). Here, the variable of interest, $Vote$, represents the average effect of voting requirements for all the sovereigns. If other clauses are not included, the average effect is positive and significant with and without correcting for endogeneity. For example, in column (1), the coefficient on $Vote$ is 1.723. This means that a decrease in the voting threshold from 75% to 50% lowers the spread at issuance by around 43 basis points. However, once I control for other clauses, the average effect is not significant in the regression that corrects for endogeneity.

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It is also worth noting the impact of other variables included in the estimation. Most coefficients on the variables related to issuer characteristics are significant and have the expected signs. If the issue is part of a shelf offering or a debt programme, the spread at launch is significantly lower. This is to be expected since the issuer can access bond markets much faster if conditions are good and does not need to go through a lengthy registration process several times. The larger the number of banks involved in underwriting the bonds, the lower the spread at issuance. With more banks involved in the issue, the clientele base increases as does the liquidity. Also, the coefficient on the volatility index (VIX) is significant. Even though all the regressions include year fixed effects, the coefficients on the global conditions variables can still be significant, since these can vary significantly within a year. However, the interpretation of these coefficients is different, since they now measure the deviations from the yearly mean value. Next, I consider various specifications of the baseline (restricted) specification. In what follows, I will mainly focus on the results from this estimation (i.e, the one correcting for endogeneity).

First, I allow for the coefficients on the voting thresholds to vary with the credit ratings of the sovereigns. In order to achieve this, I interact the voting thresholds with the credit rating of issuers. The results are presented in Table 7. The results suggest that on average, lower-rated borrowers, such as sovereigns rated B and BB, are the ones that benefit from lower voting thresholds. However, once I control for other contractual clauses the coefficient on the interaction term between B and $Vote$ is not significant any more. Interestingly, the coefficients on the interaction terms between the minimum voting requirement and highly rated issuers (such as AA and AAA) are positive and significant when not controlling for endogeneity. This is surprising, since one does not expect voting thresholds to have a significant effect on spreads at issuance for these sovereigns.

Some policymakers and researchers argue that the 2003 bond issue by Mexico, governed by New York law and using less-than-unanimity voting requirements, represents a pivotal change in how markets perceive the inclusion of majority restructuring clauses in sovereign bond contracts. I explore this hypothesis by looking at the effect of minimum voting requirements on spread pre- and post-2003. I conduct two sets of regressions. In the first set of regressions, which allows me to use the entire subsample from 1995 to 2013, I use a triple interaction term between the voting threshold, the credit rating of the sovereign, and a dummy that takes a value of 1 after 2003. Table 8 reports the results. The coefficients on the triple interaction terms for issuers rated B and BB are positive and significant (at the 10% level), suggesting that these issuers benefited incrementally more from using lower voting thresholds after 2003. Table 9 shows the results from a less restrictive specification, in which I estimate the double interaction terms on two separate subsamples (pre- and post-20003). Here, only the coefficient on the interaction term between the voting requirement and the BB-rated issuer is positive and significant.

Finally, I run separate regressions using the double interaction terms, first using only bonds governed by English law, and then by New York law (Table 10). For bonds governed by the English law, I do not find a positive and significant effect of voting requirements for B-rated

issuers, whereas for bonds governed by New York law, the only significant (and positive) effect is for BB-rated issuers.

Next, I consider a less restrictive specification that allows for different coefficients on all the explanatory variables for bonds within the same credit ratings category. Although more attractive from a theoretical point of view, these specifications greatly reduce the number of observations used in each regression. Similar to the first set of regressions, unless specified, I control for other contractual clauses, issue specific variables and global conditions. In addition, I also control for issuer specific variables, since countries within a given credit rating category can still differ economically and politically. I use the $Corruption$, CE/TE, and $DebtToGDP$ (to capture fiscal capacity).

In the baseline unrestricted specification, I only use two broad credit rating categories, "investment grade" and "non-investment grade" bonds, in order to take advantage of as many observations as possible. The results are summarized in Table 11. As expected, non-investment grade issuers seem to benefit from using lower voting thresholds requirements, both with and without including controls for other contractual clauses, whereas there is no significant effect for investment grade issuers. The coefficients on $Corruption$ and the ratio of commodity exports to total exports, CE/TE, are statistically significant. The spread at issuance is significantly lower for less corrupt countries for both credit rating categories; however, the effect on spreads is relatively larger for non-investment grade issuers. Furthermore, everything else equal, countries with higher dependency on commodity exports have higher spreads at issuance. The analysis suggests that, even though investors are willing to offer lower voting thresholds to countries that are more likely to become unable to pay, they require a higher spread at issuance for the same countries. For countries whose bonds are rated "non-investment grade", the ratio of $DebtToGDP$ is statistically significant and positive, i.e higher $DebtToGDP$ increases the spread at issuance.

Table 12 reports the results from running separate regressions for non-investment (columns (1) and (2)) and investment (columns (3) and (4)) grade bonds using pre- and post-2003 data. I find that lower voting thresholds have a significant impact on spreads in the regression using the non-investment grade bonds issued after 2003. As expected, the inclusion of MRC does not have a significant impact on the spreads on investment grade bonds. Next, I refine the credit rating categories, which further reduces the number of bonds in each sample. Table 13 reports the estimated coefficients on basic measure of fiscal B, BB and BBB-rated bonds for the entire sample period, as well as for the pre- and post-2003 subsamples.[58] For the entire sample and the post-2003 period only the coefficient on voting requirements is significant only for the BB-rated issuers. Interestingly, for the pre-2003 period, the coefficient on $Vote$ is significant only for the BBB-rated issuers.

Finally, I consider four more subsamples of bonds. Table 14 summarizes the results. Columns (1) and (3) report the results for bonds governed by English and New York law

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[58]Similarly I ran regressions for A, AA and AAA credit rating categories but none of the coefficients were significant.

respectively, whereas columns (2) and (4) report the results for bonds governed by the same laws but issued by developing countries. The average effect is positive and significant for bonds issued by developing countries under both laws.

The analyses in this section suggest that, on average, there are gains (in terms of lower spreads at issuance) from using lower voting thresholds. In general, sovereigns issuing "non-investment grade" bonds seem to benefit the most. A further refinement of the credit rating categories reveals that issuers rated BB (or "non-investment grade" speculative) benefit in most of the specifications considered (with the exception of some of the pre-2003 samples). The spreads of the bonds issued by highly rated sovereigns (A and above) seem to be unaffected by different voting requirements. In few sub-samples, the coefficient on $Vote$ is positive and statistically significant for bonds issued by sovereigns rate B and BBB.

7   Conclusion

The 2012 Greek restructuring and its handling of holdout creditors, along with the ruling in US courts against Argentina's appeal requiring it to pay holdout hedge funds, have reignited the debate over the importance and the design of collective action clauses. As a result, the European Stability Mechanism Treaty requires all new Euro-area government securities with maturity above one year issued on or after January 1, 2013, to include standardized and identical collective action clauses provisions. Recent reports by the International Monetary Fund and the International Capital Market Association suggest the need for further contractual reforms. Given the renewed interest, it is important to understand how future possible changes in such provisions will be received by market participants . In this paper, I try to add to the debate by analyzing the impact of past modifications of such clauses on the cost of borrowing for sovereigns.

Using a comprehensive dataset of variables on various collective action clauses typically contained in bond contracts, I first evaluate investors' willingness to pay in exchange for additional covenant protection by looking at the interest rate spread at launch. I contribute to the existing empirical literature on collective action clauses in several ways. First, I show that countries that are perceived to have less corrupt public sectors (as measured by a corruption index), and countries more exposed to exogenous shocks, such as those with higher commodity exports to total exports ratios, are more likely to have lower voting thresholds.

Second, after addressing endogeneity issues, I find that the effect of including different voting thresholds in bond contracts on spreads at issuance is not uniform across credit rating categories. The analysis in this study suggests that, ceteris paribus, issuers whose bonds are classified as "non-investment" grade enjoy lower spreads at issuance when the bond contract includes majority restructuring clauses that allow for lower voting thresholds. However, a further refinement of the credit rating categories shows that BB-rated sovereigns (i.e. the most creditworthy issuers among all of the "non-investment" grade bonds issuers) are the ones that benefit. Finally, in some specifications I find a positive and significant effect of voting

requirements on spreads for B and BB-rated issuers after 2003. The result is interesting since many observers argue that market participants warmed up to the use of collective action clauses in bond contracts after 2003.

From a policy perspective, the results suggest that market participants favor these contractual changes and that the current push for further contractual reforms will likely be beneficial. However, even though it may be beneficial to standardize the types of collective action clauses included in bond contracts, it is not clear that a standardization of voting thresholds will be equally beneficial to all sovereigns. Finally, other contractual features beside majority restructuring clauses, such as aggregation clauses or trustee agreements are likely to greatly improve the coordination of bondholders during a restructuring.

References

Bao, J., J. Pan, and J. Wang (2011). The illiquidity of corporate bonds. *The Journal of Finance, 66(3), 911-946*.

Bardozzetti, A. and D. Dottori (2013). Collective action clauses: How do they affect sovereign bond yields? *Journal of International Economics, 92(2), 286–303*.

Barkbu, B., B. Eichengreen, and A. Mody (2011). International financial crises and the multilateral response: What the historical record shows. *NBER, Working Paper No. 17361*.

Becker, T., A. Richards, and Y. Thaicharoen (2003). Bond restructuring and moral hazard: Are collective action clauses costly? *Journal of International Economics, 61(1), 127–161*.

Bi, R., M. Chamon, and J. Zettelmeyer (2011). The problem that Wasn't: Coordination failures in sovereign debt restructurings. *IMF, Working Paper No. 11-265*.

Bordo, M., B. Eichengreen, and J. Kim (1998). Was there really an earlier period of international financial integration comparable to today? *NBER, Working Paper No. 6738*.

Bordo, M., B. Eichengreen, D. Klingebiel, and M. S. Martinez-Peria (2001). Is the crisis problem growing more severe. *Economic Policy, 16(32), 51–82*.

Bradley, M. and M. Gulati (2013). Collective action clauses for the eurozone. *Review of Finance, 18(6), 1-58*.

Buchheit, L., M. Gulati, and A. Mody (2002). Sovereign bonds and the collective will. *Emory Law Journal*.

Csonto, B. and I. Ivaschenko (2013). Determinants of sovereign bond spreads in emerging markets: Local fundamentals and global factors vs. ever-changing misalignments. *IMF, Working Paper No. 164*.

Das, U., M. Papaioannou, and C. Trebesch (2012). Sovereign debt restructurings 1950-2010: Literature survey, data, and stylized facts. *IMF, Working Paper No. 12*.

Della Paolera, G. and A. Taylor (2012). Sovereign debt in Latin America, 1820-1913. *NBER, Working Paper No. 18363*.

Dooley, M. (2000). Can output losses following international financial crises be avoided? *NBER, Working Paper No. 7531*.

Edwards, A. K., L. E. Harris, and M. S. Piwowar (2007). Corporate bond market transaction costs and transparency. *The Journal of Finance, 62(3), 1421-1451*.

Eichengreen, B. (2003). Restructuring sovereign debt. *Journal of Economic Perspectives, 17(4), 75–98*.

Eichengreen, B., K. Kletzer, and A. Mody (2003). Crisis resolution: Next steps. *NBER, Working Papers No. 10095*.

Eichengreen, B. and A. Mody (1998). What explains changing spreads on emerging market debt: Fundamentals or market sentiment. *NBER, Working Paper No. 6408*.

Eichengreen, B. and A. Mody (2004). Do collective action clauses raise borrowing costs? *The Economic Journal, 113(495), 247–264*.

Eichengreen, B. and R. Portes (1990). Dealing with debt: The 1930s and the 1980s. *NBER, Working Papers No. 2867*.

Feis, H. (1930). Europe the world's banker 1870-1914 - an account of european foreign investment and the connection of world finance with diplomacy before the war. *Yale University Press; Oxford University Press*.

Fishlow, A. (1985). Lessons from the past: Capital markets during the 19th century and the interwar period. *International Organization, 39(03), 383–439*.

Gruson, M. and R. Reisner (1984). Sovereign lending: Managing legal risk. *Euromoney Publication*.

Gugiatti, M. and A. Richards (2003). Do collective action clauses influence bond yields? New evidence from emerging markets. *International Finance, 6(4), 415–447*.

Gulati, M. and M. D. Weidenmier (2014). A people's history of collective action clauses. *Virginia Journal of International Law, 54, 1–95*.

Haldane, A., A. Penalver, V. Saporta, and H. S. Shin (2004). Optimal collective action clause thresholds. *Bank of England, Working Paper No. 249*.

Haldane, A. G., A. Penalver, V. Saporta, and H. S. Shin (2005). Analytics of sovereign debt restructuring. *Journal of International Economics, 65(2), 315-333*.

Haseler, S. (2012). Individual versus collective enforcement rights in sovereign bonds. *MPRA Paper No. 40908*.

Hatchondo, J. C., L. Martinez, and H. Sapriza (2007). The economics of sovereign defaults. *Economic Quaterly, Volume 93(2), 163–187*.

Heckman, J. (1979). Sample selection bias as a specification error. *Econometrica, 47, 153-61*.

Hilscher, J. and Y. Nosbusch (2010). Determinants of sovereign risk: Macroeconomic fundamentals and the pricing of sovereign debt. *Review of Finance, 14(2), 235–262*.

Jochen, A. (2006). Sovereign default, risk valuation: Implications of debt crises and bond restructurings. *in Lecture Notes in Economics and Mathematical Systems, Springer Publishing*.

Kletzer, K. (2004). Sovereign bond restructuring: Collective action clauses and official crisis intervention. *in Andrew Haldane (ed.) Fixing Financial Crises in the 21st Century, London: Routledge, 230–253*.

Levy-Yeyati, E. Debt buybacks and backdoor restructurings: Can Greece pull an Ecuador?

Lindert, P. and P. Morton (1988). How sovereign debt has worked. *Developing Country Debt and Economic Performance, Volume 1: The International Financial System, University of Chicago Press*.

Lindley, D. and A. Lefever (2013). Governing law in sovereign debt lessons from the Greek crisis and Argentina dispute of 2012. *Committee on Foreign and Comparative Law, New York City Bar Association*.

Liu, Y. (2002). Collective action clauses in international sovereign bonds. *IMF, Working Paper*.

Mauro, P., N. Sussman, and Y. Yafeh (2002). Emerging market spreads: Then versus now.

Mitchener, K. J. and M. D. Weidenmier (2010). Supersanctions and sovereign debt repayment. *Journal of International Money and Finance, 29(1), 19–36*.

O'Malley, C. (2014). Bonds without borders: A history of the eurobond market. *Wiley Finance Series*.

Panizza, U., F. Sturzenegger, and J. Zettelmeyer (2009). The economics and law of sovereign debt and default. *Journal of Economic Literature, Volume 47(3), 651–698*.

Pitchford, R. and M. Wright (2008). Restructuring the sovereign debt restructuring mechanism. *UCLA, Working Paper*.

Pitchford, R. and M. Wright (2012). Holdouts in sovereign debt restructuring: A theory of negotiation in a weak contractual environment. *Review of Economic Studies, Volume 79, Number 2, 812-837*.

Reinhart, C. and K. Rogoff (2011). The forgotten history of domestic debt. *The Economic Journal, 121(552), 319-350*.

Rogoff, K. and J. Zettelmeyer (2002). Bankruptcy procedures for sovereigns: A history of ideas, 1976-2001. *IMF, Working Paper, 43(3)*.

Roubini, N. and B. Setser (2004). Bailouts or bail-ins? Responding to financial crises in emerging economies. *Institute for International Economics*.

Shleifer, A. (2003). Will the sovereign debt market survive? *American Economic Review, 93(2), 85–90*.

Tsatsaronis, K. (1999). The effect of collective action clauses on sovereign bond yields. *BIS Quarterly Review: International Banking and Financial Market Developments*.

Weidenmier, M. D. (2014). Sovereign immunity and sovereign debt. *The University of Illinois Law Review*.

Wood, P. (2007). Conflict of laws and international finance. *The Law and Practice of International Finance*.

Wright, M. (2011). Sovereign debt restructuring: Problems and prospects. *UCLA, Working Paper*.

Xafa, M. (2014). Sovereign debt management crisis: Lessons from the 2012 Greek debt restructuring. *CIGI Paper No. 33*.

Zettelmeyer, J., C. Trebesch, and M. Gulati (2013). The Greek debt restructuring: An autopsy. *Peterson Institute for International Economics, Working Paper No. 2013-13-8*.

Table 1: General sample characteristics

Panel A: General characteristics

Time frame	1990-2013
Number of sovereigns	89
Number of bonds	1395
Number of currencies	35
Number of governing laws	4
Developing countries	882

Panel B: Other bond characteristics

	Obs	Mean	Std Dev	Min	Max
Maturity	1,395	9.43	7.89	0.9	100.1
Price	1,395	99.43	4.57	24.4	140
Lead and co-lead mangers	1,395	9.34	8.96	1	49
Amount - first tranche (USD)	1,395	892.10	1012.80	0.11	10,000
Programme/shelf registration	1,395	0.55	0.50	0	1

Table 2: Governing laws

Panel A: Trustee versus Fiscal Agency Agreements

Law	FAA	Trustee	Total
England	559	116	675
New York	539	60	599
Germany	51	61	112
Japan	0	9	9
Total	1,149	246	1,395

Panel B: Issues by currency and governing laws

Currency/Law	England	New York	Germany	Japan	Total
USD	258	516	0	0	774
EURO	178	40	22	0	240
DM	11	2	90	0	103
JPY	59	11	0	9	79
Other	169	30	0	0	199
Total	675	599	112	9	1,395

Table 3: Majority enforcement clauses

Panel A: Initiation of acceleration

Law	Individual	Collective	Both	Total
England	380	237	58	675
New York	131	315	153	599
Germany	98	2	12	112
Japan	0	9	0	9
Total	609	563	223	1,395

Panel B: Acceleration requirement if collective

Law	10%	15%	20%	25%	50%	66%	Total
England	18	10	3	262	1	0	294
New York	43	0	7	417	0	1	468
Germany	8	4	0	2	0	0	14
Japan	0	0	0	0	9	0	9
Total	69	14	10	681	10	1	785

Panel C: Acceleration and reverse acceleration

ACC/Reverse	England	New York	Germany	Japan	Total
No	458	214	112	9	793
Yes	217	385	0	0	602
Total	675	599	112	9	1,395

Panel D: Acceleration, reverse acceleration, and CAC

Acc/Rev	UAC	CAC	Total
No	276	517	793
Yes	116	486	602
Total	392	1,003	1,395

Table 4: Summary statistics for various contractual clauses

Panel A reports the frequency of clauses for the full sample and subsamples. Panel B reports the conditional frequency of the various contractual clauses. The conditioning clause is reported in the first column. Panel C provides the correlation matrix between contractual clauses.

Panel A: The frequency of contractual clauses

	MRC	Written	VoteExc	Committee	SuperCAC	Accel	Acc/Rev	Sharing	FAA/Trust
Full sample	0.72	0.36	0.55	0.10	0.03	0.56	0.43	0.09	0.18
English law	0.99	0.40	0.67	0.19	0.02	0.44	0.32	0.18	0.17
New York law	0.54	0.39	0.52	0.03	0.04	0.78	0.64	0.00	0.10
German law	0.00	0.00	0.00	0.00	0.00	0.13	0.00	0.00	0.54
Japanese law	1.00	0.89	0.22	0.00	0.00	1.00	0.00	1.00	1.00
Developing	0.65	0.40	0.60	0.11	0.04	0.77	0.59	0.07	0.17
Developed	0.84	0.29	0.47	0.10	0.01	0.21	0.17	0.13	0.23
Exchange	0.68	0.45	0.66	0.00	0.19	0.90	0.77	0.01	0.23
Inv grade	0.86	0.86	0.86	0.00	0.14	1.00	1.00	0.00	0.14
Non-inv grade	0.67	0.41	0.64	0.00	0.20	0.89	0.74	0.02	0.24

Panel B: Conditional frequency of contractual clauses

	MRC	Written	VoteExc	Committee	SuperCAC	Accel	Acc/Rev	Sharing	FAA/Trust
MRC		0.51	0.76	0.15	0.04	0.58	0.48	0.12	0.17
Written	1.00		0.94	0.27	0.06	0.88	0.78	0.16	0.24
VotExc	1.00	0.62		0.18	0.04	0.70	0.60	0.15	0.21
Committee	1.00	0.95	0.95		0.05	0.99	0.97	0.00	0.00
SuperCAC	1.00	0.87	0.89	0.18		1.00	1.00	0.00	0.58
Accel	0.74	0.57	0.69	0.18	0.05		0.77	0.10	0.18
Acc/Rev	0.81	0.65	0.77	0.23	0.06	1.00		0.06	0.16
Sharing	1.00	0.65	0.91	0.00	0.00	0.62	0.30		1.00
FAA/Trust	0.70	0.50	0.65	0.00	0.09	0.59	0.39	0.51	

Panel C: Correlation between contractual clauses

	MRC	Written	VoteExc	Committee	SuperCAC	Accel	Acc/Rev	Sharing	FAA/Trust
CAC	1								
Written	0.47*	1							
VoteExc	0.68*	0.58*	1						
Committee	0.21*	0.41*	0.27*	1					
SuperCAC	0.10*	0.17*	0.11*	0.04	1				
Accel	0.05	0.48*	0.31*	0.29*	0.15*	1			
Acc/Rev	0.17*	0.53*	0.38*	0.37*	0.19*	0.77*	1		
Sharing	0.20*	0.19*	0.23*	−0.11*	−0.05	0.04	−0.09*	1	
FAA/Trust	−0.02	0.13*	0.10*	−0.16*	0.18*	0.02	−0.04	0.68*	1

Table 5: Choice of voting threshold

The table reports the coefficient estimates for the ordered logistic regression. The outcome variable is *Vote* as defined in the paper. The coefficients are in terms of log-odds. Standard errors are reported in parentheses. Significance levels are denoted by *, **, ***, which correspond to 10%, 5%, and 1% level, respectively.

	Vote
Corruption	−0.115***
	(0.043)
Commodity Exports/Total Exports	−0.007**
	(0.003)
FAA/Trustee	2.656***
	(0.309)
Committee	0.655**
	(0.275)
Vote exclusion	−3.471***
	(0.241)
Super CAC	−1.426***
	(0.467)
Acceleration	0.745***
	(0.252)
Acceleration/Reverse	−0.162
	(0.244)
Sharing	−3.022***
	(0.372)
Book runner nationality	
US	−0.475**
	(0.188)
UK	−0.525***
	(0.195)
Swiss	−0.213
	(0.173)
Germany	0.039
	(0.178)
France	−1.011***
	(0.251)
Other	−0.306**
	(0.231)
Year fixed effects	YES
Observations	923
Log likelihood	-701.7
Df	33
LR chi2	447.9
Pseudo R2	0.242

Table 6: Baseline restricted regressions

The table reports the coefficient estimates for the baseline restricted regressions. The dependent variable is the spread at issuance. In columns (1) and (3) the variable $Vote$ is the predicted voting threshold from the ordered logistic regression. In columns (2) and (4) the variable vote is the actual minimum voting threshold. The omitted credit rating category is BBB, while the omitted governing law is $English$. The sample period is 1995 to 2013. Standard errors are reported in parentheses. Significance levels are denoted by *, **, ***, which correspond to 10%, 5%, and 1% level, respectively.

	(1)	(2)	(3)	(4)
Vote	1.723***	1.339***	0.878	0.885***
	(0.512)	(0.250)	(1.881)	(0.262)
B	307.689***	305.564***	326.081***	325.378***
	(14.784)	(14.453)	(15.020)	(15.123)
BB	192.283***	194.589***	181.474***	186.420***
	(12.917)	(12.722)	(12.732)	(12.828)
A	−44.332***	−43.505***	−45.364***	−45.057***
	(15.243)	(14.842)	(15.223)	(14.745)
AA	−99.676***	−109.498***	−65.515***	−71.770***
	(20.954)	(19.689)	(21.897)	(20.580)
AAA	−132.265***	−166.099***	−138.452***	−156.061***
	(15.080)	(15.491)	(17.608)	(17.846)
FAA/Trustee			−61.000	−46.756**
			(41.097)	(22.985)
Committee			32.762	16.019
			(21.375)	(19.884)
Vote exclusion			−40.855	−49.166***
			(43.048)	(12.264)
Super CAC			23.347	20.692
			(31.616)	(25.485)
Acceleration			10.076	7.366
			(16.813)	(14.507)
Accel/Reverse			48.853***	52.495***
			(14.583)	(14.248)
Sharing			12.885***	10.169***
			(4.737)	(2.817)
New York	−15.438	−47.741***	4.575	−30.327*
	(13.084)	(14.786)	(14.149)	(16.713)
German	−9.769	−62.444***	55.312**	4.593
	(18.901)	(22.942)	(22.106)	(26.401)
Japan	25.401	−23.025	−1.952	−13.865
	(27.651)	(26.267)	(31.387)	(30.893)
Programme/Shelf	−18.635*	−21.240**	−28.065**	−26.715**
	(10.882)	(10.673)	(11.014)	(11.006)
Maturity	0.634	0.729	0.713	0.694
	(0.521)	(0.502)	(0.510)	(0.499)
Number Banks	−2.614***	−2.318***	−2.399***	−2.119***
	(0.795)	(0.804)	(0.771)	(0.781)
Exchange	20.352	23.052	15.856	16.886
	(20.990)	(20.986)	(20.262)	(20.181)
TED	0.500*	0.479*	0.413	0.384
	(0.261)	(0.255)	(0.257)	(0.255)
VIX	3.677***	3.923***	3.879***	4.113***
	(1.335)	(1.322)	(1.330)	(1.319)
TNote10y	−0.053	−0.032	−0.075	−0.079
	(0.125)	(0.124)	(0.122)	(0.120)
Year fixed effects	YES	YES	YES	YES
Observations	923	923	923	923
R-squared	0.657	0.663	0.678	0.681

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Table 7: Restricted regressions – credit rating interaction term

The table reports the coefficient estimates for the regressions containing an interaction term between the rating of the sovereign and the minimum voting threshold. The dependent variable is the spread at issuance. The regressions reported in columns (1) and (2) do not control for other contractual clauses, whereas the regressions reported in columns (3) and (4) control for these clauses. In columns (1) and (3) the variable $Vote$ is the predicted voting threshold from the ordered logistic regression. In columns (2) and (4) the variable vote is the actual minimum voting threshold. A positive and significant coefficient suggests that, ceteris paribus, a lower voting threshold (for that credit rating category) results in a lower spread at issuance. The sample period is 1995 to 2013. Standard errors are reported in parentheses. Significance levels are denoted by *, **, ***, which correspond to 10%, 5%, and 1% level, respectively.

	(1)	(2)	(3)	(4)
B x Vote	3.406***	1.438**	2.758	0.554
	(1.104)	(0.659)	(2.287)	(0.668)
BB x Vote	3.226***	1.092***	4.245**	0.859**
	(0.837)	(0.327)	(2.004)	(0.353)
BBB x Vote	−0.109	1.713***	−0.857	0.929*
	(1.039)	(0.459)	(2.174)	(0.488)
A x Vote	−1.503	1.287**	−2.519	0.232
	(1.170)	(0.561)	(2.163)	(0.577)
AA x Vote	1.580	2.005***	0.336	1.419***
	(1.137)	(0.517)	(1.960)	(0.537)
AAA x Vote	−0.135	1.183**	2.295	1.158**
	(1.038)	(0.484)	(2.051)	(0.558)
Other clauses [a]	NO	NO	YES	YES
Issue-specific variables [b]	YES	YES	YES	YES
Global conditions variables [c]	YES	YES	YES	YES
Year fixed effects	YES	YES	YES	YES
Observations	923	923	923	923
R-squared	0.663	0.664	0.688	0.682

[a] Other contractual clauses: FAA/Trustee, Committee, Vote exclusion, Super CAC, Acceleration, Accel/Reverse, Sharing.
[b] Issue-specific variables: Programme/Shelf, Maturity, Number Banks, Exchange, Law.
[c] Global conditions variables: TED, VIX, TNote10y.

Table 8: Restricted regressions – triple interaction term

The table reports the coefficient estimates for the regressions containing a triple interaction term between the rating of the sovereign, the minimum voting threshold, and a dummy variable that takes the value of 1 after 2003. The dependent variable is the spread at issuance. The variable $Vote$ is the predicted voting threshold computed from ordered logistic regression. Everything else constant, a positive and significant coefficient suggests that a lower voting threshold (for that credit rating category) has a relatively greater negative effect on the spread at issuance after 2003 than before 2003. The sample period is 1995 to 2013. Standard errors are reported in parentheses. Significance levels are denoted by *, **, ***, which correspond to 10%, 5%, and 1% level, respectively.

	(1)	(2)
B x Vote x Dummy 2003	3.719***	3.228*
	(1.299)	(1.972)
BB x Vote x Dummy 2003	1.004	2.915*
	(0.725)	(1.705)
BBB x Vote x Dummy 2003	2.059	1.734
	(1.256)	(2.405)
A x Vote x Dummy 2003	1.892*	0.892
	(1.001)	(2.149)
AA x Vote x Dummy 2003	0.626	0.220
	(1.031)	(1.906)
AAA x Vote X Dummy 2003	1.490	3.072
	(1.185)	(2.376)
Other clauses [a]	NO	YES
Issue-specific variables [b]	YES	YES
Global conditions variables[c]	YES	YES
Year fixed effects	YES	YES
Observations	923	923
R-squared	0.679	0.693

[a] Other contractual clauses: FAA/Trustee, Committee, Vote exclusion, Super CAC, Acceleration, Accel/Reverse, Sharing.
[b] Issue-specific variables: Programme/Shelf, Maturity, Number Banks, Exchange, Law.
[c] Global conditions variables: TED, VIX, TNote10y.

Table 9: Restricted regressions – double interaction term, pre- and post-2003

The table reports the coefficient estimates for the regressions containing an interaction term between the rating of the sovereign and the minimum voting threshold for two subsamples: pre-2003 and post-2003. The dependent variable is the spread at issuance. The variable $Vote$ is the predicted voting threshold from the ordered logistic regression. Standard errors are reported in parentheses. Significance levels are denoted by *, **, ***, which correspond to 10%, 5%, and 1% level, respectively.

	Pre-2003 subsample	Post-2003 subsample
Vote x B	-2.682	3.996
	(3.371)	(2.989)
Vote x BB	-3.414	9.217***
	(3.181)	(2.971)
Vote x BBB	-2.362	-3.521
	(3.404)	(2.925)
Vote x A	-3.919	-1.739
	(3.373)	(2.732)
Vote x AA	-3.682	9.059
	(2.746)	(6.382)
Vote x AAA	-2.700	3.342
	(3.353)	(2.979)
Other clauses [a]	YES	YES
Issue-specific variables [b]	YES	YES
Global conditions variables[c]	YES	YES
Year fixed effects	YES	YES
Observations	437	486
R-squared	0.772	0.644

[a] Other contractual clauses: FAA/Trustee, Committee, Vote exclusion, Super CAC, Acceleration, Accel/Reverse, Sharing.
[b] Issue-specific variables: Programme/Shelf, Maturity, Number Banks, Exchange, Law.
[c] Global conditions variables: TED, VIX, TNote10y.

Table 10: Restricted regressions – double interaction term, English versus New York law bonds

The table reports the coefficient estimates for the regressions containing an interaction term between the rating of the sovereign and the minimum voting threshold for two subsamples: bonds governed by English and New York laws. The dependent variable is the spread at issuance. The variable *Vote* is the predicted voting threshold from the ordered logistic regression. Standard errors are reported in parentheses. Significance levels are denoted by *, **, ***, which correspond to 10%, 5%, and 1% level, respectively.

	English Law Bonds	New York Law Bonds
Vote x B	5.999*	6.679*
	(3.163)	(3.525)
Vote x BB	0.181	8.080**
	(2.790)	(3.292)
Vote x BBB	-2.476	3.064
	(2.992)	(3.458)
Vote x A	-3.160	2.943
	(2.339)	(3.629)
Vote x AA	-1.378	-27.045
	(2.797)	(16.638)
Vote x AAA	2.093	
	(2.168)	
Other clauses [a]	YES	YES
Issue-specific variables [b]	YES	YES
Global conditions variables[c]	YES	YES
Year fixed effects	YES	YES
Observations	367	457
R-squared	0.649	0.649

[a] Other contractual clauses: FAA/Trustee, Committee, Vote exclusion, Super CAC, Acceleration, Accel/Reverse, Sharing.
[b] Issue-specific variables: Programme/Shelf, Amount, Maturity, Number Banks, Exchange.
[c] Global conditions variables: TED, VIX, TNote10y.

Table 11: Baseline unrestricted regressions

The table reports the coefficient estimates for the baseline unrestricted regressions. The dependent variable is the spread at issuance. All regressions use the predicted value for the voting threshold. The regressions in columns (1) and (3) use the subsample of non-investment grade bonds. The regressions in columns (2) and (4) use the subsample of investment grade bonds. The omitted credit rating category is BBB, while the omitted governing law is $English$. The sample period is 1995 to 2013. Standard errors are reported in parentheses. Significance level are denoted by *, **, ***, which correspond to 10%, 5%, and 1% levels, respectively.

	(1)	(2)	(3)	(4)
Vote	3.781***	0.807	11.687***	0.182
	(0.923)	(0.535)	(4.056)	(2.490)
New York	−83.872***	29.470**	−93.325***	58.480***
	(25.488)	(14.907)	(30.448)	(17.906)
German	−62.960**	6.948	−96.499***	32.129
	(27.291)	(29.677)	(34.256)	(42.871)
Japan		64.330**		18.699
		(29.700)		(37.133)
Corruption	−45.479***	−21.414***	−53.567***	−22.805***
	(7.886)	(2.936)	(9.470)	(3.258)
CE/TE	2.310***	0.736**	2.251***	1.036***
	(0.286)	(0.292)	(0.395)	(0.357)
Debt-to-GDP	0.526***	0.113	0.523**	0.256
	(0.198)	(0.265)	(0.250)	(0.267)
Other contractual clauses [a]	NO	NO	YES	YES
Global conditions [b]	YES	YES	YES	YES
Issue-specific variables [c]	YES	YES	YES	YES
Year fixed effects	YES	YES	YES	YES
Observations	488	390	488	390
R-squared	0.473	0.507	0.507	0.390

[a] Other contractual clauses: FAA/Trustee, Committee, Vote exclusion, Super CAC, Acceleration, Accel/Reverse, Sharing.
[b] Global conditions variables: TED, VIX, TNote10y.
[c] Issue-specific variables: Programme/Shelf, Maturity, Number Banks, Exchange.

Table 12: Unrestricted baseline regressions – pre- and post-2003

The table reports the coefficient estimates for the baseline unrestricted regressions for the pre- and post-2003 periods. The dependent variable is the spread at issuance. All regressions use the predicted value for the voting threshold. The regressions in columns (1) and (2) use the subsample of non-investment grade bonds pre- and post-2003, whereas the regressions in columns (3) and (4) use the sub-sample of investment grade bonds pre- and post-2003. The omitted governing law is *English*. Standard errors are reported in parentheses. Significance levels are denoted by *, **, ***, which correspond to 10%, 5%, and 1% level, respectively.

	(1)	(2)	(3)	(4)
Vote	1.801	8.609*	1.077	−2.168
	(4.269)	(4.885)	(4.240)	(2.482)
New York	−71.076*	−51.073	65.224***	61.476**
	(41.502)	(48.677)	(22.931)	(23.689)
Germany	−43.434	3.703	29.109	
	(46.883)	(80.665)	(46.357)	
Japan			102.657**	
			(48.960)	
Corruption	−49.432***	−64.034***	−15.358***	−29.650***
	(10.738)	(14.132)	(4.690)	(4.603)
CE/TE	1.257***	3.458***	1.379***	0.332
	(0.482)	(0.591)	(0.391)	(0.561)
Debt-to-GDP	0.696*	0.662*	−0.665*	1.072***
	(0.397)	(0.372)	(0.364)	(0.385)
Other contractual clauses [a]	YES	YES	YES	YES
Issue-specific variables [b]	YES	YES	YES	YES
Global conditions [c]	YES	YES	YES	YES
Year fixed effects	YES	YES	YES	YES
Observations	259	229	174	216
R-squared	0.632	0.592	0.612	0.602

[a] Other contractual clauses: FAA/Trustee, Committee, Vote exclusion, Super CAC, Acceleration, Accel/Reverse, Sharing.

[b] Issue-specific variables: Programme/Shelf, Maturity, Number Banks, Exchange.

[c] Global conditions variables: TED, VIX, TNote10y.

Table 13: **Unrestricted regressions – non-investment grade bonds**

The table reports the coefficient estimates for the unrestricted regressions on three subsets of credit ratings: B, BB and BBB. The dependent variable is the spread at issuance. All regressions use the predicted value for the voting threshold. Panel A provides the estimates for the entire sample period. Panels B and C provide the estimates for the following subsamples pre- and post-2003. Standard errors are reported in parentheses. Significance levels are denoted by *, **, ***, which correspond to 10%, 5%, and 1% level, respectively.

Panel A: Entire sample period

	B	BB	BBB
Vote	1.749	10.751**	−2.981
	(5.222)	(4.681)	(4.816)
Observations	186	302	148
R-squared	0.636	0.573	0.641

Panel B: Sample period: Pre-2003

	B	BB	BBB
Vote	0.781	−0.497	10.760*
	(7.643)	(3.891)	(6.335)
Observations	74	185	76
R-squared	0.811	0.626	0.713

Panel C: Sample period: Post-2003

	B	BB	BBB
Vote	6.584	16.015*	−6.307
	(5.976)	(8.601)	(4.019)
Observations	112	117	72
R-squared	0.701	0.641	0.884
Other contractual clauses [a]	YES	YES	YES
Issue-specific variables [b]	YES	YES	YES
Issuer-specific variables [c]	YES	YES	YES
Global conditions [d]	YES	YES	YES
Year fixed effects	YES	YES	YES

[a] Other contractual clauses: FAA/Trustee, Committee, Vote exclusion, Super CAC, Acceleration, Accel/Reverse, Sharing.
[b] Issue-specific variables: Programme/Shelf, Maturity, Number Banks, Exchange, Law.
[c] Issuer-specific variables: Corruption, CE/TE, Debt-to-GDP.
[d] Global conditions variables: TED, VIX, TNote10y.

Table 14: Unrestricted baseline regressions – various subsamples

The table reports the coefficient estimates for the baseline unrestricted regressions for various subsamples. The dependent variable is the spread at issuance. All regressions use the predicted value for the voting threshold. The regression in column (1) uses the subsample of bonds governed by the English law, while column (2) considers only developing countries for the same subsample. The regression in column (3) uses the subsample of bonds governed by the New York law, while column (4) considers only developing countries for the same subsample. The sample period is 1995 to 2013. Standard errors are reported in parentheses. Significance levels are denoted by *, **, ***, which correspond to 10%, 5%, and 1% level, respectively.

	(1)	(2)	(3)	(4)
Vote	3.181	7.046**	8.697*	12.018***
	(2.644)	(3.520)	(4.796)	(4.033)
Corruption	−41.098***	−82.147***	−60.033***	−67.353***
	(4.452)	(12.170)	(6.851)	(8.954)
CE/TE	3.087***	3.345***	2.317***	2.535***
	(0.424)	(0.498)	(0.408)	(0.407)
Debt-to-GDP	1.286***	1.742***	1.065***	1.114***
	(0.412)	(0.549)	(0.270)	(0.268)
Other contractual clauses [a]	YES	YES	YES	YES
Issue-specific variables [b]	YES	YES	YES	YES
Global conditions [d]	YES	YES	YES	YES
Year fixed effects	YES	YES	YES	YES
Observations	367	207	436	406
R-squared	0.682	0.698	0.530	0.528

[a] Other contractual clauses: FAA/Trustee, Committee, Vote exclusion, Super CAC, Acceleration, Accel/Reverse, Sharing.
[b] Issue-specific variables: Programme/Shelf, Maturity, Number Banks, Exchange, Law.
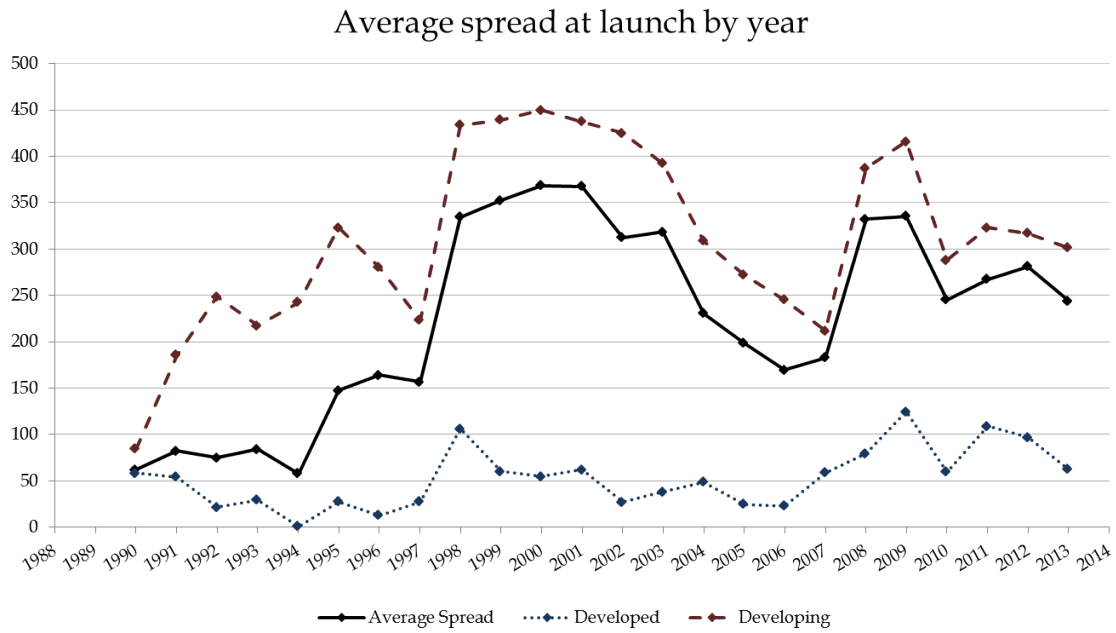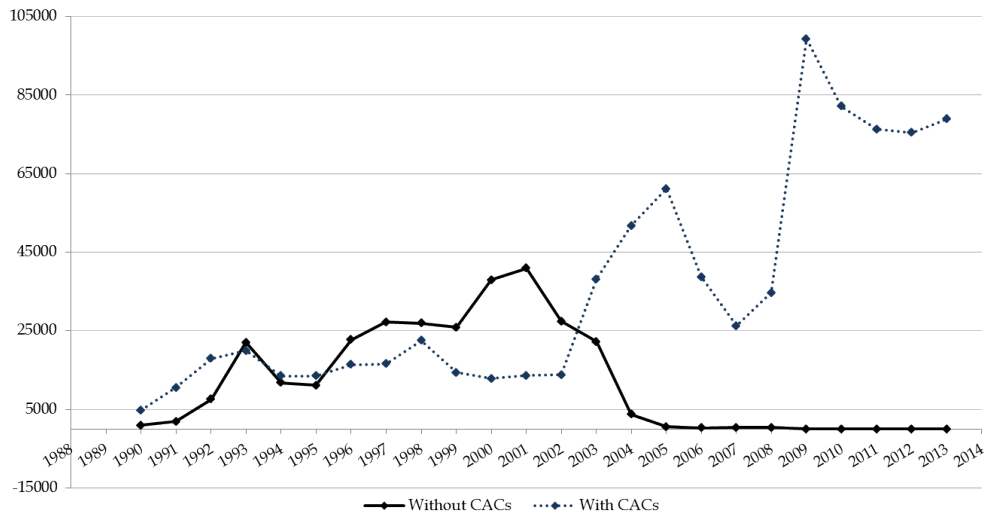[c] Global conditions variables: TED, VIX, TNote10y.

Figure 1: Interest spreads at launch The figure shows the average interest rate spread at issuance by year for the entire sample. It also provides the average spreads for two subsamples: developing and developed countries.

Panel A: Issuance volume by year

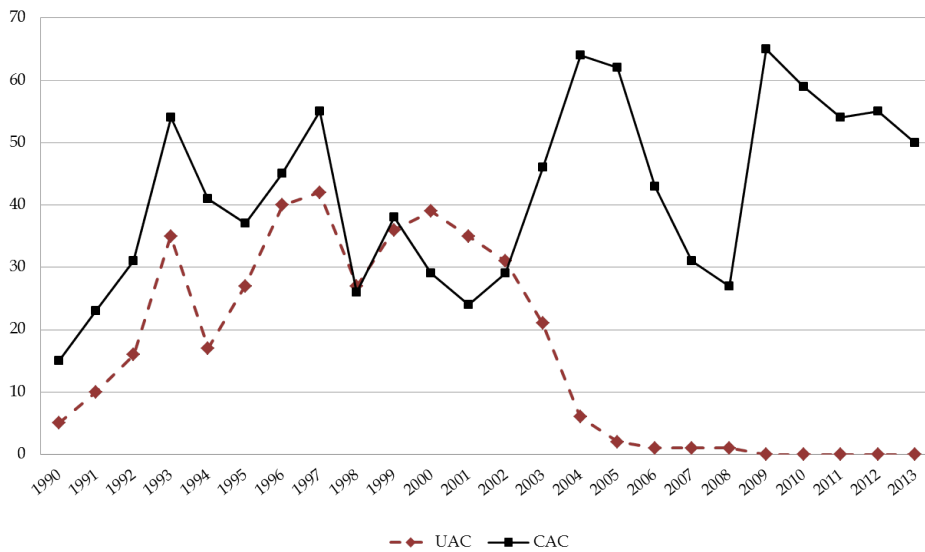**Panel B: Unanimity versus majority requirement clauses by year**

Figure 2: Bond issuance by year: collective action clauses versus unanimity action clauses Panel A depicts the volume of bonds of bonds issued with and without CAC for the sample period (in millions of dollars). Panel B depicts the number of bonds issued with and without CAC by year.
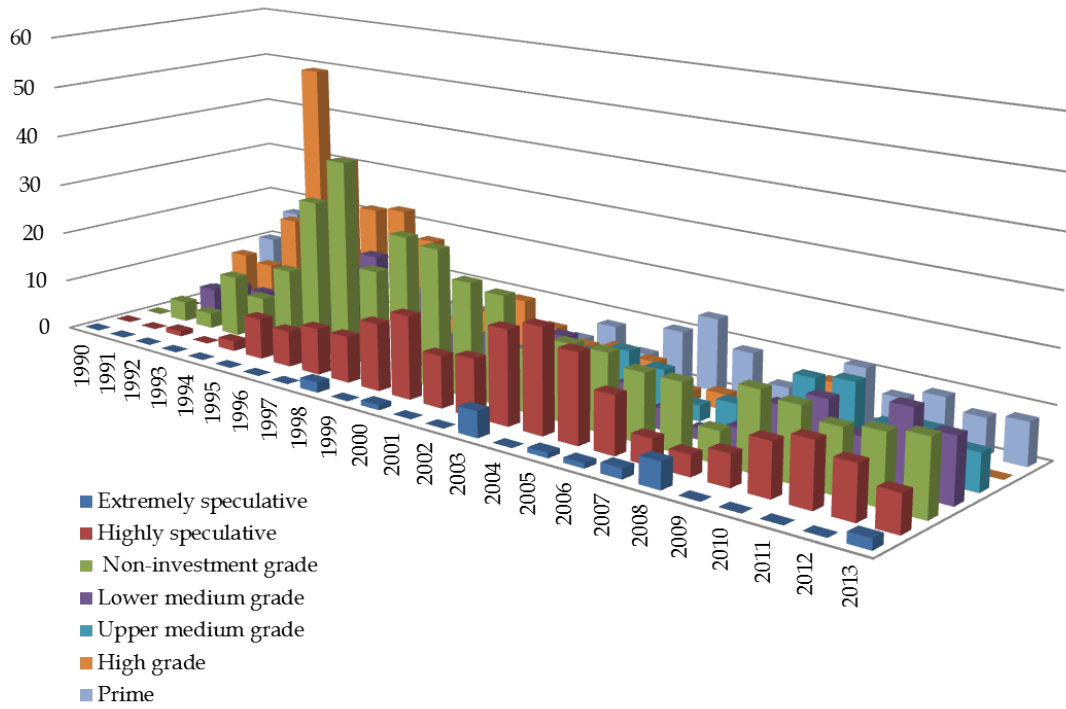
Figure 3: Credit ratings by year This figure depicts the number of bonds with various credit ratings by year.

Panel A: Adjusted versus unadjusted: first meeting
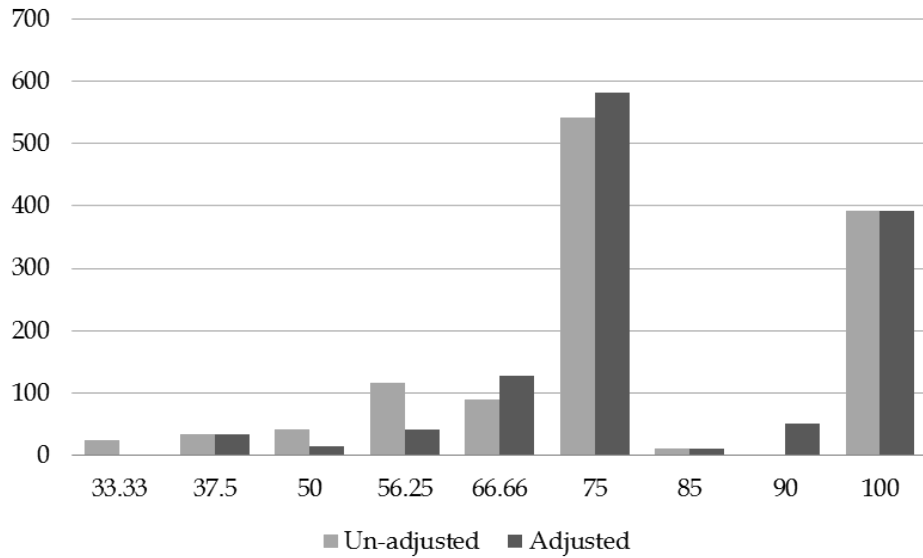
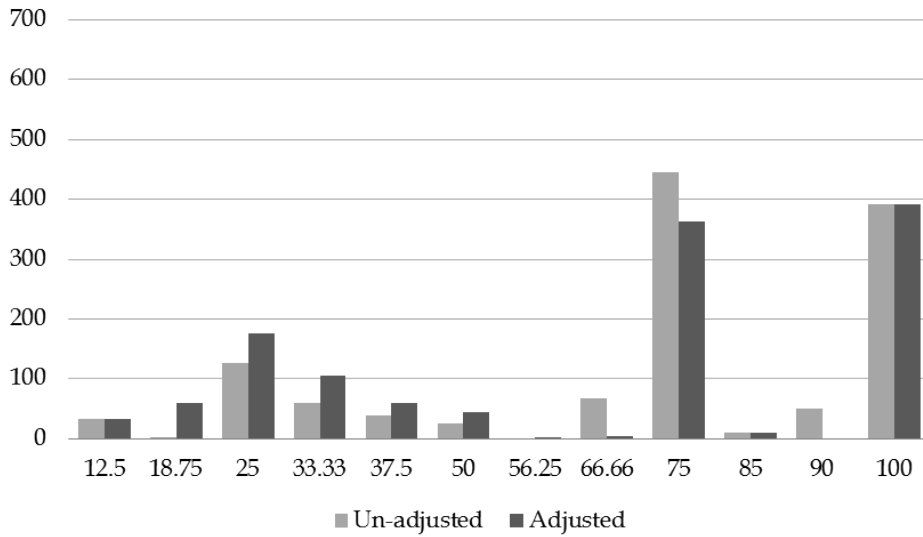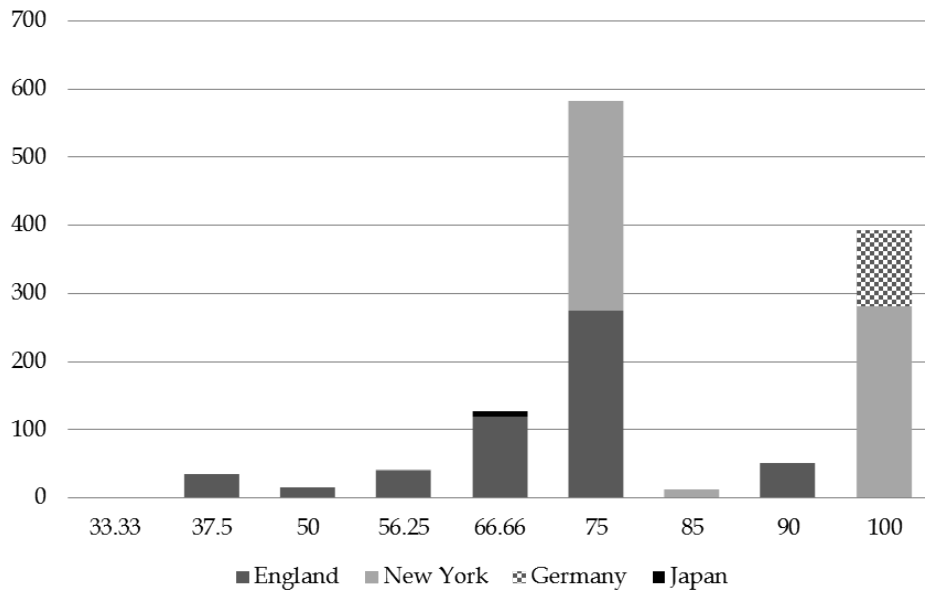**Panel B: Adjusted versus unadjusted: subsequent meetings**

Figure 4: Adjusted versus unadjusted voting requirements at first and subsequent meetings Panel A shows the distribution of voting requirements at the first meet, while panel B the ones at any subsequent meetings.

Panel A: Adjusted voting requirement at first meeting by governing law

Panel B: Adjusted voting requirement at subsequent meetings by governing law
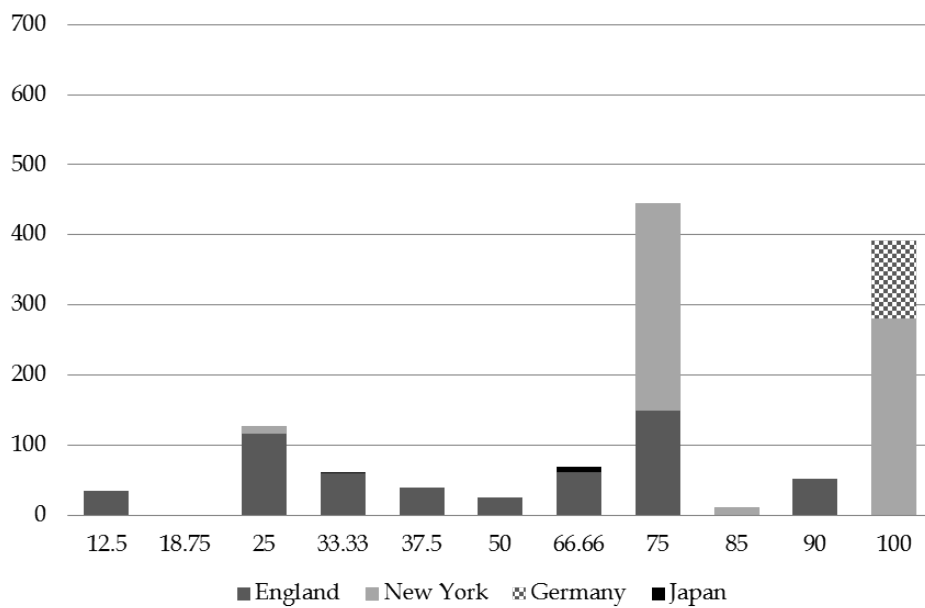

Figure 5: Adjusted voting requirements at first and subsequent meeting by governing law Panel A shows the distribution of voting requirements at the first meet, while panel B the ones at any subsequent meetings by governing law.