

# The Economics and Law of Sovereign Debt and Default

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*This paper surveys the recent literature on sovereign debt and relates it to the evolution of the legal principles underlying the sovereign debt market and the experience of the most recent debt crises and defaults. It finds limited support for theories that explain the feasibility of sovereign debt based on either external sanctions or exclusion from the international capital market and more support for explanations that emphasize domestic costs of default. The paper concludes that there remains a case for establishing institutions that reduce the cost of default but the design of such institutions is not a trivial task.*

## 1. Introduction

The economic literature on sovereign debt has enjoyed an explosive comeback in recent years. After thriving in the 1980s, research on sovereign debt had gone out of fashion in the second half of the 1990s; perhaps because the financial problems of developing countries seemed to have moved

elsewhere, toward privately issued debt and liquidity crises. A new generation of sovereign debt crises, beginning with Russia's default in August of 1998, returned sovereign debt to center stage, challenged some old ideas, and raised new questions.

Reaccess to international capital markets following several of these crises appeared to be faster than in previous decades, challenging the notion that capital market exclusion was the critical penalty that made sovereign debt possible. At the same time, several high-profile litigation cases appeared to bring back the legal system as a possible enforcement mechanism for sovereign debt contracts. Finally, with securitized debt markets, there now seemed to be room for significant collective action problems in debt restructuring negotiations, bringing cross-creditor problems to the fore along with the traditional debtor–creditor relationship. The worry that this might make debt crises unmanageable led to a far-reaching policy

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debate, culminating in the 2001 proposal by IMF First Deputy Managing Director Anne O. Krueger to create a new legal and institutional framework—"the sovereign debt restructuring mechanism"—for resolving debt crises. The proposal fell through, but it prompted significant changes ("collective action clauses") in the template used by bond contracts under New York law.

The literature has since evolved in three main directions. First, a series of theoretical contributions written since the beginning of this decade give new answers to the old question of how sovereign debt can exist at all in the absence of legal enforcement and attempt to do a better job in matching the stylized facts. Second, there has been new theoretical interest in both debt *structure*—as short-term and foreign currency debt had been blamed for some of the new crises—and debt *restructuring*, touching, in particular, on the trade-off between ex post efficiency and ex ante incentives. Third, and perhaps most significantly, there has been an explosion in the empirical literature. As recently as ten years ago, there were relatively few empirical papers on why countries may want to repay, making Anatole Kaletsky's slim 1985 volume, *The Costs of Default*, a frequently cited source. In contrast, there have been more than two dozen contributions in this area since about 2002. In addition to the costs of default, these papers explore when and why countries borrow, whether countries choose to default in good or in bad times, how countries and debtors restructure, how investors have fared with sovereign debt during crises and over longer periods, and the role of domestic sovereign debt.

This paper surveys this literature, with a focus on the new empirical contributions. We are particularly interested in three questions. First, is the empirical evidence on sovereign debt consistent with the predictions (and assumptions) of the theoretical literature? Or do we need to change our views on

what makes sovereign debt possible based on the new empirical work and the experience provided by the most recent crises? Second, have changes in legal doctrine and other legal innovations had an impact on the behavior of the sovereign debt market? And third, how has the resolution of debt crises evolved over time, and what case, if any, remains for institutional or policy changes that might improve the workings of the sovereign debt market and reduce the cost of crises?

We proceed in four steps. Because a fundamental characteristic of sovereign debt is the more limited legal enforcement compared to corporate debt, we begin by reviewing the *law* of sovereign debt, including changes away from "absolute" sovereign immunity that have taken place in the last thirty years. These changes have not always been appreciated by economists due to divisions between the legal and economic literatures. Second, we review the theoretical economic literature on sovereign debt. Because there are two comprehensive reviews of the traditional literature on sovereign debt (Jonathan Eaton and Raquel Fernandez 1995 and Kenneth M. Kletzer 1994), our review is brief, nontechnical, and focuses on the contributions written in the last fifteen years. A review of the extensive new empirical literature comes next. Finally, we address the question of whether and how the cost of debt crises could be reduced, drawing on some new theoretical contributions, and on recent policy debates.

## 2. *The Law of Sovereign Debt*

In the corporate world, debt contracts are enforced by the courts. A corporation cannot simply repudiate, i.e., decide not to repay its debts. If it tried, it would be sued and the courts would force it to hand over assets to the creditor, restructure, or (in the limit) shut down and liquidate its remaining assets.

This enforcement mechanism is much more limited in sovereign debt for two reasons.

First, few sovereign assets (including future income streams) are located in foreign jurisdictions, and a sovereign cannot credibly commit to hand over assets within its borders in the event of a default. Second, there are legal principles that protect sovereign assets even when they are located in foreign jurisdictions. However, the strength of this protection has declined over time, both through statutory changes and through case law, opening a window for legal enforcement. The question is how wide this window is and whether it has had an effect on the sovereign debt market. We address the first of these questions in this section and the second in section 4.

### 2.1 *Principles Protecting Sovereign Debtors*

Sovereign debtors have traditionally been protected by the principle of (absolute) *sovereign immunity*, which states that sovereigns cannot be sued in foreign courts without their consent. The principle can be derived from the equality of sovereign nations under international law: legal persons of equal standing cannot have their disputes settled in the courts of one of them (Ian Brownlie 2003). Importantly, however, immunity can be waived: a sovereign can enter in a contractual relationship in which it voluntarily submits to the authority of a foreign court in the event of a dispute.

Under absolute immunity, which was the prevailing doctrine in the nineteenth century and in the first half of the twentieth century, sovereign immunity applied even to commercial transactions between foreign states and private individuals from another state. From the perspective of governments, this had the advantage that private commercial interests did not get in the way of diplomatic and political relations. As a result, unless an aggrieved creditor could persuade his own government to apply pressure, he was deprived of legal remedies to enforce repayments (except to the extent that he could successfully make a case in the defaulting country's courts).

However, a more restrictive view of sovereign immunity began to take hold after the Second World War (Brownlie 2003, p. 325). In the United States, the interpretation of sovereign immunity began to change in the 1950s, in part as a consequence of the cold war—the United States felt uneasy with granting sovereign immunity to Soviet Union state owned companies operating in the United States. The U.S. government encouraged a more restrictive theory of sovereign immunity under which foreign sovereigns were denied immunity for commercial activities carried on inside, or with direct effect inside, the United States. This restrictive view was embodied in the Foreign Sovereign Immunities Act (FSIA) of 1976, which allows private parties to sue a foreign government in U.S. courts if the complaint relates to commercial activity. The United Kingdom adopted similar legislation in 1978 and many other jurisdictions have followed suit (Lee C. Buchheit 1986, 1995; Brownlie 2003).

As a result, sovereigns can now often be held legally accountable for breach of commercial contracts with foreign parties in the same manner as private parties. This leaves open the question of what is a commercial transaction, and who is a sovereign, within the terms of a foreign sovereign immunity law. With regard to the question of who is a sovereign, the U.S. FSIA, for example, defines a sovereign broadly to include agencies and instrumentalities of a sovereign. Several court decisions have confirmed that the issuance of sovereign bonds is a commercial activity. Furthermore, a 1992 U.S. Supreme Court decision (*Republic of Argentina v. Weltover*; see Philip J. Power 1996) established that suspending payments on debt contracts that call for payment in the United States entails direct effects within the United States sufficient to satisfy the U.S. nexus requirement under the FSIA. Accordingly, under U.S. law, international bond issued by a sovereign, and a subsequent default, are almost always

considered commercial activities, regardless of the purpose of the issue or the reason behind the payments interruption. Moreover, whatever protections of the sovereign remain under U.S. law can be contractually waived, and such waivers are in fact routinely included in bond covenants. As a result, under U.S. law (and that of several other major jurisdictions), sovereign immunity no longer plays an important role in shielding sovereign debtors from creditor suits.

Sovereign immunity laws may be a more effective shield against attachment proceedings, i.e., creditor attempts to collect once a favorable court judgment has been obtained. In particular, under FSIA and comparable laws, central bank assets—including international reserves—are typically immune from attachment.<sup>1</sup> For sovereign debt not issued by the central bank itself, this follows from the fact that the central bank is generally viewed as a separate legal entity that cannot be held liable for the acts of its principal (the sovereign). But even when the central bank itself is the debtor, most of its assets—in particular, international reserves and other assets necessary for the exercise of key central banking functions—generally enjoy immunity, unless this is explicitly waived (Paul Lee 2003; Ludwig Gramlich 1981). Moreover, a sovereign or a central bank can attempt to limit attachable assets by locating them outside the reach of foreign courts. For example, government and central bank assets have been placed with the Bank for International Settlements (BIS) in Switzerland to take cover under the legal protections afforded to the BIS against attachment proceedings.

<sup>1</sup> The law on this matter is not entirely uniform, particularly across European countries. As a result, sovereigns have been concerned about attachment of central bank reserve assets in some European jurisdictions; see Manmohan Singh (2003).

In addition to sovereign immunity, two other legal principles or conventions have been invoked by sovereign debtors in resisting creditor lawsuits during the 1980s and 1990s. The first of these legal principles is the *act of state* doctrine, which states that courts should not judge the validity of a foreign sovereign's acts committed on its territory. "In contrast to sovereign immunity, which acts as a jurisdictional bar to suits against a sovereign, the act of state doctrine is a judicially created rule of abstention concerning the justiciability of the acts of foreign governments" (Power 1996). Unlike sovereign immunity, the *act of state* defense cannot be contractually waived. However, the doctrine has proved to be of little use to sovereigns for a similar reason as sovereign immunity, namely, that defaulting on debtors payable in international jurisdictions is not considered to be a sovereign act worthy of judicial deference (see *Allied Bank International v. Banco Credito Agricola de Cartago*, discussed below).

The second of these legal principles is *International comity*, which, according to an 1895 U.S. Supreme Court decision, is defined as "the recognition which one nation allows within its territory to the legislative, executive or judicial acts of another nation." Although a "softer" principle than sovereign immunity or act of state—Power (1996) describes it as "not the rule of law, but rather one of practice, convenience, and expediency;" Brownlie (2003) speaks of "neighborliness and mutual respect"—comity considerations have motivated several court decisions both against and in favor of the sovereign debtor, and continue to play a role today. In practice, comity considerations seem to have boiled down to a court assessment on whether a debtor's actions could be viewed as broadly justified in light of U.S. policies on how international debt crises ought to be resolved. As such, they have given the U.S. executive branch a lever for influencing debt-related disputes before

U.S. courts. Thus, comity is an unreliable principle, as “the defense’s likelihood of success is subject to reassessment with each shift in U.S. policy on sovereign debt restructuring” (Power 1996).

## 2.2 *Experience with Legal Enforcement of Sovereign Debt Contracts*

As we have seen, legal protections of sovereigns from court action by creditors were significantly reduced by the 1980s. The question is whether this has actually allowed creditors to extract repayment, or a favorable settlement, from the sovereign debtor following a default. To answer this, we briefly review the experience with attempts by “holdout creditors” to enforce repayment through the courts, focusing on a few landmark cases after the beginning of the 1980s debt crisis.

The first such case was *Allied Bank International v. Banco Credito Agricola de Cartago*. In 1981, Costa Rica suspended debt payments to a thirty-nine-member bank syndicate. A restructuring agreement was subsequently reached with all creditors but one, Fidelity Union Trust of New Jersey, which sued through an agent, Allied Bank, in U.S. courts. A lower court initially ruled in favor of Costa Rican banks that had acted on behalf of Costa Rica, accepting the defense’s argument that Costa Rica’s actions were protected by the “act of state” doctrine. In 1984, an appeals court disagreed with this argument on the grounds that defaulting on foreign debt did not constitute an act of state. However, it initially upheld the lower court ruling on “comity” grounds, on the assumption that the U.S. executive branch was favorably disposed to Costa Rica’s attempt to restructure its debts. “Costa Rica’s prohibition of payments of its external debt is analogous to the reorganization of a business pursuant to Chapter 11 of our Bankruptcy Code. On that basis, Costa Rica’s prohibition of payment of debt

was not a repudiation of the debt but rather was merely a deferral of payments while it attempted in good faith to renegotiate its obligations.”

Upon rehearing the case in March 1985, however, the court reversed itself after the U.S. Department of Justice argued that contrary to the court’s initial assumptions, the U.S. government did not agree with “Costa Rica’s attempted unilateral restructuring,” concluding that “while parties may agree to renegotiate conditions of payment, the underlying obligations to pay nevertheless remain valid and enforceable.” This led to a settlement in which the U.S. government encouraged Fidelity Union to accept the package agreed by the rest of the bank syndicate (Christopher Greenwood and Hugh Mercer 1995). While Fidelity ultimately did not obtain a better deal than the rest of the banks, the Allied Bank case nonetheless demonstrated that a holdout creditor could be successful in the sense of obtaining a favorable judgment, and showed that two important legal principles—the act of state doctrine and international comity—did not necessarily protect sovereigns in the event of defaults.

During the remainder of the 1980s, creditor litigation remained rare, for two reasons. First, there were strong mechanisms, both contractually, and through informal institutions like the Bank Advisory Committee (BAC) process, which encouraged collective negotiations with the debtor in resolving debt disputes and discouraged go-it-alone litigation. Second, prior to the creation of the secondary debt market in the late 1980s, virtually all holders of distressed debt were banks, which had a regulatory incentive against declaring a creditor in default (in practice, a prerequisite for litigation), as this would have required them to write down their loans. This situation began to change in the late 1980s, as creditor banks provisioned against loan losses and began writing



off loans, and the creation of a secondary market in securitized loans allowed new investors—including specialized firms that became known as “distressed debt funds” (or “vulture funds”)—to buy defaulted debt at large discounts with the aim of extracting the best possible settlement.

These changes were soon followed by several high-profile lawsuits involving debt purchased in the secondary markets. A particularly significant case pitted the Dart family, which had accumulated \$1.4 billion of defaulted Brazilian “Multi-Year Deposit Facility Agreement” (MYDFA) debt at large discounts, against the Central Bank of Brazil (*CIBC Bank and Trust Co. Ltd. v. Banco Central do Brazil*; see Power 1996; John Nolan 2001). The MYDFA was long term debt, created in a 1988 debt restructuring agreement, which Brazil had stopped servicing in 1989. This debt was eventually exchanged for Brady bonds in a 1993 restructuring accepted by all creditors except the Darts. In order to prevent the Darts from becoming the sole debt holder and thus gain the ability to accelerate outstanding principal and interest payments, the Central Bank of Brazil retained \$1.6 billion of MYDFA debt. In response, the Darts (through CIBC as the debt holder of record) sued the Central Bank of Brazil in New York, claiming: (1) past due interest under the MYDFA and (2) the right to accelerate the entire principal and interest owed. In May 1995, the court ended up siding with the plaintiff on the first claim, although it declined to allow the Darts to accelerate.

In March of 1996, Brazil settled, paying the Darts \$52 million in Eligible Interest Bonds covering past due interest until April 1994 (the settlement date of the Brady deal) and \$25 million in cash covering accrued interest since April 1994. Hence, Brazil treated the remaining MYDFA as if it had been performing since April of 1994, signaling that it would continue servicing

the loan in the future. On that basis, the Darts managed to effectively sell their MYDFA holding by issuing \$1.28 billion in Eurobonds secured by MYDFA debt in October of 1996, at a modest spread over Brazilian sovereign debt with similar payment terms. Although the market value of this issue, at about \$1.1 billion, fell short of the \$1.4 billion that the Darts had initially demanded, this meant that the Darts came out much better than creditors that had accepted the Brady exchange.

From a legal point of view, several aspects of the CIBC case are notable. First, Brazil did not invoke either sovereign immunity or the act of state doctrine in its defense, a recognition of the fact that these principles had lost their protective power in the context of sovereign debt litigation. Instead, it tried to invoke two arguments designed specifically to fend off holdouts that had purchased distressed debt in the secondary market, namely, that assignment of the debt to CIBC was invalid under the terms of the original debt contract (in this case, the MYDFA), and that the Darts’ suit violated New York’s “Law of Champerty,” which prohibits litigating on a claim purchased exclusively for the purposes of filing a law suit. Both arguments were rejected by the court. The “Champerty defense,” in particular, suffered from having to prove intent: claimholders could argue that they had purchased the claim not with the intention to litigate but in order to get paid, and that the decision to litigate was merely a reaction to the sovereign’s refusal to pay, and fully within their rights.

Finally, as in the Allied Bank case, the U.S. government filed a brief, but with the opposite thrust, urging the court to reject the Darts’ claim for acceleration of principal on the grounds that holdouts that had purchased debt in the secondary market should not be allowed to take a free ride on debt workouts agreed by a majority of creditors.

The United States observed that its concern in CIBC was a “mirror image” of its concern in Allied ten years earlier, with the concern for creditor rights being trumped, in this case, by a concern that creditors would use the courts to extract unfair concessions from the debtor (Power 1996). The court ultimately agreed with the U.S. argument, so comity may have benefited the debtor in this aspect of the case.

By and large, the precedents set by CIBC have been borne out in subsequent litigations. First, subsequent cases have confirmed a holdout’s right to litigate on the basis of a claim acquired in the secondary market. The Champerty defense, in particular, was rejected in several instances, including by the English Court of Appeal in *Camdex International Limited v. Bank of Zambia*, and—on appeal—by a New York court in *Elliott Associates v. Banco de la Nación (Peru)*. Second, court judgments generally paid some attention to the argument, made by the U.S. government in the CIBC case, that holdout creditors should not be allowed to disrupt or free ride on debt restructuring agreements negotiated with a majority of creditors—most notably, in the case of Argentina’s 2005 restructuring.

This said, the desire to safeguard creditor rights as defined by the debt contract has tended to prevail whenever there has been a conflict between these two principles. For example, in *Pravin Banker v. Banco Popular del Peru*, a New York court stayed Pravin’s claims for full repayment by Peru on two occasions to avoid a disruption to the ongoing Brady deal negotiations, but ultimately decided in favor of Pravin. Similarly, in *Elliott Associates v. Republic of Panama*, Elliott obtained judgments covering the full claim, and subsequently settled for close to that amount, notwithstanding the fact that it had acquired the Panamanian debt at a substantial discount from Panama’s original creditors. Elliott could extract full repay-

ment because it was able to obtain attachment orders that could have inflicted serious harm on Panama: one directed against U.S. assets of the national telecommunications company which Panama was about to privatize; and one which would have interfered with a large new bond issue in New York. Although Panama paid in full, the amount paid (\$71 million) was an order of magnitude smaller than both the value of the privatization deal and the proceeds received from the bond issue.

The most famous legal victory of holdout creditors is *Elliott Associates v. Banco de la Nación (Peru)*. Elliott acquired nonperforming debt guaranteed by the Peruvian government, at a large discount, just prior to Peru’s 1996 Brady deal. After Peru refused to repay in full, Elliott sued in New York. A prejudgment attachment sought by Elliott was initially denied on the grounds that it would have jeopardized the pending Brady restructuring, but in late 1999, Elliott obtained a prejudgment attachment order against Peruvian assets used for commercial purposes in the United States, and finally, in June 2000, a US\$57 million judgment against Peru. Based on this judgment, Elliott sought court orders in New York and various European countries that would either attach Peruvian assets or bar Peru from paying interest on its Brady bonds. It was eventually successful, convincing a Brussels appeals court to order the payments provider Euroclear on an emergency basis—i.e., before arguments in opposition had been made—to suspend payments on Brady bond interest payments. Faced with an approaching payments deadline that would have brought its entire stock of Brady debt into default, Peru decided to settle for a reported sum of US\$56.3 million rather than continue the legal fight.

The Elliott/Peru case caused alarm in official policy circles because it appeared to hand holdout creditors an instrument to

enforce claims against a debtor country at the expense of other (consenting) creditors. Rather than engaging in the difficult process of attaching debtor assets abroad, holdouts could ask courts to interfere with cross-border payments to creditors that had previously agreed to a debt restructuring, hence creating a seemingly formidable obstacle to orderly sovereign debt restructurings. However, subsequent restructuring cases did not bear out this fear, in part because the legal argument that Elliott used to interfere with Peru's debt service payments turned out to be weak,<sup>2</sup> and in part because steps could be taken to protect international payments from holdouts. Most obviously, payments could be made in the debtor country, so that any cross-border transfer would involve creditor accounts only, and international payments systems could be explicitly protected from judgment creditors through changes in national laws (Belgium adopted such a law after the Elliott case).

Several holdouts attempted to mimic Elliott's legal strategy with respect to Peru, with limited success (Singh 2003; International Monetary Fund 2004). In *LNC v. Nicaragua*, the Belgian Court of Appeals found that the contractual pari passu clause did not give LNC the right to attach payments channeled through Euroclear, since Euroclear was not a

party to the contract in which the pari passu clause arose. In *Kensington v. Republic of Congo*, an English court also rejected enforcement based on the pari passu clause, on the grounds that reliance on this contractual clause was inconsistent with the fact that the plaintiff's claim had been reduced to a court judgment. In *Red Mountain Finance v. Democratic Republic of Congo*, the courts rejected the broad construction of the pari passu clause but issued an injunction with a similar effect, i.e., preventing the debtor from making external debt payments unless proportionate payment was made to Red Mountain. The DRC appealed the injunction, but settled with Red Mountain at about 37 percent of the value of the judgment claim before the appeal hearing, just ahead of an arrears-clearing payment to the International Monetary Fund which reestablished Congo's access to multilateral financial support after years of crisis and civil war.

The final installment of our brief review is the extensive litigation associated with Argentina's 2001 default. By late 2004, almost 140 law suits—including fifteen class action suits, a novel vehicle in the context of sovereign debt litigation—had been filed against Argentina in New York, Italy, and Germany, both by distressed debt funds holding Argentine claims and "retail investors."<sup>3</sup> Many of these suits resulted in judgments in favor of the creditors, including a \$725 million judgment in favor of one creditor (EML, a subsidiary of Dart Capital).

However, attempts to actually attach assets turned out to be fruitless.<sup>4</sup> So were

<sup>2</sup> Elliott's motion to suspend payments to Peru's Brady bond holders rested on a broad interpretation of the pari passu clause in the debt contracts it had purchased, as giving it the right to receive a proportional share of any payments on external debt made by Peru (though arguably the Brussels court went further, effectively giving Elliott priority over the Brady bond holders). This contrasts with a more conventional interpretation of the pari passu clause stating that the claim in question does not have lower priority than other unsecured claims (G. Mitu Gulati and Kenneth N. Klee 2001; Philip Wood 2003; Buchheit and Jeremiah S. Pam 2004). By now, Elliott's interpretation of the pari passu clause has been challenged not just by many legal commentators, but also (in the context of the Argentina case, see below) by the U.S. government, the Federal Reserve Bank of New York, and the New York Clearing House Association.

<sup>3</sup> In addition, a large number of suits has been filed in Argentine courts.

<sup>4</sup> For example, plaintiffs sought to attach the representation office of the province of Buenos Aires in New York, diplomatic facilities, U.S. accounts of Correo Argentino S.A. (the renationalized postal service), and—most significantly—\$105 million in reserves held by the Central Bank of Argentina in New York. All these requests have been denied (the latter, on appeal by the U.S. Supreme Court in October 2007).



attempts to block Argentina's January 2005 debt exchange offer from going forward. These were followed by a further legal challenge in March 2005, shortly before the exchange was to settle, NML Capital (an offshore fund with ties to Elliott Associates) asked a New York court to attach a portion (\$7 billion) of Argentina's defaulted bonds that had been turned in by consenting bondholders to the Bank of New York, in charge of carrying out the exchange, arguing that they had market value and hence could be sold to satisfy a future judgment. The court rejected this argument, on the grounds that until settlement, the bonds belonged to the creditors that had accepted the exchange, and that attaching them would jeopardize the exchange. In late May, an appeals court upheld this decision, arguing that the lower court "acted within its discretionary authority to vacate the remedies in order to avoid a substantial risk to the successful conclusion of the debt restructuring. That restructuring is obviously of critical importance to the economic health of a nation." Although the court technically did not set a precedent because it did not rule on the legal issues disputed by the parties, one has to agree with Anna Gelper's (2005) observation that "if future judges use similar reasoning, pre-closing challenges look increasingly remote."

In sum, changes in the legal environment since the late 1970s have made it much easier for holdout creditors to obtain judgment claims. In addition, there are some examples—most famously, CIBC/Brazil, Elliott/Panama, and Elliott/Peru—in which holdouts have been able to enforce those claims, or settle at substantially better terms than the average creditor. These settlements seem to have occurred either because holdouts were able to credibly threaten to attach sovereign assets or interfere with international transactions, or because of reputational concerns—

debtor reluctance to defy court judgments at a time when they were regularizing their record as borrowers. This said, full repayment has remained the exception, and many holdouts have received nothing (Federico Sturzenegger and Jeromin Zettelmeyer 2007b). Furthermore, attempts to block debt restructuring negotiations or debt exchanges through litigation have not been successful.

### 3. *The Economic Theory of Sovereign Debt*

As we have seen in the previous section, the main difference between corporate and sovereign debt is the lack of a straightforward legal mechanism to enforce repayment of the latter. In the event of default, legal penalties or remedies do exist, but they are much more limited than at the corporate level. This leads to the question of why debt nonetheless tends to be repaid, and why a sovereign debt market can exist. Much of the economic literature on sovereign debt has focused on this problem.

The most radical way of posing the question is to ask whether there would be a sovereign debt market if creditors had *no* direct power to enforce repayment whatsoever, and their only means of retaliating in the event of default would be through the denial of future credit. In a seminal paper, Eaton and Mark Gersovitz (1981) showed that under some assumptions, the answer can be "yes." If debtors have no way of insuring against output shocks other than through borrowing, and default triggers permanent exclusion from credit markets, then the threat of losing access to credit markets is a sufficient reason for repaying, up to a certain maximum level. This level is higher, the bigger the variance of output, and the more the borrowing country values the insurance function of

international capital markets for given fluctuations in output.<sup>5</sup>

Though highly influential, Eaton and Gersovitz's result was quickly criticized from two angles. The first, anticipated by Eaton and Gersovitz themselves in the introduction of their paper, focused on the assumption that a default could be punished through *permanent* exclusion from future credit. The problem is that in such a situation both parties—creditors and debtors—are generally worse off than in a situation in which lending resumes.<sup>6</sup> In technical parlance, a lending equilibrium sustained by the threat of a permanent embargo on future lending is not renegotiation-proof, in the sense that after a default both parties potentially benefit from reaching a new agreement involving positive lending. But if such an agreement is anticipated, then this undermines the expected punishment that was sustaining positive lending in the first place (see Kletzer 1994 for details).

The second line of criticism, due to Jeremy Bulow and Kenneth S. Rogoff (1989b),

<sup>5</sup> In Eaton and Gersovitz's model, the insurance motive comes through concavity in the utility function, i.e., risk aversion (the country prefers smooth consumption to choppy consumption). This is the way in which international borrowing has usually been motivated in the literature, but it is not the only way. For example, one could assume linear utilities and concavity in *production*, together with the assumption that production requires capital (Harold L. Cole and Patrick J. Kehoe 1998; Mark L. J. Wright 2005). What these stories have in common is that they generate potential gains from trade between borrowers and lenders *that go on forever*. While there may be other motives for borrowing that do not have this property—for example, impatience to consume, or acceleration of capital accumulation—these can generally not be exploited to enforce repayment (Eaton, Gersovitz, and Joseph E. Stiglitz 1986). The reason is that they imply a point in time after which the motive for borrowing disappears (for example, because the capital stock has been built up to the point where the marginal return to capital equals the international interest rate). Anticipating that point, creditors will refuse new lending, which takes away the incentive to repay in the preceding period, and so on by backward induction.

<sup>6</sup> In addition, there is little empirical justification for this assumption (see below).

focused on the implicit assumption that borrowing from international lenders is the *only* way in which countries can smooth consumption in response to shocks to output.<sup>7</sup> What if there are other ways, including storing output, purchasing insurance, or investing a portion of one's wealth abroad so that it can be tapped in times of need? Clearly, this would diminish the dependence on international credit for insurance purposes, and thus the effectiveness of exclusion from credit markets in preventing defaults. In the limit, if a country can purchase an insurance contract that delivers payments in low output states exactly like borrowing would, then the threat of exclusion from credit loses its bite entirely. To see this, suppose sovereign debt could exist in these circumstances, and take the highest level of debt that can supposedly be sustained. Rather than repaying this debt to creditors, the country could use the repayment to collateralize an insurance contract delivering the same maximum transfer in bad states as the country could have borrowed under the previous debt contract, in exchange for country payments ("premium") in good states. Thus, a "cash-in-advance" insurance contract can be designed so that it exactly replicates the flows associated with international borrowing. But in addition, the country would receive interest on its collateral. Since this argument can be made for any level of debt, any borrowing is impossible.

Together, these objections posed a powerful challenge to the notion that the threat of exclusion from credit markets, by itself, makes sovereign borrowing possible. Broadly speaking, the literature has since evolved in three directions.

A first group of papers, including Jeffrey Sachs and Daniel Cohen (1982), Bulow and

<sup>7</sup> We would like to thank an anonymous referee for reminding us that this criticism had also been anticipated by Eaton and Gersovitz (1981).

Rogoff (1989a), and Fernandez and Robert W. Rosenthal (1990), focused on direct punishments as the reason for repayment. Direct punishments are generally interpreted as interference with a country's current transactions, i.e., trade and payments, either through seizure outside the country's borders or through the denial of trade credit. Renegotiations are explicitly modeled in these papers. In Bulow and Rogoff (1989a), contracts can be renegotiated at any time. The amount that a country can borrow is determined by the proportion of the debtor's output that creditors can expect to extract in this renegotiation. The fact that creditors can extract anything at all hinges critically on the assumption that inflicting a sanction not only harms the debtor, but also benefits the creditor directly (for example, the creditor receives a share of the debtor country's trade payments). Thus, the threat that in the event of non-payment creditors will actually impose the sanction is credible. This, however, would not be the case if imposing the sanction ends up hurting both debtors and creditors.<sup>8</sup>

A second line of research attempts to rescue the idea that governments repay because they are worried about the repercussions of a default in the credit market. Most of these papers no longer rely on enforcement through the (implausible) threat of permanent exclusion from credit markets, and some explicitly address the renegotiation problem.

<sup>8</sup> The appendix of Bulow and Rogoff (1989a) correctly points out that creditors' rights are now stronger than what they were before the approval of the FSIA. However, the discussion in section 2 above suggests that creditors have not been so successful in enforcing their claims. The appendix of Bulow and Rogoff (1989a) discusses the impact of trade sanctions and shows that trade disruptions of about 9 percent of the total value of imports and exports would be more costly than making payments of 5 percent of total external debt. However, as Bulow and Rogoff point out, the fact that creditors can punish the defaulting country does not necessarily imply that they will have an incentive to impose such sanctions.

One group of papers (including Cole and Kehoe 1995, Eaton 1996, and Kletzer and Brian D. Wright 2000) sidestep the Bulow and Rogoff (1989b) critique by dropping the assumption that the government can safely invest abroad regardless of their past behavior. Just like the debtor countries themselves, financial institutions may not be able to commit to future payments, at least not to countries that have defaulted (for example, because past lenders could attempt to interfere with such payments as a way of enforcing their claims). In the jargon of this literature, the "one-sided commitment problem" assumed by the sovereign debt literature of the 1980s is replaced by a "two-sided commitment problem." This said, with multiple lenders, an equilibrium sustained by credit market sanctions could still unravel if a new lender refuses to participate in the sanctions. In Kletzer and Wright's (2000) model, this is deterred by the original lender's offer to "pardon" the debtor (i.e., to let the debtor return to the original lending relationship) in exchange for defaulting on any new lender. As a result, potential new lenders will respect the punishment of the borrower in equilibrium, i.e., a defaulter will not be able to find new positive surplus lending relationships.

More recently, several papers have demonstrated that sovereign lending could exist in a setting that *both* considers credit market punishments only *and* assumes that deposit or insurance contracts à la Bulow–Rogoff are feasible. Wright (2002) shows that sovereign debt can be sustained in these circumstances if countries can have lending relationships with more than one bank at a time—syndicated lending, which offers banks a profit relative to competitive lending—because this creates an incentive for lenders to collude in punishing default. Banks that defect by engaging in financial relationships with a defaulting country are punished by exclusion from future

syndicated lending.<sup>9</sup> Manuel Amador (2003) presents a model in which governments undersave because they know that they may lose power, but at the same time wish to retain access to capital markets since they count on returning to power eventually (this fits a situation in which several established parties alternate in power). This combination—a desire for insurance, combined with a chronic lack of cash that could be used to make a deposit or finance a cash-in-advance insurance contract—means that the threat of exclusion from future borrowing is sufficient to sustain sovereign lending.<sup>10</sup>

As far as the enforcement of repayment is concerned, Kletzer and Wright (2000) and Wright (2002) work with infinite horizon models in which default does not trigger permanent exclusion from credit markets, but rather a new financial relationship *at terms that make the defaulting debtor no better off than permanent exclusion*. Thus, the equilibrium in the subgame following a default is just as unpleasant for the debtor as a permanent lending embargo, but it is also efficient. The creditor appropriates all gains from trade, and would thus not want to renegotiate. For example, Wright (2002) builds a model in which a country borrows from a single bank which can commit to honoring deposit and insurance contracts. The threat that enforces repayment is the replacement of the lending relationship with an insurance contract in which the insurance “premium” after a default is so large as to leave

the country without any surplus relative to permanent exclusion from capital markets.<sup>11</sup>

A third line of research is built around the idea that incentives to repay sovereign debt are created not so much through the threat of punishment by creditors (whether directly or through the credit market) but rather because defaults inflict broad “collateral damage” on the debtor country government or its economy. One way in which this could happen is if defaults have broader adverse effects on a borrower’s reputation than just through its standing in international credit markets. This was first raised as a possibility by Bulow and Rogoff (1989b), and is developed by Cole and Kehoe (1998). Cole and Kehoe assume that there are two types of debtor country governments: “honest” governments that always repay, and “normal” governments which sometimes do not repay. Lenders do not know the borrower’s type.<sup>12</sup> If the government can save or purchase insurance and is in just one repeated relationship (with lenders), then the Bulow-Rogoff result applies, i.e., no borrowing can be sustained if the lending relationship is sufficiently long

<sup>9</sup> Alternatively, the presence of multiple *borrowers* might create an incentive for bank collusion, as banks can gain by cooperating punishing each other’s defaulting borrowers, and punish banks that defect from this cooperative arrangement by offering the defector’s debtor a deposit contract that induce it to default.

<sup>10</sup> See Faruk Gul and Wolfgang Pesendorfer (2004) for a result that relies on the same intuition—namely, that saving cannot replace borrowing for consumption smoothing purposes if the debtor has a self-control problem—but involves a different characterization of the self-control problem.

<sup>11</sup> Perhaps because authors such as Kletzer and Wright (2000), Wright (2002), and Amador (2003) argue that the Bulow-Rogoff critique could in principle be overcome, an even more recent generation of sovereign debt models has gone back to Eaton and Gersovitz’s (1981) implicit assumption that countries do not have a savings opportunity after defaulting (Mark Aguiar and Gita Gopinath 2006; Cristina Arellano 2008; Irani Arráiz 2006b; David Benjamin and Wright 2008; Ran Bi 2008a; Rohan Pitchford and Wright 2007; Vivian Z. Yue 2006). These models are not primarily interested in explaining the existence of sovereign debt but in matching certain stylized facts (for example, that defaults occur in bad times or that borrowing spreads are countercyclical) and, in some cases, in endogenizing default penalties and explicitly modeling the debt renegotiation process. We discuss these issues in sections 4 and 5.

<sup>12</sup> A similar information problem is assumed in Eaton (1996). In his model, which assumes that borrowers cannot save or buy insurance, defaults lead to either exclusion from credit markets or higher interest rates, depending on whether in addition there is extraneous uncertainty or not about the borrower’s *ability* to pay.

so that lenders find out about the “normal” government’s true type.<sup>13</sup>

Suppose, however, that there is another relationship in which the government’s partners (say, workers) also have incomplete information about the government’s true type. Both workers and lenders make inferences about the government’s true type from the way the government behaves in the other relationship as well as in their own. Default, vis-à-vis lenders, tarnishes the government’s reputation with its workers. This provides a powerful new incentive to repay. The intuition is that while the possibility of saving the defaulted debt or using it to back an insurance contract removes the need to preserve a good reputation vis-à-vis the creditors, it is no substitute for preserving a good reputation in the other relationship. In that relationship, there is no mechanism analogous to the presence of insurance contracts that would undo the damage caused by the government’s loss of reputation. The same argument could be made for other relationships—for example, with depositors or foreign equity holders. What deters default in this class of models is not the actions of the creditors, but of other agents that change their behavior after observing a default.

A related approach focuses on the information content of default with respect to the underlying structure of the economy (Guido Sandleris 2005; Luis Catão and Sandeep Kapur 2006; Kapur, Ana Fostel, and Catão 2007). For example, a default may signal that credit conditions are tighter than expected, that the government’s financial position is weaker than previously thought (thus leading to a revision on expected taxation) or that future output is likely to be lower than

expected. Regardless of the reason, these models predict capital outflows, reduction in investments, and potentially financial crises following defaults.

An alternative way to model the domestic costs of a sovereign default is to assume that a default limits the ability of private agents to obtain the working capital necessary to buy imported inputs (perhaps because the sovereign will impose capital controls or use other measures that will affect the ability of private agents to make payments to foreign creditors). In this case, the default will lead to an inefficient reallocation of labor and have a negative effect on total factor productivity. Enrique G. Mendoza and Yue (2008) show that a model with these characteristics is consistent with the rapid output collapses and rapid recoveries often observed around default episodes and with the presence of a negative correlation between sovereign spreads and GDP growth. Moreover, the model can produce levels of sustainable sovereign debt that are closer to reality than those produced by standard models à la Eaton and Gersovitz (see below).

Finally, Fernando Broner, Alberto Martin, and Jaume Ventura (2006) highlight the role of secondary markets in limiting or even eliminating sovereign risk.<sup>14</sup> If governments maximize the utility of domestic residents and cannot discriminate between foreign and domestic debt holders, and foreigners can sell debt to domestic residents in secondary markets, then debt will always be repaid, even in the absence of any of the traditional punishments. If domestic agents could coordinate not to buy back the debt from foreign creditors, the country would default and be better off. The inability to coordinate leads to an ex post inefficiency but—by solving the

<sup>13</sup> If cash-in-advance contracts are possible, then “normal” governments will be tempted to occasionally default and save. If this goes on for sufficiently long time periods, lenders will eventually become convinced that the government is indeed “normal.” In the limit for  $T \rightarrow \infty$ , no borrowing can be sustained.

<sup>14</sup> Broner, Martin, and Ventura’s model focuses on debt contracts between private parties that are enforced (or not) by a sovereign.



sovereign-risk problem—allows the country to borrow and hence is efficient *ex ante*.

Summing up, the classic theory of sovereign debt focuses on the actions of non-residents and suggests that incentives to repay sovereign debt might include a loss of reputation in the international credit market, trade retaliations, and legal harassment. More recent models focus more on the domestic effects of the defaults. In this case, incentives to repay come from the concern that defaults may have direct adverse effects on domestic agents that the government is trying to protect, or that defaults could be interpreted as bad news about either the sovereign or the economy. The latter may in turn lead defaults to spill over into a much broader range of economic problems.

#### 4. *Empirical Evidence on Sovereign Debt and Sovereign Default*

We now survey the empirical evidence on sovereign debt and default, discuss whether the data can help us in discriminating among the models discussed in section 3, and check if there are changes in the behavior of the sovereign debt market and/or the resolution of sovereign debt crises that could be attributed to the evolution of the legal doctrine as discussed in section 2. We begin by discussing the evidence on the cyclical properties of sovereign borrowing in light of the fact that the majority of theoretical models predict countercyclical net debt flows (countries borrow in bad times and repay in good times). Next, we look at the determinants of sovereign default and discuss whether countries default strategically—i.e., when they could easily repay their debt—or whether defaults are associated with inability to pay. In section 4.3, we examine how debt renegotiations have changed over time, and whether or not they have become more difficult as a result of collective action problems. We then move to the core question of how defaults

are costly to the debtor country, and examine whether the various channels emphasized in the theoretical literature are consistent with the evidence.

##### 4.1 *When Do Countries Borrow?*

According to most of the models surveyed in section 3, the main reason for issuing sovereign debt is to smooth consumption by transferring income from good to bad states of the world. Hence, sovereign borrowing should be countercyclical. This conclusion is also in line with both traditional Keynesian policies and neoclassical models of optimal fiscal policy (Robert J. Barro 1979). However, a large literature beginning with Michael Gavin and Roberto Perotti (1997) has shown that developing countries have in fact tended to follow a procyclical fiscal policy.<sup>15</sup> Is this also true for sovereign borrowing? Eduardo Levy-Yeyati (forthcoming) tackles this issue by regressing net transfers to developing countries from different types of creditors over the recipient's output gap. His main finding is that private lending to sovereigns is procyclical (the output gap coefficient is positive and statistically significant) while official lending is countercyclical; with a net procyclical effect in emerging market countries that regularly access private capital markets. This evidence is hence inconsistent with the idea that countries borrow abroad to smooth income shocks.

Levy-Yeyati (forthcoming) does not deal with reverse causality; that is, the possibility that sovereign borrowing may lead to higher output and, hence, induce the observed positive correlation.<sup>16</sup> Table 1 addresses this

<sup>15</sup> See also Graciela L. Kaminsky, Carmen M. Reinhart, and Carlos A. Végh (2005). Roberto Rigobon (2005) and Dany Jaimovich and Ugo Panizza (2007) provide a criticism to the procyclicality literature.

<sup>16</sup> Levy-Yeyati (forthcoming) argues that reverse causality is not an issue for his purposes because the insurance models of external borrowing predict that net flows should be countercyclical even after the effect of net borrowing on output is factored in.

TABLE 1  
CYCLICALITY OF SOVEREIGN LENDING TO EMERGING MARKET COUNTRIES

	(1)	(2)	(3)
	<b>PRIV</b>	<b>OFF</b>	<b>TOT</b>
	<b>FIXED EFFECTS ESTIMATIONS</b>		
Output gap	3.790** (0.57)	0.284 (0.41)	4.074** (0.71)
	<b>IV FIXED EFFECTS ESTIMATIONS</b>		
Output gap	3.777 (2.88)	2.373 (2.16)	6.150* (3.65)
Observations	943	943	943
Number of countries	29	29	29

*Notes:* The dependent variables measure net transfer to the sovereign from private and official creditors scaled by the recipient's GDP. The output gap is measured as the percentage deviation from a log-linear trend, all regressions include a constant term, country and year fixed effects. The instrument in the IV estimations is the weighted average of the output gap of the country's trading partners. The data consists of an unbalanced panel covering the 1970–2006 period. The emerging market sample consists of the thirty-two countries included in the broadest JP Morgan EMBI Index. However, we exclude Ecuador and Lebanon because they are large outliers and Serbia for lack of data.

Robust standard errors in parentheses.

\*  $p < 0.1$   
\*\*  $p < 0.01$

issue. In column 1, the dependent variable measures net transfers from private lenders to emerging market sovereigns; in column 2, official (bilateral and multilateral) transfers; and in column 3 total net transfers. The top panel of the table reproduces Levy-Yeyati's main results (we loosely define output gap as the percentage deviation of actual output from trend output). The bottom panel of the table instruments the output gap with a weighed average of the output gap of the recipient country's trading partners (see Jaimovich and Panizza 2007 for a discussion of the properties of this instrument). It shows that controlling for endogeneity strengthens the procyclicality result.<sup>17</sup>

<sup>17</sup> In column 1, the coefficient is not statistically significant but the point estimate is basically identical to the one obtained in the standard fixed effects estimates. All of the other coefficients are larger in the IV estimates.

Why is sovereign borrowing procyclical? To answer this question, one can look at the literature on the cyclical behavior of fiscal policy. Here, there are two competing (but not necessarily mutually exclusive) theories for fiscal procyclicality. The first class of explanations focuses on a market failure. In particular, Gavin and Perotti's (1997) original contribution argued that procyclicality is driven by the fact that developing countries lack access to international credit during recessions.<sup>18</sup> An alternative class of explanations concentrates on political failures and shows that procyclicality may arise from the presence of a conflict across different interest groups (Aaron Tornell and Philip R. Lane

<sup>18</sup> The role of incomplete markets is also emphasized by Alvaro Riascos and Végh (2003) and Ricardo J. Caballero and Arvind Krishnamurthy (2004).

TABLE 2  
CYCLICALITY OF NET LENDING MINUS RESERVE ACCUMULATION

	(1)	(2)	(3)
	PRIV- $\Delta$ RES	OFF- $\Delta$ RES	TOT- $\Delta$ RES
Output gap	3.345* (1.57)	1.111 (1.58)	3.997* (1.68)
Observations	931	931	931
Number of countries	29	29	29

*Notes:* The dependent variables measure net transfer to the sovereign from private and official creditors scaled by the recipient's GDP minus reserve accumulation. The output gap is measured as the percentage deviation from a log-linear trend, all regressions include a constant term, country and year fixed effects. The data consists of an unbalanced panel covering the 1970–2006 period. The emerging market sample consists of the thirty-two countries included in the broadest JP Morgan EMBI Index. However, we exclude Ecuador and Lebanon because they are large outliers and Serbia for lack of data.

Robust standard errors in parentheses.

\*  $p < 0.05$

1999), from political pressure for wasteful spending, (Ernesto Talvi and Végh 2005) or from the presence of corrupt politicians (Alberto Alesina, Filipe R. Campante, and Guido Tabellini 2008).

One can try to discriminate these two classes of explanations by examining the joint behavior of net transfers and the accumulation of international reserves. If net transfers are procyclical because developing countries cannot borrow during bad times, developing countries should find it optimal to accumulate international reserves during good times and run them down in bad times. Hence, if the market imperfection story is true we should find that net transfers minus reserve accumulation are less procyclical than net transfers. However, table 2 shows that, when we subtract reserve accumulation from net transfers, the coefficients in a regression of this aggregate on the output gap are basically identical to those of the top panel of table 1. This provides prima facie evidence that, in this sample of emerging countries, political imperfections

dominate market imperfections as an explanation for procyclical borrowing.<sup>19</sup>

A third class of explanations for the observed procyclicalities of sovereign borrowing relates to the nature of the output shock. Aguiar and Gopinath (2006), and Jean-Charles Rochet (2006) show that a model with persistent shocks can generate procyclical borrowing even in the absence of political or capital market imperfections.<sup>20</sup> To the best of our knowledge there exists no empirical

<sup>19</sup> Market imperfections may still play a role if they not only constrain borrowing in bad times but also discourage the accumulation of reserves in normal times (for example, because international reserves are remunerated well below the opportunity cost of funds). Even with this caveat, the results of table 1 are hard to reconcile with the idea that the *only* reason for procyclical borrowing is lack of access during bad times.

<sup>20</sup> The nature of the shock also plays a role in determining the relationship between output volatility and the level of debt. Models with transitory output shocks predict a positive relationship between volatility and the level of sustainable debt. Models that assume persistent shocks (i.e., shocks to trend growth) may generate the opposite relationship.

test of whether the nature of the output shock is associated with the cyclical nature of sovereign borrowing.

#### 4.2 *When Do Countries Default?*<sup>20</sup>

In standard sovereign debt models, countries borrow during bad times and repay during good times. Countries might be tempted to default rather than to repay, but anticipating this, creditors will not lend beyond a threshold level of debt at which defaulting and facing financial autarky is preferable to repaying. As a result, in the simplest models, defaults never happen. This said, defaults can arise in equilibrium in sovereign debt models if the models incorporate uncertainty about output and the debt market is characterized by incomplete contracts.<sup>21</sup> A sequence of bad output shocks can result in a situation in which the country borrows up to its credit limit. If the next output realization is bad again, the country may prefer to default rather than to adjust consumption downward at a time when this is particularly painful.<sup>22</sup> In fact, models that assume persistent shocks (Aguiar and Gopinath 2006 and Rochet 2006) yield the clear prediction that defaults are countercyclical: they tend to occur in bad times.<sup>23</sup>

The evidence seems to be broadly consistent with this aspect of the theory. Levy-Yeyati and Panizza (2006) use quarterly data to study the evolution of GDP growth around

twenty-three default episodes which took place between 1982 and 2003 and find that defaults tend to follow output contractions. Michael Tomz and Wright (2007), using a much larger number of sovereign default episodes between 1820 and 2004, also find a negative correlation between output and defaults. However, traditional sovereign debt models have trouble explaining actual default patterns along two dimensions.

First, they tend to greatly underpredict the incidence of defaults. Aguiar and Gopinath (2006) calibrate a model assuming transitory shocks around stable trend growth using Argentina's business cycle statistics and a set of standard assumptions on the output and reputational cost of default. While Argentina defaulted or restructured its debt five times over the last two centuries, the calibrated model of Aguiar and Gopinath (2006) predicts two defaults in a period of 2,500 years. Aguiar and Gopinath (2006) show that by assuming shocks to trend growth it is possible to generate more reasonable default probabilities, and Hatchondo and Martinez (2008) show that a model with long-duration bonds also generates higher default probabilities. However, both papers yield default probabilities that are much lower than those observed in the real world.

Second, the empirical relationship between bad output realizations and defaults is not as tight as expected. Tomz and Wright (2007) simulate a version of Aguiar and Gopinath's (2006) model, and show that the model predicts that between 85 and 100 percent of default episodes should happen during bad times. In fact, only 62 percent of the default episodes in their sample occurred when output was below trend. Tomz and Wright provide two interpretations for these findings. First, in addition to output shocks, societies may be subject to other shocks that affect the trade-off between defaulting and repaying, particularly political shocks (one could

<sup>21</sup> The classic Eaton–Gersovitz paper contains such an extension (see sections 2 and 3 of that paper).

<sup>22</sup> In the presence of complete contracts, the government could issue fully contingent debt or buy other forms of insurance and become fully isolated from output shocks (in other words, debt would mimic an equity contract). We would like to thank an anonymous referee for reminding us that defaults require both output uncertainty and incomplete contracts.

<sup>23</sup> See also Juan Carlos Hatchondo, Leonardo Martinez, and Horacio Sapriza. (2007b), who show that capital market exclusion is not *necessary* for building a model that matches the cyclical behavior of sovereign debt and sovereign default.

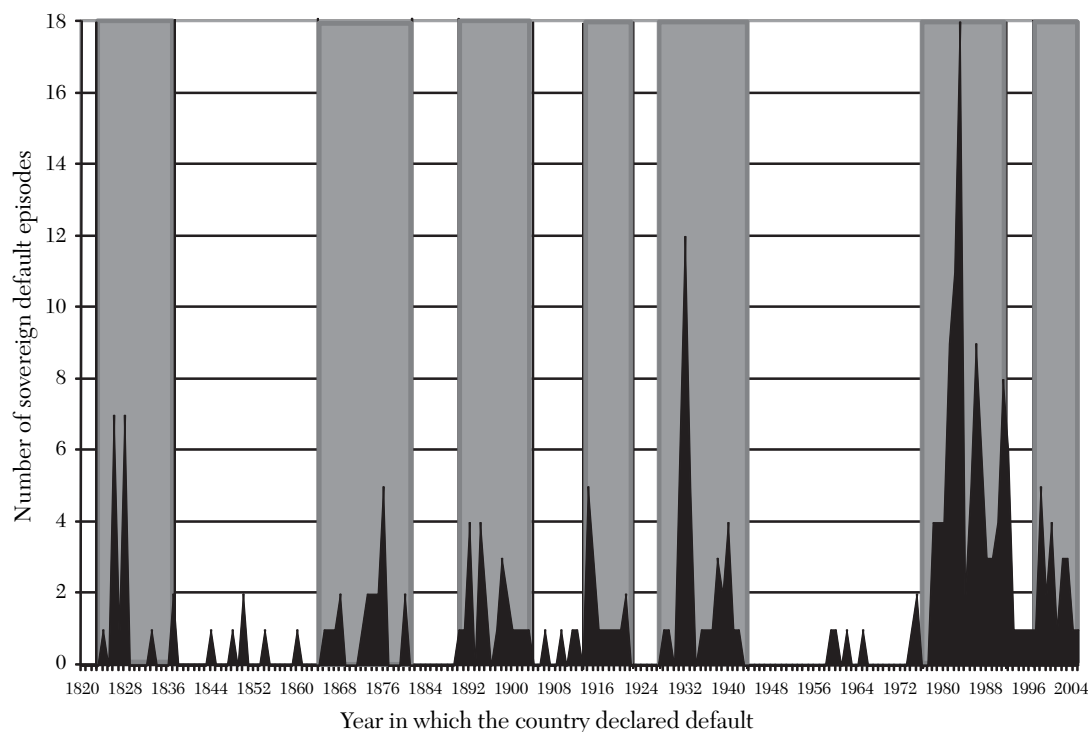


Figure 1. Default Clusters, 1820–2005

Source: Sturzenegger and Zettelmeyer (2007) and Borensztein and Panizza (2008).

interpret these as shocks to national or governmental preferences; see also Tomz 2007). Second, the definition of “bad times” could be broader than just a situation in which output is below trend. In particular, there could be exogenous swings in the credit constraint facing borrowing countries in addition to output shocks—for example, driven by global credit cycles. If defaults are more likely to occur during tight global financial conditions, then this would weaken the correlation between defaults and domestic economic activity (and presumably also increase the incidence of defaults).

Default episodes do in fact tend to happen in clusters, typically following the end

of a period of rapid credit expansion to the borrowing countries (figure 1).<sup>24</sup> Hence, the evidence supports the idea that in addition to debtor country shocks (both economic and political), defaults are influenced by the behavior of creditors and international capital markets (see also Reinhart and Rogoff 2008b).

While the connection between capital market conditions and defaults has not been emphasized very much in the classic literature on sovereign debt, there is a parallel

<sup>24</sup> Roughly speaking, the default clusters occurred from 1820 until the mid 1830s; in the 1870s; the 1890s, around World War I, in the 1930s, in the 1980s, and between 1998 and 2003.



literature on debt and currency crises in emerging markets in which the effect of investor behavior or expectations is the main focus. Unlike the theoretical literature on sovereign debt surveyed in section 3, this literature usually takes the existence (and sometimes the structure) of sovereign debt as given. Conditioning on a given level of debt, tighter international financial conditions will make borrowing in bad times more expensive, and defaulting a more attractive option. In the limit, external financial conditions could in fact make it *impossible* to repay—for example, when there is a run on debt (Sachs 1984; Alesina, Alessandro Prati, and Tabellini 1990; Cole and Timothy J. Kehoe 1996, 2000; and Marcos Chamon 2007) or, with dollar-denominated debt, when there is a run on the currency (see Philippe Aghion, Philippe Bacchetta, and Abhijit Banerjee 2001, 2004; Paul Krugman 1999; Craig Burnside, Martin Eichenbaum, and Sergio Rebelo 2004; and Olivier Jeanne and Zettelmeyer 2005b for a survey).<sup>25</sup>

A third perspective on debt crises, in addition to output shocks and sudden reversals in international capital markets, focuses on the idea that some countries may in fact “overborrow,” that is, accumulate debt which is too high from a welfare perspective, and at—or perhaps just below—the debt level that

competitive creditors will accept.<sup>26</sup> Given this high debt, small shocks (of whatever kind) could trigger a default. Debt accumulation might be excessive because the parties that contract the debt do not bear the full costs of repayment or crises. For example, excessive borrowing could benefit specific groups at the expense of the average domestic taxpayer (Perotti 1996). Moral hazard could also occur at the expense of the *foreign* taxpayer, if countries in crisis are “bailed out” by institutions such as IMF or World Bank, or through bilateral lending.<sup>27</sup> Finally, overborrowing (and overlending) may occur at the expense of preexisting creditors, if these have to share the recovery value of the debt with new creditors in the event of default (see Borensztein et al. 2005 for a discussion of this “debt dilution” problem).

In addition to the (small) literature on the cyclical properties of defaults and debt crises, there is a much larger empirical literature on the determinants of debt crises that dates back to the work of William R. Cline (1984) and Daniel McFadden et al. (1985).<sup>28</sup> The objective of this literature is mainly to predict

<sup>26</sup> Evidence for overborrowing is provided in International Monetary Fund (2003), chapter 3, and Mendoza and Jonathan D. Ostry (2002). Reinhart and Rogoff (2008a) examine domestic and external debt and defaults jointly and show that external defaults are often driven by the accumulation of unsustainable *domestic* debt.

<sup>27</sup> For this argument to make sense, official loans must contain a subsidy, either by carrying an interest rate that does not reflect the riskiness of the loan for the official lender, or because the debtor country expects part of the loan to be forgiven. If this is not the case, the safety net would be operated at no one's expense and, hence, could not be a source of moral hazard by definition (Jeanne and Zettelmeyer 2001, 2005a).

<sup>28</sup> This literature includes Enrica Detragiache and Antonio Spilimbergo (2001); Catão and Bennett Sutton (2002); Paolo Manasse, Nouriel Roubini, and Axel Schimmelpfennig (2003); Reinhart, Rogoff, and Miguel A. Savastano (2003); Caroline Van Rijckeghem and Beatrice Weder (2004); Aart Kraay and Vikram Nehru (2006); Mark Kruger and Miguel Messmacher (2004); Emanuel Kohlscheen (2005, 2006); and Andrea Pescatori and Amadou N. R. Sy (2007).

<sup>25</sup> Liquidity or conditional solvency crises of this kind could hence be called true “ability to pay,” as opposed to “willingness to pay,” crises in which the country chooses not to repay. Beyond this, however, the distinction between “willingness to pay” and “ability to pay” is of limited usefulness since even crises that are triggered by a bad shock could be viewed as “willingness to pay” crises in the sense that, with sufficient adjustment (e.g., a large decline in consumption), repayment would be feasible. In contrast, Herschel I. Grossman and John B. Van Huyck's (1988) and Tomz's (2007) distinction between “excusable” (or “expected”) defaults and pure repudiations (in essence, defaults in good times) is more useful. Most defaults are arguably both in the “willingness to pay” category and “excusable” in the sense that they are triggered by bad shocks or difficult debt market conditions.

defaults (or say something about their likelihood in a specific country situation) in a way that is only loosely connected to theory. A discrete measure of debt distress—defined either *de jure*, in line with the definition of default used by rating agencies, or *de facto*, based on the accumulation of arrears, nonconcessional IMF lending, or secondary market sovereign bond spread in excess of a critical threshold is typically regressed on a large number of “solvency,” “liquidity,” and perhaps “willingness to pay” proxies, mostly with expected results. The probability of a debt crisis is positively associated with higher levels of total debt and higher shares of short-term debt, and negatively associated with GDP growth and the level of international reserves. Defaults are also related to more volatile and persistent output fluctuations, less trade openness, weaker institutions, and a previous history of defaults.

While these papers are useful in establishing the correlates of debt crises and creating an inventory of “early warning signals,” their results sometimes have ambivalent interpretations and, hence, only limited usefulness as tests of theoretical predictions. One problem is that causality may often run both ways: it is exceedingly difficult to disentangle causes and consequences of default, particularly since economic behavior could change in anticipation of crises. For example, the fact that short-term debt increases and reserve holdings decrease ahead of a default may indicate that liquidity shortages cause crises; but it may also reflect the sovereign’s inability to issue long-term debt when a default appears imminent (Detragiache and Spilimbergo 2001). Another problem is that a particular fact, even when the direction of causality is clear, may be consistent with competing theories. Assume the correlation between short-term debt and crises does in fact reflect a causal relationship from the former to the latter. Even making this assumption, there are competing interpretations. Higher short-term debt makes more likely that countries will face a run;

but it also increases the temptation to default today rather than later. These are very different interpretations of why crises occur.

One way to use crisis regression models which is less sensitive to these problems is to use them to check whether the structure of the relationship between the probability of default and its various economic and political correlates has remained stable or not. In particular, we are interested in testing whether the changes in legal doctrine and practice discussed in section 2 may have altered the incentives to default. One way of doing this is to interact the standard economic and political correlates with a dummy variable that takes the value of one for the post 1992 period.<sup>29</sup> We conducted this experiment based on a logit model for all developing and transition economies from 1970 until 2004, using the set of explanatory variables studied by Manasse, Roubini, and Schimmelpfennig (2003), and the Standard & Poor’s definition of selective default. Only one of the interacted variables had a statistically significant coefficient, and a Wald test revealed that the whole set of interacted variables was not jointly significant (full results available on request). Hence, institutional or legal changes in sovereign debt after the 1980s do not appear to have altered the relationship between economic and political variables and the probability of a debt default.

#### 4.3 *How Are Defaults Resolved?*<sup>3</sup>

The process through which debt crises are resolved—i.e., the debt is renegotiated—has changed significantly since the 1980s, mainly as a consequence of debt securitization and changes in the identity and representation

<sup>29</sup> We use this break point because of the 1992 decision of the U.S. Supreme Court (*Republic of Argentina v. Weltover*) that established that default on a contract that involves payments in the United States is sufficient to satisfy the U.S. nexus requirement under FSIA.

of creditors.<sup>30</sup> In the 1970s and 1980s, the creditors of emerging market sovereigns tended to be banks. Debt took the form of syndicated loans, and renegotiations were conducted through “bank advisory committees” (BACs) consisting of representatives of the major bank creditors (Lex Rieffel 2003). Each country negotiated with just one BAC. In contrast, after the mid-1990s, creditors were mainly bondholders with widely differing institutional characteristics—from pension funds to individual “retail holders”—reflecting the return to emerging market bond finance after the Brady deals, in which defaulted bank loans were exchanged for Brady bonds. There was no unified creditor representation and generally no structured negotiation process. Debt restructurings took the form of take-it-or-leave-it exchange offers, though these were usually preceded by informal discussions with creditors.

The role of third parties—in particular, the International Monetary Fund—in these negotiations also changed. The IMF played an important role during the debt restructurings of the 1980s, both as a source of independent information about the debt service capacity of the debtor countries, and by providing new financing to the debtors (in addition to the debt relief itself) conditional on economic adjustment and reform measures (Erika Jorgensen and Sachs 1989; James M. Boughton 2001; Rieffel 2003). In the 1990s, the Fund still played its traditional role of conditional lending to countries experiencing external financing crises, but generally took a more distant approach to the debt restructuring negotiations themselves. This was motivated, in part, by the desire of not appearing partial to either side<sup>31</sup> and, in part,

by the fact that the Fund was itself a major creditor and hence faced a conflict of interests in important restructuring cases such as Russia (1998–2000) or Argentina (2002–05).

The question is whether these institutional changes had implications either for the efficiency of debt crisis resolution or the costs of default for either debtors or creditors. In the late 1990s and the early years of this decade, debt market participants and the policy community believed that it would, generally for the worse. It was feared, first, that the dispersion and heterogeneity of bondholders would make it much more difficult for creditors to coordinate, making for protracted and litigious debt restructuring negotiations. Second, this would not necessarily have benefits *ex ante* (as might be the case if protracted debt restructurings make defaults more costly from a creditor country perspective) both because long and messy restructuring negotiations created a deadweight loss that might be reflected in more costly borrowing, and because take-it-or-leave-it offers, combined with a more fractured creditor side, would tend to shift bargaining power toward the sovereign. These perceived problems motivated a large set of policy initiatives focused on mitigating collective action problems in sovereign debt restructurings, ranging from issuing bonds with collective action clauses that would make changes in the payment terms agreed by a supermajority of creditors legally binding for all creditors, to the creation of new

<sup>30</sup> In this paper, we do not deal with the resolution of defaults vis-à-vis official creditors because this is mostly a political issue. For a discussion of the politics of external debt, see Panizza (2008).

<sup>31</sup> During the 1980s, the IMF was viewed as strengthening the bargaining position of the banks, because

its policies initially did not allow it to lend to debtors in arrears. This policy was changed in the late 1980s and replaced by a policy allowing the Fund to lend into arrears with private sector creditors as long as countries were conducting “good-faith” negotiations. This has not stopped the controversy, however. In particular, after Argentina’s default, creditors criticized the Fund for lending to Argentina in spite of what they perceived as a lack of good faith negotiation on the side of the Argentine government. For an independent analysis of the IMF’s lending-into-arrears policy, see Javier-Díaz Cassou, Aitor Erce-Domínguez, and Juan J. Vázquez-Zamora (2008).

institutions such as an international bankruptcy mechanism for sovereigns.<sup>32</sup>

Did these fears materialize? The answer, by and large, appears to be No.

As far as the duration of default episodes is concerned, Inter-American Development Bank (2006) shows that the duration of the average default episode declined from approximately eight years in the 1970–90 period to about four years since 1991.<sup>33</sup> Compared to the historical norm, recent defaults appear to have been resolved in record time. Among the high-profile bond restructurings since 1998 (see Sturzenegger and Zettelmeyer, 2007b for a description), only one—Argentina (2001–05)—took more than two years. Furthermore, in most of these recent cases (Argentina is again the main exception) creditor participation was above 90 percent, and both pre-and postrestructuring litigation has remained rare.<sup>34</sup>

Cristoph Trebesch (2008) studies the determinants of delays in ninety restructuring episodes between 1980 and 2007. He finds long delays (averaging approximately five years) in the Brady era (1990–98) and much shorter delays (between 1 and 1.5 years) in the pre-Brady (1980–90) and post-Brady (1998–2007)

eras. Trebesch also finds limited evidence of prerestructuring litigations (litigation was an obstacle to restructuring in only seven of the ninety cases included in his sample), and no evidence that the number of creditors or the type of instrument (bonds versus bank loans) is correlated with the duration of the restructuring process. His main conclusion is that *debtor* characteristics—including measures of political risk, the debt profile, and other economic characteristics—are a much more important predictor of the duration of debt restructurings than creditor characteristics.

Why did creditor coordination failures turn out to be mostly a nonevent in the 1990s in spite of the lack of contractual or institutional coordination devices?<sup>35</sup> A possible answer is that the debtors themselves had some influence over potential coordination problems through the design of their exchange offers, and by and large seem to have used this influence effectively (Bi, Chamon, and Zettelmeyer 2008). For one thing, incentives for costly litigation could be reduced by making an offer sufficiently attractive. Furthermore, creditor coordination could be facilitated by setting “minimum participation thresholds” that made an exchange offer contingent on high creditor participation, reassuring accepting creditors that they could revert to their original claim if the exchange turned out to be a failure. Minimum participation thresholds were in fact used in all major debt exchanges except for Argentina’s 2005 exchange. In addition, “exit consents” in which creditors accepting the exchange offer were asked to consent to changes in the nonpayment terms of the original bonds, were used to discourage hold-outs in some restructurings (Ecuador, 2000; Uruguay, 2003; Dominican Republic, 2005;

<sup>32</sup> See Barry Eichengreen and Richard Portes (1995), Group of Ten (1996), Krueger (2001), Sean Hagan (2005), and Rogoff and Zettelmeyer (2002) for a survey. Theoretical analyses of these proposals include Eichengreen, Kletzer, and Ashoka Mody (2003), Jeanne (2004), Patrick Bolton and Jeanne (2007), Andrew G. Haldane et al. (2005), Pitchford and Wright (2007), and Sergi Lanau (2008).

<sup>33</sup> Data presented in Benjamin and Wright (2008) leads to the same conclusions. The duration of a default episode is usually measured as the amount of time between the moment in which a country stops servicing its debt (sometimes credit rating agencies allow for a short grace period) and the moment in which debt restructuring is completed. Post-restructuring litigations are not usually included in the computation of the length of the default episode.

<sup>34</sup> Using a longer time series and different data, Reinhart and Rogoff (2008b) show that the median length of default spells in the 1800–1945 period was twice as long than the median length of default spells in the 1946–2005 period.

<sup>35</sup> A few cases (e.g., Ukraine, 2000; Moldova, 2002) were resolved with the help of collective action clauses but, for the most part, collective action clauses played little or no role.

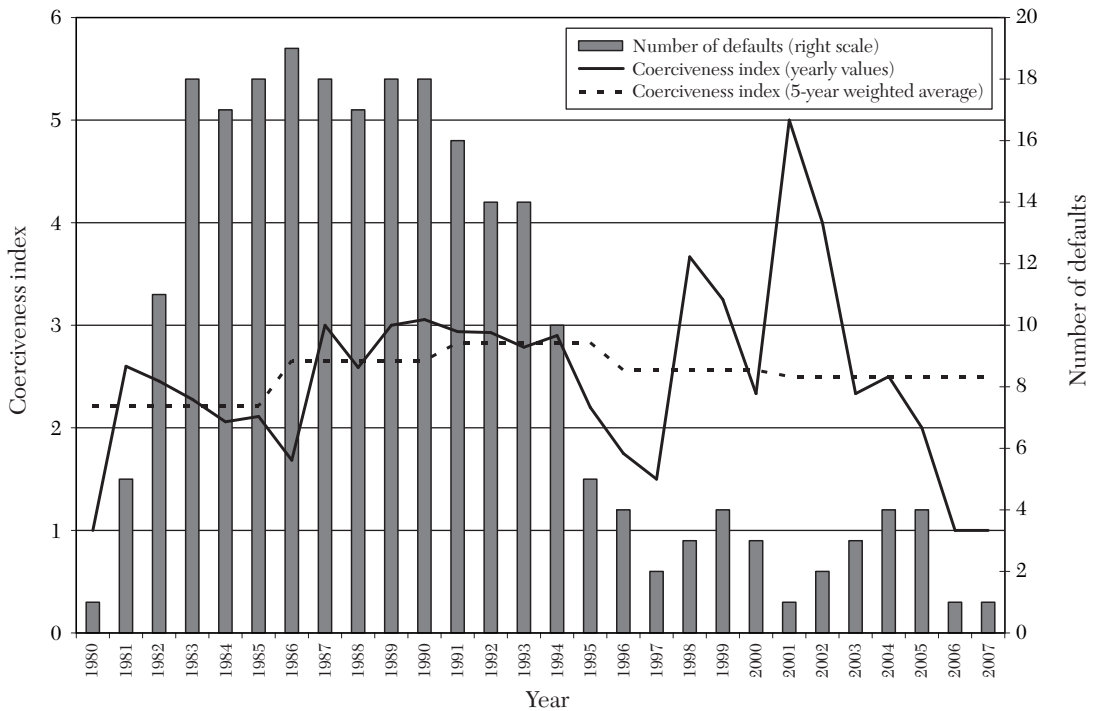


Figure 2. The Index of Coerciveness

Source: Own calculations based on data from Enderlein, Müller, and Trebesch (2008).

see Sturzenegger and Zettelmeyer 2007b for details).<sup>36</sup>

There is also no evidence that recent bond restructurings have resulted in more “coercive” creditor treatment, or that the practice of take-it-or-leave-it offers has shifted

bargaining power to debtor countries. Henrik Enderlein, Laura Müller, and Trebesch (2008) build an index of coerciveness for thirty-eight emerging market default episodes in the 1980–2006 period. The index is based on procedural criteria that aim to measure whether a defaulting government strived to solve the crisis in cooperation with its external creditors, or decided to take an aggressive stance. Figure 2 plots the coerciveness index and the number of default episodes in the sample of Enderlein, Müller, and Trebesch (2008).<sup>37</sup> The index is fairly stable (between 2 and 2.9) during 1981–94, but becomes very

<sup>36</sup> A second reason why incentives to hold out may have been less pronounced than was originally feared is related to the tradability of debt and to the introduction of mark-to-market accounting (we thank Charlie Blitzer for this observation). In the 1980s, lack of tradability allowed banks to value sovereign loans at face value while they were being rolled over. Accepting a debt exchange amounted to recognizing a loss. In contrast, secondary debt markets in the 1990s implied that defaulted debt was marked to market value. By the time of a debt exchange offer, losses had, hence, already been realized and creditors were typically keen to capture the upside associated with the new instruments on offer.

<sup>37</sup> Each bar measures the number of the countries that are in default in a given year and not the number of countries that entered default in that year.



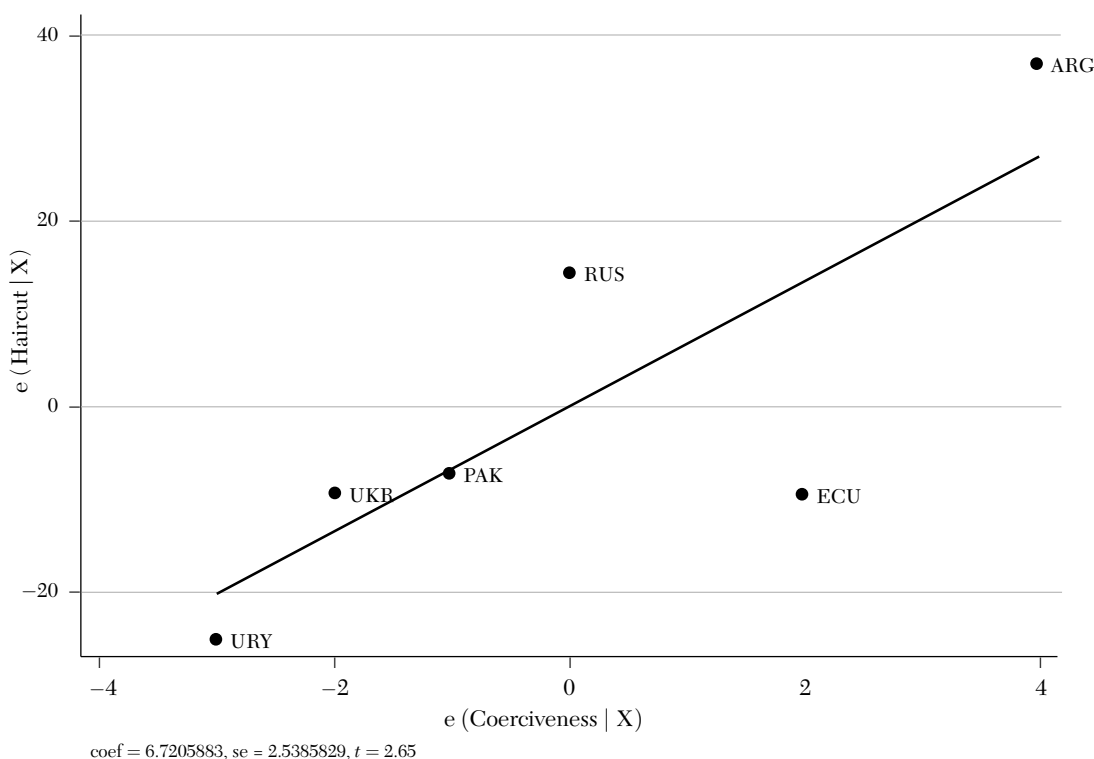


Figure 3. Haircut and the Index of Coerciveness

Source: Haircut data are from Sturzenegger and Zettelmeyer (2007) and coerciveness data are from Enderlein, Müller, and Trebesch (2008).

volatile (oscillating between 1 and 5) in 1995–2007. In contrast, *average* coerciveness over five-year periods has remained more or less constant, ranging between 2.2 (in 1980–85) and 2.8 (in 1991–95). Hence, figure 2 suggests that changes in creditor composition or legal environment did not affect the coerciveness on average, but may have affected its volatility (perhaps by encouraging either a cooperative attitude that avoided litigation altogether, or all-out conflict). This said, it is possible that the increase in volatility is simply driven by the smaller number of defaults in the recent period (on average 2.8 per year in 1995–2007, versus 15.2 per year in

1981–94). Indeed, the index takes its extreme values in 2001, 2006, and 2007, all years in which there is only one default episode.

Consistent with the behavior of Enderlein, Müller, and Trebesch's procedural index, *actual* creditor losses in the 1998–2005 period show a high degree of variation, from very high losses in Argentina's 2005 restructuring—about 75 percent—to low losses in Uruguay's (2003) external restructuring in the order of 13 percent (Sturzenegger and Zettelmeyer 2007a, 2008). Furthermore, there is a strong, albeit not perfect, correlation between investors' losses and the procedural index (figure 3). Finally, estimates of debt

forgiveness based on face value reductions and interest forgiven compiled by Benjamin and Wright (2008) for ninety default episodes that were initiated between 1979 and 2005 suggest that the defaults that began before 1995 involved debt write downs that were more than twice as big than those of defaults that began after 1995 (the “haircuts,” in Benjamin and Wright’s definition, are about 22 percent for the more recent group of defaults and about 45 percent for the pre-1995 group of defaults; restricting the latter group to the Brady deal countries leads to about the same average haircut). While these estimates are crude because they do not take into account net present value losses due to maturity extension, they are consistent with the idea that investors did not receive harsher treatment in the post-1995 bond restructurings compared to the bank debt restructurings of the 1980s and early 1990s.

#### 4.4 *What Is the Cost of Default for Debtors?*

For a sovereign debt market to exist, defaults must be costly in at least some states of the world. As we have seen, models of sovereign debt distinguish themselves primarily in terms of which cost they emphasize. We now briefly review what the empirical literature has to say on this subject, and whether it lends support to specific theories (or classes of theories).<sup>38</sup>

##### 4.4.1 *Capital Market Exclusion*

There is clearly some capital market exclusion period following a default. This typically encompasses the default period, i.e., the period until the conclusion of a debt restructuring. Once this has concluded, however,

<sup>38</sup> See also the surveys by Bianca De Paoli, Glenn Hoggarth, and Victoria Saporta (2006); Hatchondo, Martinez, and Saprizza (2007a); and Borensztein and Panizza (forthcoming-a).

countries defaulting in the last three decades have regained access to international capital markets fairly quickly.

Defining “access” as bond issuance or bank borrowing in international markets, Sandleris, Gaston Gelos, and Ratna Sahay (2004) show that in the 1980s countries were excluded from international capital markets for about four years on average after their defaults ended.<sup>39</sup> After the 1980s, reaccess following exit from default was even faster (0–2 years).<sup>40</sup> Using a stronger definition of “access”—positive *net* transfers—Christine Richmond and Daniel A. Dias (2008) find somewhat longer exclusion periods of 5.5 years in the 1980s, 4.1 in the 1990s, and 2.5 in this decade. Levy-Yeyati (forthcoming) finds that countries that defaulted in the 1970–2004 period receive lower net transfers in the years that follow the default episode. However, the effects are fairly small: the impact of past defaults on net transfers ranges between 0.1 and 1 percentage points of GDP. Arráiz (2006a) presents evidence showing that countries that defaulted in the past are excluded from the capital market for a *shorter* period than first time defaulters. She interprets this as an indication of the fact that countries with a history of defaults have

<sup>39</sup> Arguably, one needs to add to this the average renegotiation period while countries are in default, which was long in the 1980s (about eight years, see Benjamin and Wright 2008). This said, most countries that defaulted in the 1980s received several debt reschedulings as well as “new money” lending from both private and official creditors. In this sense, capital market exclusion was not complete even during the renegotiation period. The same is true for the more recent renegotiation periods, during which debtors typically both had access to official credit, and sometimes were able to issue new domestic debt—including to international creditors—before a debt restructuring agreement had been concluded.

<sup>40</sup> This may overstate the speed of access because Sandleris, Gelos, and Sahay exclude countries that did not regain access to international markets at all during their (1980–2004) sample period. However, this latter group consists of only a few countries (Bolivia and a small set of African countries that defaulted in the 1980s).

revealed to the credit market how they might manage possible future defaults.

Global credit cycles seem much more important than default history in determining market access. For instance, in the period between the end of the World War II and the mid 1960s almost no developing country had access to the international capital market. This included both countries that defaulted in the 1930s, and countries (such as Argentina, for example) which had made great efforts to avoid default and maintain a good reputation.<sup>41</sup> Conversely, almost all countries that defaulted in the 1980s regained international capital market access in the 1990s. Richmond and Dias (2008) confirm that external financial market conditions—proxied by the spread on high-yield corporate bonds in the United States and U.S. T-Bill rates—are the most important factors determining the speed with which countries return to positive net borrowing.

In light of this evidence, how satisfactory are sovereign debt models based on capital market exclusion? The fact that real-world capital market exclusion is temporary is not per se a problem for modern theories: beginning with Cole, James Dow, and William B. English (1995) and Kletzer and Wright (2000), sovereign debt models based on reputation in capital markets have typically dispensed with the assumption of permanent capital market exclusion. Furthermore, some of these recent models—including Natalia Kovrijnykh and Balazs Szentes (2007), Benjamin and Wright (2008), and Bi (2008a)—can generate renegotiation patterns and capital market exclusion periods that seem roughly in line with what is observed in reality.

At the same time, however, it is clear from the evidence and the calibrated models that

fear of exclusion from capital markets cannot be the only—or even the main—reason why countries repay their debts. Arellano and Jonathan Heathcote (2008) show that a world in which the only cost of default is *permanent* exclusion from future borrowing would yield maximum sustainable debt levels which are at least one order of magnitude smaller than the debt levels that we observe in the real world. Presumably, temporary exclusion, as observed after actual defaults, would yield even lower sustainable debt levels. Indeed, it has become standard practice in calibrated models of sovereign debt to assume an additional exogenous output cost of default in order to generate realistic debt levels.<sup>42</sup>

#### 4.4.2 *Cost of Borrowing*

The evidence on the effect of defaults on the cost of borrowing has a similar flavor as that on market exclusion. Immediately following a default episode—that is, after a debt restructuring has been concluded—borrowing costs tend to be much higher than in tranquil times, controlling for fundamentals (Sturzenegger and Zettelmeyer 2007a; Borensztein and Panizza forthcoming-a). However, this effect is short-lived. Based on a sample of thirty-one emerging market countries in the 1997–2004 period, Borensztein and Panizza (forthcoming-a) find that in the year after a default episode spreads are about 400 basis point higher than in tranquil periods, but this premium falls to 250 basis points in the second year and loses statistical significance, and quickly declines further in the following years. Marc Flandreau and Frédéric Zumer (2004) find a similar pattern for the 1880–1914 period: default episodes are associated with an increase in spreads of approximately 90 basis points in the year

<sup>41</sup> Argentina may have been rewarded by accessing capital markets just before World War II, however, while countries that defaulted in the 1930s were excluded (Tomz 2007).

<sup>42</sup> For example, Laura Alfaro and Fabio Kanczuk (2005), Arellano (2008), Aguiar and Gopinath (2006), Bi (2008a), and Benjamin and Wright (2008).

that follows the episode, but the effect of the default dies out very rapidly.

These findings are consistent with several papers that study the effects of defaults on borrowing costs over longer periods. Peter H. Lindert and Peter J. Morton (1989), Bhagwan Chowdhry (1991), and Sule Özler (1993) all show that defaults in the nineteenth century and in the early twentieth century had no effect on borrowing costs in the 1970s. However, Özler (1993) does find that countries that defaulted either in the 1930s or in the postwar period were charged slightly higher spreads in the 1968–81 period (in the order of 25 and 40 basis points, respectively); and Giovanni Dell’Ariccia, Isabel Schnabel and Zettelmeyer (2006) have a similar result for the 1990s with respect to countries that defaulted in the 1980s. This said, the precision and, hence, statistical significance of Özler’s (1993) results may be overstated because the regression is based on loan-level data without clustering of standard errors. Indeed, in a paper examining borrowing costs during the same period using country-level data and a different methodology, Péter Benczúr and Cosmin Ilut (2006) do not find a statistically significant effect of distant (pre-1970s) default history on spreads, although they do find an effect of recent default history.

Overall, these findings do not lend much support to theories of sovereign debt based on maintaining a good reputation in credit markets. Except in the short run, the effects of defaults on borrowing costs seem small, and eventually disappear. Defaults do not seem to affect borrowing costs in a way which is both long-lived and quantitatively important.<sup>43</sup>

<sup>43</sup> Other empirical work aimed at testing the reputation in credit markets focused on the behavior of credit ratings. Richard Cantor and Frank Packer (1996) show that a dummy variable that takes value one for countries that defaulted in the 1970–95 period is associated with a two-notch drop in the country’s credit rating in 1995. Reinhart, Rogoff, and Savastano (2003) show that default history is significantly and negatively correlated with

Hence, by itself, the effect of default on borrowing costs does not seem to be a plausible deterrent of default. This conclusion is supported by a recent calibrated model due to Alfaro and Kanczuk (2005), which shows that interest rate penalties cannot sustain equilibria with positive sovereign debt, unless it is assumed that the short-lived rise of interest rates after a default induces large output costs.

#### 4.4.3 Sanctions

As we have seen in section 3, economic models of sovereign debt have sometimes assumed that creditors can impose direct penalties on the defaulting country, in addition to (or instead of) punishing defaulters through future capital market exclusion or higher borrowing costs. The question is what form such sanctions might take, and whether there is any evidence for them. We briefly review three types of sanctions: political or military pressure by Western governments acting in the interests of creditors, legal sanctions (including actual or threatened asset seizures by private creditors), and reductions in trade.

Kris James Mitchener and Marc D. Weidenmier (2005) document about a dozen cases of “supersanctions” during the classical gold standard period of 1870–1914. These took the form actual or threatened military intervention (“gunboat diplomacy”), typically leading to direct control of customs or tax revenues on behalf of creditors (for example, in Tunisia, 1870; Egypt, 1882; Turkey, 1882; Greece, 1898; Morocco, 1905; and, in the early twentieth century, several Central

ratings published by *Institutional Investor*. However, Catão and Kapur (2006) find that this result is not robust to including additional economic variables in the regression. Borensztein and Panizza (forthcoming-a) show that defaults initially have a large negative impact on credit ratings; however, the correlation between default and credit rating tends to disappear about five years after the default episode.

American countries). In some cases, such as Tunisia, Egypt, and Morocco, these interventions were followed by a loss of political independence, i.e., with debtor countries becoming “protectorates.”<sup>44</sup> Whether or not these episodes should be viewed as punishment for default, however, is controversial. Tomz (2007) argues that gunboat diplomacy was driven by the coincidence of defaults with other disputes (civil wars, territorial conflicts, and tort claims) that he suggests were the real cause of the military intervention. This said, from the perspective of default incentives it might not matter whether defaults are the “real” cause of a military intervention or not, as long as defaults increase the chances of such an intervention.

Regardless of how the debate between Tomz (2007) and Mitchener and Weidenmier (2005) is resolved, there does not appear to be any recent evidence for supersanctions (in particular, following the debt defaults of the 1980s and 1990s). One possibility is that supersanctions lost their significance as sovereign immunities were reduced after World War II, and the potential role for private enforcement through the courts increased. Indeed, as documented in section 2, in the 1990s some holdout creditors received (near) full repayment, sometimes backed by the threat of disrupting financial transactions of the debtor abroad, which in turn was based on court judgments allowing the creditors to seize commercial assets of the debtor (diplomatic assets remain protected by sovereign immunity). However, in all cases in which holdouts were successful, they owned only a small portion of the total outstanding debt. The penalty involved with repaying these holdouts would hence have been far too small to deter a default. Furthermore, the potential for holdouts to deter defaults remains

limited by the availability of debtor country assets abroad, and the ingenuity of debtors in structuring international financial transactions so as to avoid large asset holdings in jurisdictions where holdouts have obtained court judgments.

Finally, much attention has focused on declines in international trade as a potential cost of default. For instance, an influential paper by Carlos F. Díaz-Alejandro (1983) argues that Argentina did not default in the 1930s in order to protect its trade relations with Great Britain. Andrew K. Rose (2005) uses bilateral trade data to study the effect of Paris Club debt rescheduling and finds that debt renegotiations are associated with a decline in bilateral trade of approximately 8 percent per year, and that defaults affect trade for a long period (fifteen years). Borensztein and Panizza (forthcoming-b) use industry-level data and show that sovereign defaults are costly for export oriented industries. In contrast to Rose’s finding, these effects appear to be fairly short-lived (three to four years). Lanau (2008) also uses industry-level data and finds that import-competing firms benefit from defaults in relative terms, consistent with the idea that defaults reduce trade and, hence, competition from abroad.

There is also indirect support for the thesis that defaults lead to trade reductions. If the cost of default goes through bilateral trade, it is plausible that higher levels of international trade should be associated with higher level of bilateral lending. Rose and Mark M. Spiegel (2004) test and find support for this hypothesis. Along similar lines, Lane (2004) shows that countries that trade more can sustain higher levels of external debt.

While the notion that defaults reduce trade, at least temporarily, is well established, its role in deterring defaults remains controversial. Tomz (2007) takes issue with Díaz-Alejandro’s argument regarding the motives for Argentina’s determination to avoid default in the 1930s. English (1996) studies defaults

<sup>44</sup> In addition, there were several cases of “softer” political or diplomatic intervention on behalf of creditors (Paolo Mauro, Nathan Sussman, and Yishay Yafeh 2006).



by U.S. states in the nineteenth century and points to the fact that since foreign lenders could not impose trade sanctions on individual states that defaulted on their debt, the states that paid back must have done so for reputational reasons and not because they were afraid of a trade embargo. Furthermore, the *channel* through which defaults affect trade remains something of a puzzle. Any evidence linking trade declines to “supersanctions” is limited to the Gold Standard era (Mitchener and Weidenmier 2005).

A possible interpretation for the more recent periods could be that in the aftermath of a default episode both importers and exporters lose access to credit and the decline in trade is driven by the presence of credit constraints. Borensztein and Panizza (forthcoming-a) test this hypothesis, with mixed results: while default episodes are associated with a decline in trade credit, the relationship between trade and default is not affected by including trade credit in the regression. Carlos Arteta and Galina Hale (2008) use firm-level data and show that sovereign defaults are negatively associated with domestic private firms’ access to foreign credit. However, they find that this effect is stronger for nonexporters than for exporting firms. Thus, the channel linking default to trade remains a mystery.

#### 4.4.4 Domestic Costs

As we saw in section 4.2, defaults tend to be negatively correlated with domestic output: they tend to happen in bad times. So far, we have interpreted this correlation in line with the causality offered by insurance models of sovereign debt, that is, with the causality running from output to defaults. However, there could also be a causal link in the other direction. Defaults could cause output drops, or make already bad output states worse, at least in the short run. If so, this might constitute an extra reason for why countries generally try to repay their debts.

A recent literature based on cross-country regressions has attempted to shed some light on this subject. Based on cross-section and panel growth regressions, Sturzenegger (2004) finds that default episodes are associated with a reduction in growth of approximately 0.6 percentage points. If the default comes with a banking crisis, growth decreases by 2.2 percentage points. De Paoli, Hoggarth, and Saporta (2006) also find that output losses (i.e., periods in which actual GDP is below trend GDP) are correlated with default episodes, and increase with the duration of the default episode. In contrast, using quarterly data, Levy-Yeyati and Panizza (2006) find that defaults tend to happen in the trough of a contraction and often mark the beginning of the *recovery*.

How can these results be reconciled? Growth regressions involving default dummies could suffer from not one but at least *two* biases. First, and most obviously, defaults could be endogenous to output declines, as theory does indeed predict, imparting a downward bias on the default dummy’s regression coefficient. Second, it is possible that output declines not in reaction to defaults, but in reaction to default *expectations*. A regression focusing on the contemporaneous and lagged effects of defaults at higher frequencies (annual perhaps, and certainly quarterly) could miss this effect.

Recent papers by Gisella Chiang and Javier Coronado (2005) and Borensztein and Panizza (forthcoming-a) attempt to address these biases using a two-stage approach. First, the probability of defaults is estimated using a probit model involving various predictors of debt crises, and then, the predicted default probabilities are used in a second regression to explain output. In Chiang and Coronado (2005), the second stage regression involves a default dummy and the predicted default probability as an addition control (defined for all time periods). Borensztein and Panizza (forthcoming-a) run a second stage regression

TABLE 3  
DEFAULTS AND GDP GROWTH

	(1)	(2)	(3)
DEFAULT	-1.309** (0.29)	-1.649** (0.40)	
DEFAULT*D90		0.703 (0.51)	
UNPRED_DEF			-0.937* (0.38)
PRED_DEF			-1.437* (0.64)
Observations	2,048	2,048	843
R <sup>2</sup>	0.22	0.22	0.26
Tests:		<i>p</i> -value	<i>p</i> -value
DEFAULT*D90 + DEFAULT = 0		0.011*	
UNPRED_DEF-PRED_DEF = 0			0.491

*Notes:* All regressions are based on pooled data for the 1970–2006 period. The dependent variable is the growth rate of GDP per capita. The control variables are year fixed effects, regional fixed effects, investment ratio, population growth, initial income, education, government consumption, index of civil rights, terms of trade shocks, and trade openness.

Robust standard errors in parentheses.

\*  $p < 0.05$

\*\*  $p < 0.01$

in which the default dummy is decomposed into predicted and unpredicted portions. Both are statistically significant, although the effect of the unpredicted portion is a bit smaller, and both effects appear to be short-lived.

Table 3 gives the flavor of these results and also checks whether recent default episodes had a different effect on growth by interacting the default dummy with a dummy variable that takes value one for the 1990s. Column 2 shows that recent defaults had a smaller impact on growth but the coefficient remains negative and statistically significant at the 5 percent confidence level. Column 3 undertakes the decomposition into expected defaults and default surprises and shows that even unpredicted defaults

had a statistically significant and, at 1 percent, quite sizable effect. We also find that the impact of predicted defaults is not significantly different from that of unpredicted defaults.

While these regressions do not fully deal with the endogeneity problem—including because they rely on a particular empirical model for identifying the default surprise, which may or may not be correct—they do provide some backing for the idea that defaults, both expected and surprises, may cause output losses. This is also backed by case studies (International Monetary Fund 2002; Sturzenegger and Zettelmeyer 2007b) that suggest specific causal channels through which default may make economic crises worse—in particular, by causing a run on

banks, and by exacerbating capital flight<sup>45</sup>—and by recent papers that investigate specific channels. Borensztein and Panizza (forthcoming-a) find that sovereign defaults are associated with an increase of the probability of a banking crises. Miguel Fuentes and Diego Saravia (2006) show that defaults lead to a fall in FDI flows into the country, with this reduction concentrated in flows originating in creditor countries.<sup>46</sup> Arteta and Hale (2008) show that foreign credit to the *private* sector collapses in the aftermath of a default, though it is not clear whether this is driven by a reduction in the supply of credit or a reduction in the demand for credit.

What are the implications of these findings for sovereign debt theory? Most obviously, evidence that the cost of defaults are mainly domestic costs gives a boost to new theories of sovereign debt, such as Broner, Martin, and Ventura (2006), Sandleris (2005), or Mendoza and Yue (2008), which do not rely on external sanctions or capital market exclusion (see section 2). This said, these alternative approaches may of course face empirical challenges of their own. For example, Broner, Martin, and Ventura's elegant theory based on secondary markets and the government's inability to target defaults to foreigners must contend with the fact that sovereign debt existed even at a time when secondary markets were inoperative (for example, in the postwar period, prior to the late 1980s) and that some defaults appear to have successfully discriminated between foreign and

domestic debtholders (see Sturzenegger and Zettelmeyer 2007b for some recent cases).

While domestic default costs are clearly outside the scope of models à la Eaton and Gersovitz—that is, models emphasizing reputation *in credit markets*—they may be consistent with broader reputation-based theories, in which defaults reveal information about the institutions, preferences, or deep structural characteristics of the borrowing country, which then trigger a range of economic consequences (Cole and Kehoe 1998; Sandleris 2005; Catão and Kapur 2006; Kapur, Fostel, and Catão 2007). Indeed, the panic and pessimism that is characteristic for economies suffering large defaults has the flavor of “reputational spillovers,” in which confidence in the government is undermined with respect to issues beyond just external debt. What other assets might be confiscated? Will the rights of investors holding equity or owning businesses be curtailed? The consequence of such a generalized lack of faith could be a large reversal of inflows, capital flight, or even a run on deposits—as observed in many debt crises.<sup>47</sup>

Finally, an intriguing possibility related to domestic costs of default focuses on political economy issues in debtor countries. Economic theory usually treats debtors like “representative agents,” but this is not necessarily a good assumption. Hence, a potential reason for why countries repay their debts is that defaults inflict costs on the politicians or government officials that make the decision to default, who may lose their jobs, or damage

<sup>45</sup> A useful comparison in this regard is between the crises in Argentina in 2002 (currency crisis and default) and Brazil in 1999 (currency crisis but no default). The capital account reversal was much worse in Argentina. In Brazil, debt flows collapsed but FDI held steady and even increased. In Argentina, both debt flows and FDI collapsed in spite of the fact FDI was not directly affected by the default.

<sup>46</sup> Intriguingly, they also find no effect on debtor countries flows to creditor countries, suggesting that sanctions—if any—are ineffective.

<sup>47</sup> A challenge to the “reputational spillovers view” is the fact, documented by Tomz and Wright (2008), that debt defaults and expropriations of foreign direct investment are *not* synchronized, with most postwar expropriations concentrated in the 1970s, ahead of the modern era of debt crises. However, this fact could still be consistent with the presence of limited reputational spillovers, which a defaulting country might attempt to contain, for example, by reaffirming the rights of foreign direct investors (on expropriation and direct investment, see also Cole and English 1991).

TABLE 4  
CHARACTERISTICS OF RECENT DEBT RESTRUCTURINGS

Country	Year	Total amount restructured <sup>1</sup> (bill US\$)	Haircut (%)	Type of restructuring
Russia	1998–2000	38.7	52.6	Postdefault
Ukraine	1998–2000	7.8	28.9	Predefault
Pakistan	1999	0.61	31	Predefault
Ecuador	1999–2000	6.5	28.6	Postdefault
Argentina	2001–2005	145	75	Pre- and postdefault
Uruguay	2003	5.4	13.3	Predefault
Moldova	2002	0.08	37	Pre- and postdefault
Dominican Republic	2005	1.5	2	Predefault

<sup>1</sup> Domestic and external debt with private creditors.

Source: Sturzenegger and Zettelmeyer (2007, 2008).

their political careers. There is tentative evidence for this. Richard N. Cooper (1971) and Jeffrey A. Frankel (2005) show that currency devaluations are often followed by electoral losses of the ruling party and reduce the tenure of the chief of the executive and the minister of finance; Borensztein and Panizza (forthcoming-a) show that default episodes may have a similar effect.<sup>48</sup> If confirmed by further research, this finding would open the possibility that defaults occur *too rarely* (or not soon enough) from a social perspective, at least in an ex post sense, as politicians “gamble for redemption.” This argument has been

made, for example, with regard to Argentina’s 2001 default, though it is difficult to prove (see Sturzenegger and Zettelmeyer 2007b). Furthermore, since political default costs would help make sovereign debt affordable, it is not obvious that they would lead to an inefficiency ex ante. To our knowledge, a systematic analysis of the relationship between sovereign debt, defaults, and political career concerns has not been undertaken, and is an interesting area for future research.

#### 4.4.5 Evidence from the Most Recent Defaults

The evidence discussed so far is based mostly on defaults and renegotiations that took place by the early 1990s. We now ask what the most recent (1998–2005) restructuring

<sup>48</sup> These are simple correlations that do not control for the fact that defaults often come at time of economic crisis and, thus, should be interpreted with caution.

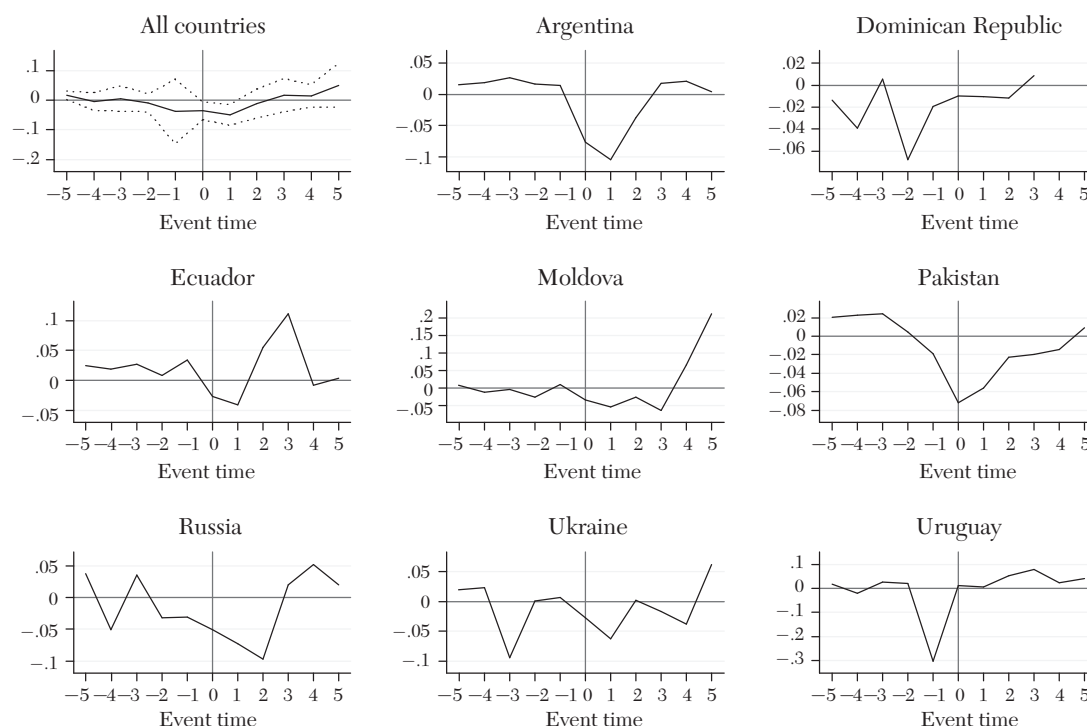


Figure 4. Recent Defaults and Private Capital Flows

Notes: The figure plots the residuals of a regression that controls for country and year fixed effects and that includes all developing countries that had an income per capita greater than US\$500 in the year 2000.

episodes teach us about the costs of default, and whether they appear to be in line with the picture that we have sketched so far. Table 4 lists eight well-known recent episodes and classifies them in terms of size of the restructuring; the size of the “haircut” (investor loss) involved in each restructuring; and whether restructurings were initiated before or after the country had missed payments. Although this sample is small, it turns out to be very diverse. With respect to the first criterion, the sample includes the largest default ever recorded (Argentina in 2001) and a few very small defaults (Moldova and Pakistan). With respect to the second criterion, the sample includes a few defaults with very large haircuts (above 50 percent

in the cases of Argentina and Russia) and a restructuring with basically no haircut (the Dominican Republic). Finally, about half of the restructurings listed in table 4 were preemptive (i.e., they took place before the country missed any payment on its existing debt) while the other half were postdefault restructurings.<sup>49</sup>

Consider first whether there is any evidence of *capital market exclusion*. Figure 4, based on a regression that includes all

<sup>49</sup> For detail on these restructurings, see Sturzenegger and Zettelmeyer (2007b, 2008). Harald Finger and Mauro Mecagni (2007) who examine the question of whether the restructurings were successful in restoring debt sustainability.



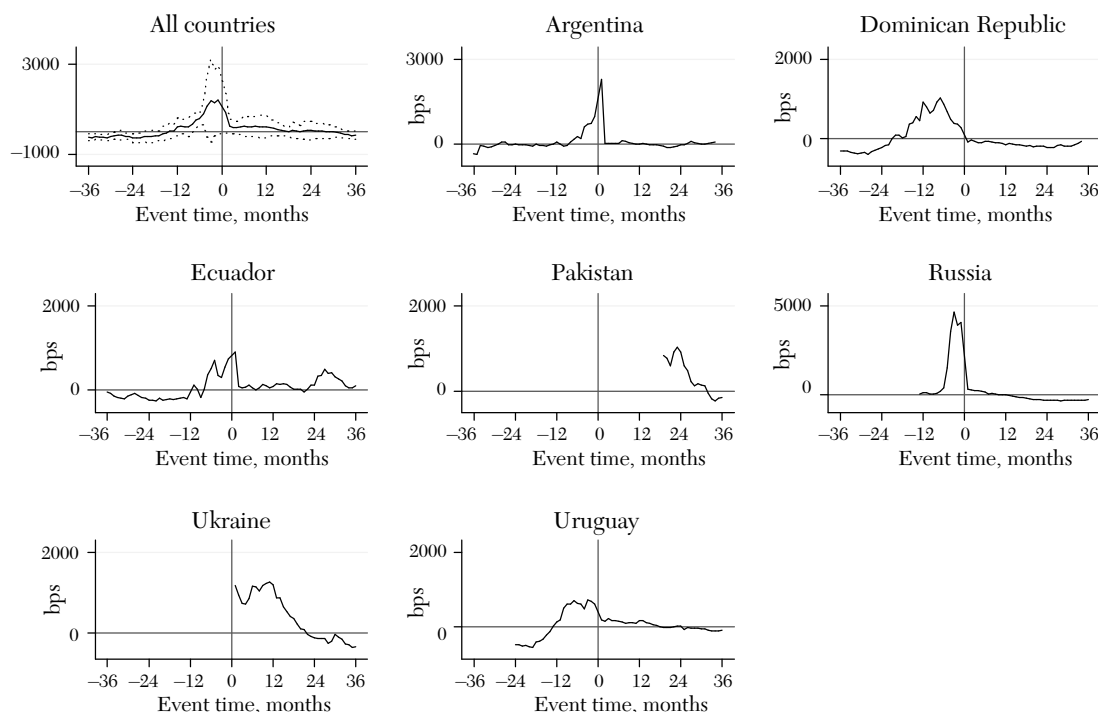


Figure 5. Spreads Before and After Defaults

Notes: The figure plots the residuals of a regression that controls for country and year fixed effects and that includes all countries that are included in the JP Morgan EMBI+ Global.

developing countries with an income per capita of at least US\$500 and controls for both country and year fixed effects, suggests not. In the year of the default episode, private capital flows to the defaulting countries were slightly below trend but started to recover immediately thereafter and, within three years of the episode, they were already above trend. Argentina, Russia, and Ecuador observed a collapse of capital flows one or two years *before* the default. In these countries, capital inflows reached a trough in the year after the default but then recovered quickly. The case of Argentina is particularly interesting. This country had by far the largest and least creditor friendly default in this group. Nonetheless, two years after

the default, private inflows were so high that the country had to impose capital controls on inflows. Profit opportunities—perhaps linked to the behavior of the real exchange rate—seemed to have dominated any reputational considerations. This is not to say that the restructuring strategy may not have had an impact on the behavior of capital flows around the time of the restructuring. Countries that opted for a preemptive strategy (Dominican Republic and Uruguay) seemed to enjoy a recovery of private inflows even before the restructuring. However, the evidence suggests that effects on the volume of capital flows were at best transitory.

Figure 5 examines whether there is any evidence for “punishment” via *borrowing costs*,

based again on a large panel regression that controls for country and time fixed effects, and excludes the months in which a country is in default. The main result is that—controlling for changes in global financial conditions (via time dummies)—post default spreads return to pre-default levels within twenty-four months or less. However, figure 4 does not control for changes in the fundamentals of defaulting countries. If these improve as a result of the restructuring, the rapid convergence shown in the figure could still be consistent with the idea that defaulters pay higher spreads than nondefaulters with similar fundamentals.

To deal with this objection, we regress average spreads in year  $t$  on economic fundamentals measured in year  $t-1$ , in addition to year fixed effects, in a 1994–2008 sample (that is, centered on the recent default episodes).<sup>50</sup> Our variables of interest are three dummies that take value 1 in each of the three years after the resolution of the default episode (DEF  $t+1$ , DEF  $t+2$ , and DEF  $t+3$ ) and a dummy that takes value one in each year after the third year of the default episode ( $D>t+3$ ).<sup>51</sup> Column 1 of table 5 reports the results of the model estimated controlling for both credit ratings and economic fundamentals. We find a positive but statistically insignificant effect of default on spreads in the first two years, while the coefficients on (D  $t+3$ ) and ( $D>t+3$ ) are statistically significant and *negative*. When we repeat the regression without controlling for credit ratings, the default dummies become

statistically significant and positive, but only in the first two years after the resolution of the default episode (column 2). The interpretation for these conflicting results must be that defaults lead to lower credit ratings, so that *controlling* for credit ratings there is no positive impact on borrowing costs. This is confirmed by column 3, which shows that, controlling for fundamentals, defaults do indeed tend to lower credit ratings. However, the effect is not very large (between one and two notches) and disappears after three years. On the whole, these results confirm the previous result that any effect of default on spreads is temporary.

Turning to direct costs of defaults, figure 6 shows the behavior of *exports* around the default dates. Again, we do not find any hard evidence that defaults have a long-lasting negative effect. For the average country, in the year of the default trade was slightly below trend and picked up in the year after the default. However, there is a lot of heterogeneity in our sample. In Argentina, Russia, and Ukraine, the default was followed by an export boom. In the Dominican Republic and Pakistan, it was followed by a sharp decline in exports.<sup>52</sup>

As far as *legal sanctions* are concerned, among the eight recent cases, only Argentina's default led to large judgments in favor of creditors (see section 2). However, a legal challenge to the settlement of the debt exchange itself was rejected by New York courts, and creditors have been unable to attach significant assets. After the U.S. Supreme Court rejected an appeal by two investment funds to allow the attachment of reserves of the Central Bank of Argentina held in New York in October 2007, the recovery prospects of investors look increasingly remote, although

<sup>50</sup> We measure fundamentals with the log of GDP per capita (GDP\_PC), the current account balance divided by GDP (CA/GDP), log inflation (INF), total public debt over GDP (TPuD/GDP), and the share of public external debt over total public debt (EPuD/TPuD).

<sup>51</sup> Thus, if a country defaulted in 1998 and concluded the episode in 2000, D  $t+1$  takes value one in the year 2001, D  $t+2$  takes value one in 2002, D  $t+3$  takes value one in 2004, and  $D>t+3$  takes value one in 2005, 2006, 2007, and 2008. In countries that never defaulted, the four dummies always take value zero.

<sup>52</sup> It is possible that the behavior of the real exchange rate and commodity prices mattered more than the default.

TABLE 5  
DEFAULT HISTORY AND SOVEREIGN SPREADS, (RANDOM EFFECTS ESTIMATIONS)

	Dependent variable		
	EMBI spread	EMBI spread	Credit rating
DEF $t + 1$	108.7 (95.04)	307.2*** (103.4)	-1.015* (0.608)
DEF $t + 2$	109.6 (82.45)	261.7*** (92.75)	-1.666*** (0.553)
DEF $t + 3$	-142.1** (65.40)	-62.64 (78.65)	-1.098** (0.477)
DEF $> t + 3$	-145.2*** (51.75)	-197.3*** (75.95)	-0.447 (0.502)
Ln(GDP_PC) $_{t-1}$	32.98 (23.04)	-7.590 (52.74)	2.084*** (0.427)
(CA/GDP) $_{t-1}$	299.6 (190.2)	-275.6 (271.3)	-7.415*** (1.654)
Ln(INF) $_{t-1}$	-0.745 (10.48)	15.54 (12.00)	-0.103 (0.0685)
(TPuD/GDP) $_{t-1}$	-48.02 (34.54)	120.7*** (42.53)	-3.124*** (0.675)
(EPuD/TPuD) $_{t-1}$	146.8** (57.55)	273.5*** (100.2)	-1.078*** (0.253)
Constant	1438*** (285.6)	742.0 (464.5)	-5.975 (3.686)
Observations	336	336	329
Number of countries	32	32	32
Controls	Year fixed effects Credit rating fixed effects	Year fixed effects	Year fixed effects
Period	1994–2008	1994–2004	1994–2008

*Notes:* In columns 1 and 3, the dependent variables measure average EMBI sovereign spreads. In column 3, the dependent variable is based on a numerical coding of S&P long-term foreign currency sovereign ratings (2 corresponds to CC and 21 corresponds to AAA). DEF  $t + 1$  is a dummy variable that takes value 1 in the year after the resolution of the default episode, DEF  $t + 2$  is a dummy variable that takes value 1 two years after the resolution of the default episode, DEF  $t + 3$  is a dummy variable that takes value 1 three years after the resolution of the default episode, DEF  $> t + 3$  is a dummy variable that takes value 1 from the fourth year after the resolution of the default episode. Ln(GDP\_PC) is the log of GDP per capita, CA/GDP is the current account balance divided by GDP, Ln(INF) is log inflation, TPuD/GDP is total public debt over GDP, and EPuD/TPuD is the share of public external debt over total public debt. All regressions control for global factors with year fixed effects.

Robust standard errors in parentheses.

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

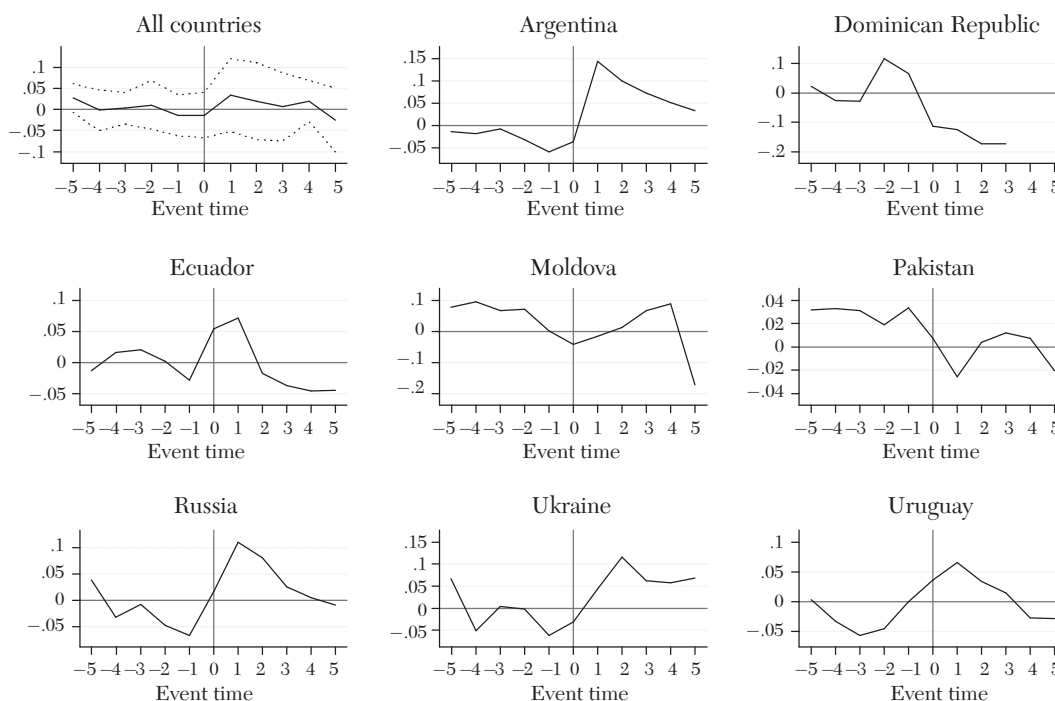


Figure 6. Recent Defaults and Exports

Notes: The figure plots the residuals of a regression that controls for country and year fixed effects and that includes all developing countries that had an income per capita greater than US\$500 in the year 2000.

litigation continues.<sup>53</sup> So far—more than seven years after the default—legal action does not seem to have significantly impaired

<sup>53</sup> Following the U.S. Supreme Court rejection of their appeal, the plaintiffs returned to the District Court based on a different legal argument. Furthermore, in September 2006, a large group of Italian holders of defaulted Argentine bonds initiated an arbitration procedure before the International Center for Settlement of Investment Disputes (ICSID), an international panel designed to arbitrate disputes between investors and a sovereigns in cases in which treaty protections granted under a Bilateral Investment Treaty (BIT) are alleged to have been breached. However, the legal basis for the arbitration attempt is questionable (Michael Waibel 2007) and, even if investors win an ICSID award, they may face a similar enforcement problem as the investors that have won judgment claims.

either Argentina's economic recovery or its foreign relations.

This is not to say that litigation has not had any effects at all. The threat of attachment may be one of the reasons why Argentina has not issued any sovereign bonds in foreign jurisdictions since its 2001 default. Hence, ironically, it was not reputation but the threat of legal penalty that seems to have led to a capital market exclusion of sorts in this case. However, this does not seem to have impaired Argentina's ability to borrow from nonresidents (and, more generally, attract foreign capital, as shown in figure 4) by issuing bonds in domestic jurisdictions.

Finally, figure 7 plots the evolution of *GDP growth* (we use local currency real GDP per

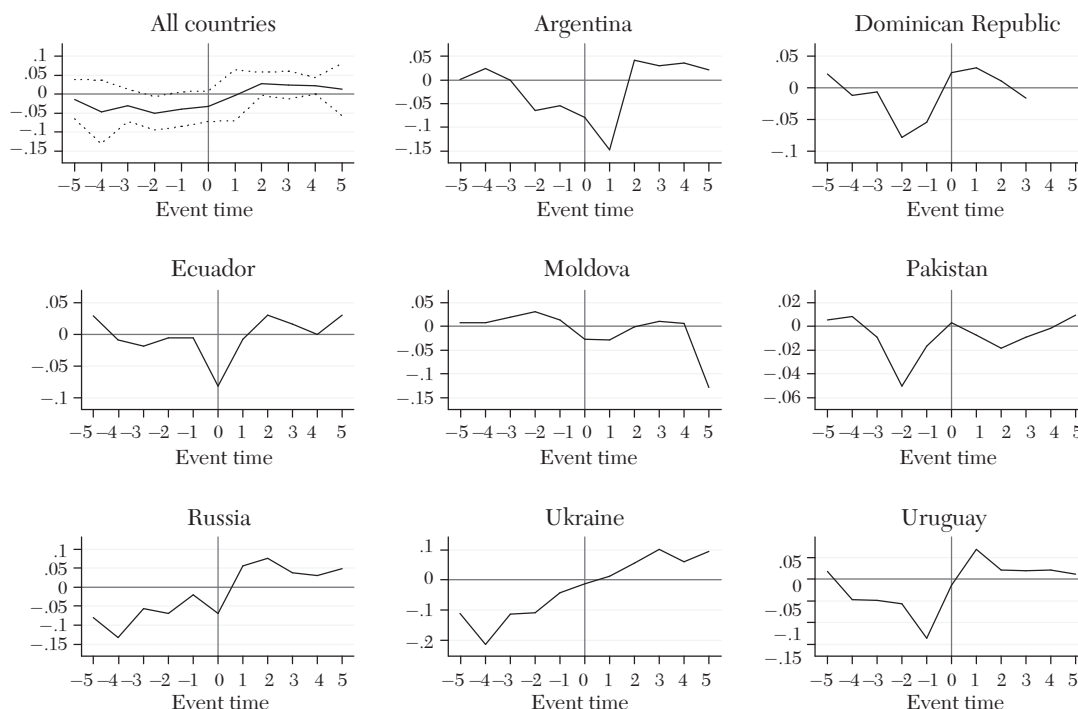


Figure 7. Recent Defaults and GDP Growth

*Notes:* The figure plots the residuals of a regression that controls for country and year fixed effects and that includes all developing countries that had an income per capita greater than US\$500 in the year 2000.

capita) around the recent default episodes.<sup>54</sup> The top left panel plots the average growth performance for the eight countries in the sample and shows the familiar result that growth is below average in the year of the default episode. The figure also shows that in several countries that decided to adopt a strategy of preemptive rescheduling (Ukraine, Uruguay, Dominican Republic, and Pakistan) growth bottomed out before the rescheduling year. Argentina and

Ecuador, and to lesser extent Russia, suffered severe drops in GDP either during or just after the default. Although growth recovered quickly after most defaults, the output losses associated with these crises could be permanent, in the sense that there is not reason to think that they are compensated by higher growth after the crisis (Valerie Cerra and Sweta Chaman Saxena 2008).

In sum, the most recent defaults do not seem to have been significantly penalized through *any* of the standard channels such as capital market exclusion, higher borrowing costs, lower exports, or legal or political sanctions. They did, however, occur in the context of significant economic crises, and may have

<sup>54</sup> As in the previous figures, we control for country-specific and year-specific trends by plotting the residuals of a regression of the GDP growth over a set of country and year fixed effects (the regression includes all developing countries that had an income per capita greater the US\$500 in 2000).



contributed to the depth of output losses during these crises, at least in some cases. This—in addition to direct costs to the political leadership that steered the countries into default, which usually lost power—seems to be the main tangible cost of the most recent defaults.

### 5. *Can the Costs of Debt Crises Be Reduced?*

As we have seen above, debt crises are costly, in the sense that they may lead to output declines, financial sector disruptions and generally a period of capital market exclusion while debt is renegotiated. This fact motivated a set of proposals, beginning in the 1980s and particularly following the 1995 Mexican and 1998 Russian crises, to reform the institutions and/or contracts governing debt flows and debt renegotiation in order to reduce the cost of crises.<sup>55</sup> For the most part, these proposals—which climaxed in the proposal by management and staff of the IMF, in 2001, to create a bankruptcy-type “sovereign debt restructuring mechanism” (SDRM) for countries—focused on making the debt renegotiation process smoother and faster, in particular, by mitigating creditor coordination failures (see Rogoff and Zettelmeyer 2002 for a history).

As argued in the previous section, proposals in this class can perhaps be criticized (with the benefit of hindsight) for having barked up the wrong tree—creditor coordination failures did not, in the end, turn out to be a significant impediment to the debt renegotiations of the 1998–2005 period. Beyond questions of empirical relevance, however, proposals that aim to reduce the costs of debt crises raise a deeper issue (Michael P. Dooley 2000; Andrei Shleifer 2003). If sovereign debt is made possible (and affordable) by the

costs of default, would the attempt to reduce these costs not be counterproductive, in the sense of raising the cost of borrowing and/or reducing market access, and hence presumably lowering welfare *ex ante*? Furthermore, to the extent that these costs are endogenous (market) responses to the main distortion characterizing sovereign debt—the enforcement problem—might official attempts to reduce the costs of default not be futile, as the market will find ways to circumvent these attempts, and create new costs, reputational, or otherwise? In short, are costly crises simply the inevitable byproduct of the enforcement problem?

The answer, given more than twenty years ago in a classic paper by Grossman and Van Huyck (1988), is “in principle, no.” If the only distortion in the relationship between creditors and debtors is the enforcement problem—meaning, in particular, that creditors have full information about relevant actions of the debtor and the state of the debtor’s economy—and creditors have access to a punishment technology such as reputation or direct sanctions in the event of default, then they will want to exercise this punishment only if the debtor defaults in good states of the world. If defaults are “excusable” because of bad shocks, for example, creditors should be willing to (costlessly) reschedule the debt. In other words, the actual payments from debtors to creditors will mimic an equity contract. Default costs will never be observed, because they play a role only “out of equilibrium,” in deterring bad behavior that never actually occurs.

In the real world, of course, defaults and debt restructuring do appear to have costs, so the Grossman and Van Huyck view cannot apply literally. But why? The answer to this question has implications for how, and by how much, it might be feasible to reduce the costs of debt crises, through policy and institutional reforms, in a way that raises welfare *ex ante*.

<sup>55</sup> For an early proposal, see UNCTAD (1986).

Fundamentally, there could be two reasons why debt crises are costly. One is that the ability of market participants to tailor default punishments to the circumstances of the default is limited by existing institutions and contractual arrangements, which are inherited from history. As a result, default punishments could both be too blunt, i.e., fail to adequately discriminate between excusable and inexcusable defaults, and be socially inefficient. In particular, there could be too much punishment, in the sense that the ex ante incentives benefits of punishment do not fully offset their costs if things go wrong. Pitchford and Wright (2007) explore this possibility in a calibrated model in which defaults are deterred by costly renegotiation between a country and multiple creditors. Suboptimal delays can arise because collective action problems among creditors give rise to prolonged bargaining and “holdouts.”<sup>56</sup> Pitchford and Wright’s main finding is that a policy measure that cuts renegotiation time in half (such as the introduction of collective action clauses in bond contracts, or an SDRM) is indeed welfare improving. However, the welfare benefit is so small as to be negligible. Hence, in this type of model, the critiques of Dooley (2000) and Shleifer (2003) are at least partly vindicated.<sup>57</sup> Although cutting negotiation time in half does not have dramatic adverse ex ante consequences (such as destroying the sovereign debt market), neither does it have overall big benefits, precisely because the ex

post benefits are balanced by an ex ante deterioration in borrowing terms.

An alternative view attributes costly crises to the presence of *additional* distortions—such as incomplete information, or debtor moral hazard—which complicate the standard enforcement problem (Sachs and Cohen 1982; Douglas Gale and Martin Hellwig 1989; Andrew Atkeson 1991; Jeanne 2000, 2004; Bolton and Jeanne 2005, 2007). Suppose, for example, that creditors cannot observe the debtor’s capacity to repay. In that case, they would not know whether defaults are “excusable,” and punishments could no longer be waived for some types of defaults. A similar problem arises if the state of the economy is observable, but creditors cannot tell whether the economy is in poor shape because of debtor actions or exogenous shocks. Moral hazard problems of this kind can endogenously give rise to debt that is either hard to restructure (Bolton and Jeanne 2005, 2007) or risky in the sense that they expose debtors to self-fulfilling runs via foreign currency or maturity mismatches (Jeanne 2000, 2004; Jean Tirole 2003; and Bi 2008b). From the perspective of the debtor and an individual creditor, this is good, because it disciplines the debtor and protects the creditor, and hence makes debt more affordable. At the same time, however, it creates an inefficiency ex ante, in the sense that the debt structure is suboptimal compared to a situation in which the debtor could commit to refrain from policy actions that hurt the creditor.

The main policy message from this literature is that there is indeed room for public intervention that would both reduce the costs of debt crises ex post and improve efficiency ex ante. However, intervention must be designed carefully or it could backfire. Simply lowering the costs of renegotiation across the board, or taxing short-term debt, for example, will not do, because this ignores that root cause of why renegotiation is costly

<sup>56</sup> See also Haldane et al. (2005) and Pitchford and Wright (2008).

<sup>57</sup> An alternative class of sovereign debt models focuses on protracted renegotiation between a debtor and just one creditor. In Kovrijnykh and Szentes (2007) and Bi (2008a), the negotiation period ends only after the country has enjoyed a sequence of good shocks. In Benjamin and Wright (2008), delays may arise because of a shift in bargaining power in favor of the debtor. Unlike Pitchford and Wright (2007), these papers do not examine the welfare trade-offs from lowering renegotiation costs.

and debt is short term.<sup>58</sup> Instead, policy must attempt to address those root causes. In principle, there are two ways of doing this. First, institutions could be created that improve information or provide commitment. This may enable the development of more complete contracts between creditors and debtors (for example, contracts that put a limit on the total debt that a country can issue, and hence prevent the “dilution” of past creditors by new creditors; or contracts that are specifically “equity-like,” such as GDP-indexed bonds). Alternatively, institutions could be created that *substitute* for more complete contracts. For example, while an SDRM that lowers renegotiation costs across the board may not have a big welfare impact (as shown by Pitchford and Wright 2007), this may be different if the SDRM reduces renegotiation costs only for countries with “excusable” defaults, and hence does not weaken incentives *ex ante* (see Sturzenegger and Zettelmeyer 2007b, chapter 12, for an overview of proposals in this area). This said, international institutions that play this role effectively may be complicated to design and would need to be powerful—and, hence, “intrusive” and politically controversial—in order to be effective.

## 6. Conclusions

Sovereign debt has attracted the attention of both economists and legal scholars for many decades. One reason for this fascination comes from an enduring puzzle: how can a thriving cross-border capital market develop in the absence of enforceable property rights (or at least, with much weaker enforcement than in other markets)? Another comes from

the fact the sovereign debt has occasionally given rise to spectacular defaults and crises, which appear to have been costly for debtors and creditors alike. How do these crises arise, and through what channels do they inflict costs on debtors? And finally, what is the link between these questions? The fact that defaults lead to costly crises could plausibly be the answer—or part of the answer—of why sovereign debt can exist. If so, are costly crises the inevitable byproduct of sovereign debt, or could they be eliminated, or at least mitigated, by changes in the “international financial architecture”? In concluding our survey, we briefly summarize what a new wave of sovereign debt crises, and a new generation of literature on sovereign debt, have taught us about these questions.

First, almost three decades after Eaton and Gersovitz’s pathbreaking contribution, there still is no fully satisfactory answer to how sovereign debt can exist in the first place. None of the default punishments that the classic theory of sovereign debt has focused on appears to enjoy much empirical backing. Capital exclusion periods are brief; effects on the cost of borrowing are temporary and small; trade reductions seem to be real but the literature has not been able to identify the channel through which defaults reduce trade; and there is no evidence of diplomatic or military sanctions at least in the postwar era. Furthermore, while the legal channel for enforcing debt repayments appeared to gain relevance in the late 1990s—in particular, by potentially allowing creditors to interfere with a defaulting country’s international payments—this has since turned out to be weak, due to a lack of attachable assets outside the debtor’s jurisdiction, and because defaulting debtors have been able to issue new debt domestically (including to foreign investors) at relatively low cost.

If anything, defaults appear to be deterred by the domestic “collateral damage” that tends to accompany debt crises, rather than

<sup>58</sup> This would be less of a problem if the presence of an inefficient debt structure is not only due to institutional failures in the borrowing country but also relates to historical accidents and path dependence (Borensztein et al. 2005; Ricardo Hausmann and Panizza 2003).

punishments from the outside. While it is very difficult to empirically disentangle causes and effects of defaults, there is at least some evidence supporting the idea that defaults may magnify the output drops observed during debt crises. Once output costs in line with this evidence are assumed in parameterized models of sovereign borrowing, the levels of sovereign debt that can be sustained in equilibrium rise to more reasonable levels compared to models in which capital market penalties are the only punishment.

The critical question is hence *how* defaults trigger domestic output costs. The most popular answer is that a default reveals bad news about either the debtor or the economy, leading to capital flight and/or reductions in consumption and investment. Alternatively, it may impair the *private* sector's ability to borrow. However, empirical work on testing and discriminating between explanations in this class is still in its infancy. A related area that deserves much more attention is whether sovereign defaults have adverse domestic consequences beyond the crisis, for example, through effects on credit culture and financial development. There also needs to be more work on the private incentives of policymakers to default or fight a crisis, as opposed to the incentives of a social planner.

Finally, while the connection between costly sovereign debt crises and the existence of a sovereign debt market poses a challenge to policy makers that wish to reduce the *ex post* costs of crises, a new literature suggests that this may not be insurmountable. At the most general level, costly crises must be the manifestation of an incomplete contracts problem. If contracts between investors and sovereigns could be structured in a way that solves the incentives problem associated with sovereign borrowing—that is, in a way that encourages policies that will keep the borrower solvent, and punishes repudiation—then “inexcusable” defaults would never occur, only contingent reductions in debt

services that are envisaged by the contract. Contracts could condition on specific debtor actions, such as maintaining debt low and the macroeconomy stable, and/or specific exogenous (or near exogenous) events (if times are bad because of a bad shock, then debt repayments would be lower). There must be good reasons for the fact that such explicitly contingent contracts are not observed in reality: a lack of institutions which would verify the conditions built into such contracts; barriers to financial innovation; or domestic political economy. However, these underlying barriers may themselves be amenable to change and reform.

In sum, thirty years of literature on sovereign debt do not seem to have resolved some of the fundamental questions that motivated the field. However, they have ruled out some of the initial answers, and given us a better sense of where to continue searching. They have also added a wealth of new perspectives and evidence, particularly on the causes and effects of sovereign debt crises, and on whether and how crises can be mitigated. With a new generation of developing countries, particularly in Africa, just entering the international debt market, these themes will likely be the subject of debate and further research for decades to come.

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