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The Economics of Sovereign Defaults

Juan Carlos Hatchondo, Leonardo Martinez, and Horacio Sapriza

Sovereign defaults are widespread throughout history. In particular, after Russia defaulted on its sovereign debt in 1998, numerous episodes of sovereign default followed. These recent episodes invigorated the study of sovereign defaults, giving rise to much interesting work that added to the large body of literature on this topic. This article discusses the economics of sovereign defaults, summarizing lessons from existing work on this issue. First, we describe the costs associated with a sovereign default episode. We discuss costs imposed by creditors and those implied by the information revealed by the default decision. Second, we identify circumstances that are likely to lead to a default episode. We explain that sovereign defaults are likely to be observed when resources available to the sovereign are low, borrowing costs are high, or there is a change in political circumstances. Finally, we discuss how understanding sovereign defaults may help to account for distinctive economic features of emerging economies. We conclude that even though there is a large body of literature studying default episodes, there is still a great deal that is not known.

1. SOVEREIGN BORROWING AND DEFAULTS

Sovereign debt refers to debt incurred by governments. Sovereign borrowing can be a key policy tool to finance investment or to respond to a cyclical downturn.

There are different definitions of a sovereign default. First, from a legal point of view, a default event is an episode in which a scheduled debt service

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E-mails: JuanCarlos.Hatchondo@rich.frb.org; Leonardo.Martinez@rich.frb.org; and Hsapriza@andromeda.rutgers.edu. The views expressed in this article are those of the authors and do not necessarily reflect those of the Federal Reserve Bank of Richmond or the Federal Reserve System.

is not paid beyond a grace period specified in the debt contract. Second, credit-rating agencies consider a "technical" default an episode in which the sovereign makes a restructuring offer that contains terms less favorable than the original debt.[1]

Sovereign defaults do not necessarily imply a total repudiation of outstanding debt. Most default episodes are followed by a settlement between creditors and the debtor government. The settlement may take the form of a debt exchange or debt restructuring. The new stream of payments promised by the government typically involves a combination of lower principal, lower interest payments, and longer maturities. Credit-rating agencies define the duration of a default episode as the amount of time that passes between the default event and when the debt is restructured (even though there may be holdout creditors).

Sturzenegger and Zettelmeyer (2005) propose a methodology to compute estimates of debt recovery rates. They also describe recent debt restructurings and estimate the recovery rates for these episodes. Table 1 presents these estimates, which are equal to the market value of the new instruments obtained by the creditors in the debt exchange plus any cash payment they received divided by the net present value of the remaining contractual payments on the old instruments (inclusive of any principal or interest that remained unpaid after the date of maturity). The present values are discounted using the yield of the new instruments immediately after the results of the exchange offer became public information.[2]

Sovereign Borrowing Versus Private Borrowing

There are some similarities between sovereign borrowing and private sector borrowing. For example, like private agents (households and corporations), governments can borrow to finance long-lived investments. Furthermore, in the same way households borrow to preserve living standards through periods of temporary hardship, governments borrow if they do not want to decrease expenditures when tax revenues are low. In addition to seeking to smooth private consumption, households want to smooth their consumption of services provided by the government (law enforcement, justice, defense, public health, public education, parks, etc.). Consequently, benevolent governments would rather provide a smooth flow of services than have this flow fluctuating with tax revenues. Moreover, some government expenditures are not contingent on tax revenues, and therefore governments may want to borrow when tax revenues are low in order to afford these expenditures. For instance, gov-

[1] See Peter (2002) for further discussion on rating agencies' definitions of default.

[2] Sturzenegger and Zettelmeyer (2005) also discuss alternative ways of estimating recovery rates.

Table 1 Average Recovery Rates for Recent Debt Restructuring (1998–2005)

Country	Debt Restructuring Episodes	Rate (percent)
Russia	GKO/OFZs-residents	55.0
	GKO/OFZs-nonresidents	38.9
	MinFin3	36.8
	PRINs/IANs	47.4
Ukraine	OVDPs-residents	93.1
	OVDPs-nonresidents	43.7
	Chase Loan	69.3
	ING Loan	62.0
	International Bonds	62.2
Pakistan	Eurobonds	69.1
Ecuador	International Bonds	62.6
Argentina	Phase 1 (residents)	58.3
	Pesification	54.4
	2005 International	27.1
Uruguay	External	87.1
	Domestic	76.7

Source: Sturzenegger and Zettelmeyer (2005).

ernment employee wages are typically not contingent on tax revenues. Thus, governments may want to borrow when tax revenues are low in order to pay wages to their employees.

There are also significant differences between the borrowing problem faced by governments and the borrowing problem faced by private agents. The distinctive features of governments' borrowing problems imply that the economics of sovereign defaults may differ from the economics of personal or corporate bankruptcy.

First, the most important difference is that it is easier for households and firms to post appropriable collateral in order to improve borrowing conditions.[3] If a private agent defaults, the government forces him to hand over the assets posted as collateral. On the other hand, a sovereign cannot commit to hand

[3] This is the case, at least, in developed countries. Djankov, McLiesh, and Shleifer (forthcoming) argue that in developing countries, creditor protection is poor (as are information-sharing institutions), and therefore it is more difficult for lenders to force repayment or grab collateral. Berger and Udell (1990) explain that "Collateral plays an important role in U.S. domestic bank lending, as evidenced by the fact that nearly 70% of all commercial and industrial loans are currently made on a secured basis." In contrast, Fleisig (1996) states that only 10 percent of all loans are secured by collateral in Argentina.

Table 2 Selected Government Defaults and Rescheduling of Privately Held Bonds and Loans (1824–2003)

	1824–1834	1867–1882	1890–1900	1911–1921	1931–1940	1976–1989	1998–2003
Europe							
Austria		1868		1914	1932		
Bulgaria				1915	1932		
Germany					1932		
Greece	1824		1893				
Hungary					1931		
Italy					1940		
Moldova							2002
Poland					1936	1981	
Portugal	1834		1892				
Romania				1915	1933	1981	
Russia				1917			1998
Serbia-Yugoslavia			1895		1933	1983	
Spain	1831	1867, '82					
Turkey		1876		1915	1940	1978	
Ukraine							1998
Latin America							
Argentina	1830		1890	1915	1930s	1982	2001
Bolivia		1874			1931	1980	
Brazil	1826		1898	1914	1931	1983	
Chile	1826	1880			1931	1983	
Columbia	1826	1879	1900		1932		
Costa Rica	1827	1874	1895		1937	1983	
Cuba					1933	1982	
Dominica							2003
Dom. Republic		1869	1899		1931	1982	
Ecuador	1832	1868		1911, '14	1931	1982	1999
El Salvador	1827			1921	1931		
Guatemala	1828	1876	1894		1933		
Honduras	1827	1873		1914		1981	
Mexico	1827	1867		1914		1982	
Nicaragua	1828		1894	1911	1932	1980	

over its assets if it defaults, and in general there is no authority that can force it to do so. Few government assets are located outside of national borders, and even if there was a significant amount of government assets abroad, there are legal obstacles that would prevent them from being confiscated. Wright (2002) presents a case study that shows how attempts to attach sovereign assets have had limited success. Thus, sovereign debt is typically unsecured.

Second, the costs of bankruptcy are different from those of sovereign default. While for households and firms an important part of the costs of debt repudiation is determined by bankruptcy law, there is no international legal

Table 2 (Continued) Selected Government Defaults and Rescheduling of Privately Held Bonds and Loans (1824–2003)

	1824–1834	1867–1882	1890–1900	1911–1921	1931–1940	1976–1989	1998–2003
Latin America (continued)							
Panama					1932	1982	
Paraguay	1827	1874	1892	1920	1932	1986	
Peru	1826	1876			1931	1978, '83	
Uruguay		1876	1891	1915	1933	1983	2003
Venezuela	1832	1878	1892, '98			1982	
Africa							
Angola						1988	
Cameroon						1989	
Congo						1986	
Cote d'Ivoire						1984	
Egypt		1876				1984	
Gabon						1986	
Gambia						1986	
Liberia		1874		1912		1980	
Madagascar						1981	
Malawi						1982	
Morocco						1983	
Mozambique						1984	
Niger						1983	
Nigeria						1983	
Senegal						1981	
Sierra Leone						1977	
South Africa						1985	
Sudan						1979	
Tanzania						1984	
Togo						1979	
Uganda						1981	
Zaire						1976	
Zambia						1983	
Other							
Jordan						1989	
Pakistan						1981	1999
Philippines						1983	
Vietnam						1985	

Notes: Defaults are excluded unless they coincide with a cluster. Russia also defaulted in 1839; Venezuela in 1847 and 1864; and Spain, in 1820 and 1851. U.S. southern states defaulted in the 1840s. Defaults are federal except for Argentina's defaults in 1915 and during the 1930s, which were at the provincial level. The year listed refers to the initial rescheduling or default.

Source: Sturzenegger and Zettelmeyer (2006a) Table 1.1.

framework that imposes costs on a defaulting sovereign. The next section discusses costs of sovereign defaults.

Third, politico-economic factors affect the issuance of government debt (see Alesina and Tabellini 2005 and Persson and Svensson 1989). For example, a politician who cares mostly about the period during which he will be in office may not fully internalize the costs of issuing debt. Moreover, governments can borrow strategically to bind the hands of future governments with different preferences. Such strategic behavior would be more important in economies where policymakers' interests are more polarized.

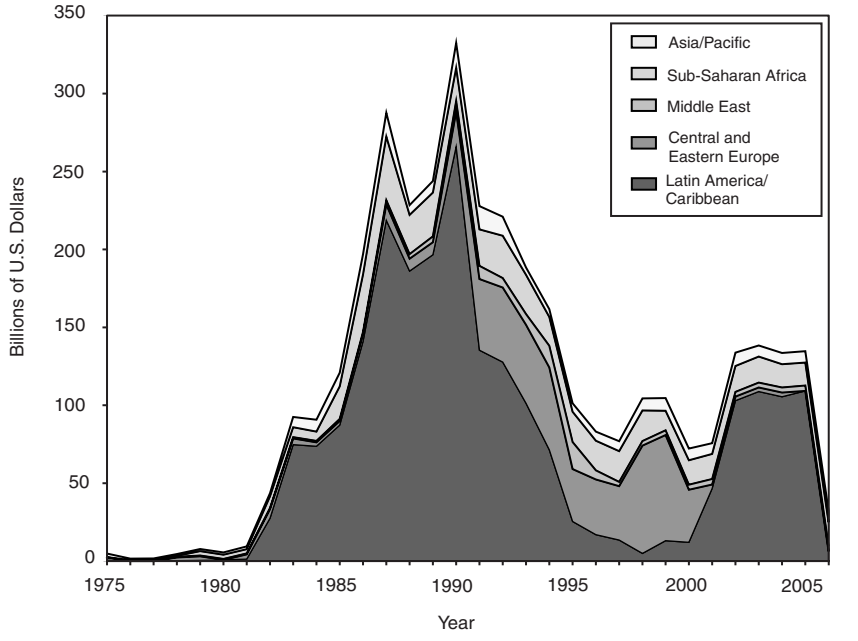
Historical Evidence

Sovereign defaults are not a novel feature of financial markets; and their incidence is widespread throughout history. For example, Spain defaulted six times between 1550 and 1650, and France defaulted eight times between 1550 and 1800 (see Reinhart, Rogoff, and Savastano 2003). Tomz and Wright (forthcoming) document 250 sovereign defaults by 106 countries between 1820 and 2004. Moreover, there are no reasons that rule out the occurrence of default episodes in the future (see Beers and Chambers 2006). Sturzenegger and Zettelmeyer (2006a) explain that sovereign defaults have occurred in temporal and sometimes regional clusters that correspond to the end of a boom-bust cycle in international capital flows. Table 2 presents a list of default events since 1824 grouped into seven temporal clusters. Figures 1 and 2 show the amount of sovereign debt in default and the number of countries in default since 1975, respectively. The amount of sovereign debt in default peaked at more than $335 billion in 1990. This debt was issued by 55 countries (Beers and Chambers 2006). One of the largest defaults in history occurred in late December 2001, when Argentina defaulted on $82 billion.

2. COSTS OF SOVEREIGN DEFAULTS

Identifying the costs of a sovereign default is essential in understanding why we observe sovereign debt in the first place. If there were no costs of defaulting, the sovereign would default under all circumstances. Anticipating this behavior, investors would never lend to sovereigns and there would be no sovereign debt. That is, for sovereign debt to exist, it is necessary that at least in some circumstances it would be more costly for a sovereign to default than to pay back its debt. Similarly, for sovereign defaults to exist, it is necessary that at least in some circumstances it would be more costly for a sovereign to pay back its debt than to default. There is an ongoing debate about the importance of different costs of a sovereign default. The remainder of this section describes two costs that are often mentioned in the literature: sanctions imposed by creditors and signaling costs.

Figure 1 Sovereign Debt in Default (1975–2006)



Notes: Sovereign loans from multilateral lending institutions (such as the World Bank) are not considered.

Source: Beers and Chambers (2006).

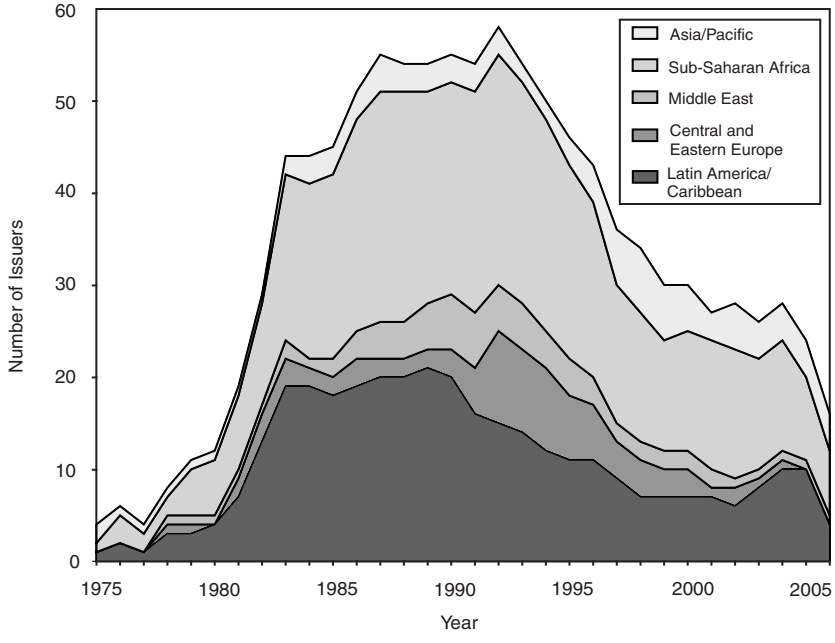
Costs Imposed by Creditors

It has been argued that creditors of defaulted debt can impose sanctions on defaulting sovereigns. In this subsection, we present arguments on the plausibility of punishments imposed by creditors that have been discussed in the sovereign default literature. First, we concentrate on the ability of creditors to increase the borrowing cost of defaulting sovereigns. Later, we focus on other sanctions.

Higher Borrowing Cost

The ability of creditors to impose higher borrowing costs on defaulting sovereigns has received a great deal of attention in the literature. In general, increasing a defaulting sovereign's borrowing costs would require coordination among holders of defaulted debt and all other potential lenders. It would require that potential creditors who find it beneficial to lend to a sovereign

Figure 2 Number of Countries in Default (1975–2006)



Notes: Sovereign loans from multilateral lending institutions (such as the World Bank) are not considered.

Source: Beers and Chambers (2006).

that has defaulted in the past would choose not to give credit to this sovereign, because these creditors want to punish the defaulter for its past behavior. In models of sovereign default, coordination among lenders can be sustained in infinitely repeated games in which a creditor wants to maintain his good reputation by not deviating from his agreement with other creditors in order to keep his share of the profits obtained through coordination (see Wright 2002).

Such a degree of coordination seems unlikely to occur in competitive credit markets with a large number of potential lenders. Wright (2005) discusses how in the past three decades, the sovereign debt market has become more competitive and explains how an increase in competition (number of creditors) may diminish the creditors' ability to coordinate (see also Wright 2002).[4] With more creditors, the share of the benefits from coordination for each creditor

[4] A similar point is raised by Cole, Dow, and English (1995) and Athreya and Janicki (2006), among others.

is smaller, and therefore deviations from a coordination agreement become relatively more attractive. This indicates that coordination was more likely to occur during periods in which the number of potential lenders was small, as in the 19th century when a large fraction of international capital flows was channeled through a few creditors. But coordination is less likely nowadays, when almost anyone can buy sovereign bonds.

Lenders can also try to impose financial sanctions that do not require such coordination. In their analysis of the legal consequences of sovereign default episodes, Sturzenegger and Zettelmeyer (2006b) discuss how holders of defaulted bonds succeeded in interfering with cross-border payments to other creditors who had previously agreed to a debt restructuring. If all cross-border payments could be blocked, a defaulting sovereign would not be able to borrow abroad—no creditor would lend if it were unable to collect the payments. From this, Sturzenegger and Zettelmeyer (2006b) infer that holders of defaulted bonds may have been able to "exclude" defaulting economies from international capital markets. Yet, at the same time they conclude that "legal tactics are updated all the time, and new ways are discovered both to extract payment from a defaulting sovereign as well as to avoid attachments." In particular, they expect that "the threat of exclusion may be less relevant for some countries or to all countries in the future." In any case, there are other financial alternatives available to defaulting economies. They could issue bonds in local markets, obtain aid, or ask for official credit (from other governments or multilateral financial institutions). It is not obvious whether a sovereign forced to use these alternatives would face a higher borrowing cost.

At the extreme level, instead of imposing a higher borrowing cost on defaulting sovereigns, creditors may exclude these sovereigns from capital markets. Punishment by exclusion is often discussed in sovereign default literature. For instance, it is one of the costs assumed in recent quantitative models of sovereign default.[5] There is also extensive empirical literature that attempts to identify whether creditors punish defaulting sovereigns by excluding them from capital markets. A common finding is that a default leads to a drainage in capital flows (this may be in part because sovereign defaults often occur together with devaluations; see IMF 2002 and Gelos, Sahay, and Sandleris 2004). However, the observed difficulties in market access after a default may be the result of the same factors that triggered the default decision itself. For example, both default and the difficulties in market access after default may be triggered by political turnover (see end of Section 3). The empirical literature finds no clear evidence of defaulters being

[5] See Aguiar and Gopinath (2006); Arellano (2005); Arellano and Ramanarayanan (2006); Bai and Zhang (2005); Cuadra and Sapriza (2006a, 2006b); Lizarazo (2005a, 2005b); and Yue (2006). Hatchondo, Martinez, and Sapriza (forthcoming) discuss the role of the exclusion assumption in quantitative models of sovereign default.

punished by creditors through exclusion or higher interest rates on new loans when sufficient control variables are used (see Eichengreen and Portes 2000; Gelos, Sahay, and Sandleris 2004; and Meyersson 2006).

Other Sanctions

On a number of occasions, a government has intervened actively in support of its constituents who are holders of defaulted debt issued by other sovereigns (see Sturzenegger and Zettelmeyer 2006a). These interventions have taken the form of diplomatic dissuasion, withholding of official credit, threat of trade sanctions, and in exceptional cases, armed interventions.

For instance, Mitchener and Weidenmier (2005) provide a case study of gunboat diplomacy.[6] They study the economic effects of the announcement of Theodore Roosevelt's 1904 Corollary to the Monroe Doctrine, which proclaimed that the United States would intervene in the affairs of unstable Central American and Caribbean countries that did not pay back their debts. Mitchener and Weidenmier (2005) find a drastic increase in Latin American sovereign bond prices following this announcement. This is an example of how an increase in the costs of defaulting that, in turn, implies a decrease in the default probability (other things being equal) can decrease a sovereign's borrowing cost.[7]

On the other hand, in their analysis of the importance of government interventions in favor of its constituents who are harmed by the default of other sovereigns, Sturzenegger and Zettelmeyer (2006a) conclude that "Creditor country government intervention in debt disputes has been the exception rather than the rule." This may be the case because the interests of holders of defaulted debt are not necessarily aligned with those of their governments. Furthermore, even though these interventions may have been important before World War II, no explicit sanctions or armed interventions were triggered by default episodes occurring after World War II.

It has also been argued that the IMF's role as crisis creditor has been used to increase the bargaining power of lenders in debt restructuring negotiations. However, recent changes in the IMF's policy indicate that the strength of IMF pressure declined over time. For instance, the IMF moved from its policy of not lending to countries that were in arrears (that is countries with debt that

[6] In international politics, gunboat diplomacy refers to the pursuit of foreign policy objectives with the aid of conspicuous displays of military power, which constitutes a direct threat of warfare should terms not be agreeable to the superior force.

[7] The price of a sovereign bond that promises to pay one unit the next period and satisfies the lenders' zero profit condition is given by $q = \frac{1-default\ \ probability}{1+r}$, where r is the interest rate at which lenders can borrow. The interest rate the sovereign would pay (if it does not default) is given by $\frac{1}{q} - 1$ and is increasing with respect to the default probability (because the bond price, q, is decreasing with respect to the default probability).

remains unpaid following the date of maturity) in the 1980s to a policy of not lending to defaulting countries that were not in "good faith" negotiations with creditors in the 1990s (the exact meaning of good faith is unclear but seems to imply a weaker IMF stand toward defaulters).

Signaling Costs

Numerous theoretical studies of sovereign defaults present models in which a default is costly because of the information it signals (see Sandleris 2006). For example, a default decision may signal that the policymakers in office are less prone to respect property rights. Furthermore, government officials' assessments of the fundamentals of the economy may be different from the ones of private agents. As long as the default decision depends on these assessments, a default discloses some of the government's private information to market participants. For instance, if the government finds it optimal to default in bad circumstances (see Section 3), a default could signal poor economic conditions.

If there is persistence in the variables that are signaled by the default decision (the government type or economic conditions), defaulting increases the perceived probability of a future default (other things being equal). Thus, there is a signaling cost of defaulting because information revelation results in an increase in the borrowing cost.[8] In contrast with the costs discussed in the beginning of this section, signaling costs reflect the increased perceived probability of a future default and not a punishment imposed by creditors.

Furthermore, the signal transmitted by a default decision may have other consequences besides increasing the cost of future borrowing. Cole and Kehoe (1998) argue that a sovereign default may imply that the government is considered untrustworthy in other areas besides the credit relationship with lenders. Sandleris (2006) explains how by revealing negative information about itself or the economy, the government may affect firms' net worth and their ability to borrow, which may lower the desired level of investment. This can generate a contraction in foreign lending to domestic firms, and a credit crunch—a sudden reduction in the availability of loans or other forms of credit in the economy—in domestic credit markets. Using micro-level data, Arteta and Hale (2006) find that sovereign debt crises are systematically accompanied by a large decline in foreign credit to domestic private firms. IMF (2002), Kumhof (2004), and Kumhof and Tanner (2005) explain that domestic financial crises are observed after sovereign defaults—similarly, Kaminsky and

[8] Similarly, Chatterjee, Corbae, and Ríos-Rull (2005) study household bankruptcy in a model in which borrowers have different discount factors and there is asymmetric information about the borrower's type. In this model, there is a signaling cost of filing for bankruptcy because someone who files for bankruptcy is believed to be more likely to file again in the future.

Reinhart (1999) show that debt devaluations in developing countries are followed by banking problems. IMF (2002), Kumhof (2004), and Kobayashi (2006) argue that financial crises may lead to severe recessions.[9]

The signals implied by a government's default decision may also have political consequences. The default may reveal important characteristics of the incumbent policymakers, such as their competence. For instance, the poor economic conditions that trigger a default decision can be interpreted as the result of bad policies. Moreover, because the holdings of sovereign debt are not uniformly distributed across the population, a government's default may signal, to some extent, its redistributional goals.

Although the existence of signaling costs of defaulting seems plausible, it is not clear how important these costs are. More specifically, it is not clear how important the government's private information is, the extent to which this information is transmitted through the default decision, and the importance of the effects of communicating this information.

3. DETERMINANTS OF SOVEREIGN DEFAULTS

This section discusses which circumstances are likely to lead to a sovereign default. Investors try to measure the probability of the realization of such circumstances in order to estimate the probability of a default and then compute the appropriate price of sovereign bonds.[10] Of course, identifying the set of states that are likely to trigger a sovereign default is closely related with identifying how the costs of defaulting discussed in the previous section depend on these states.

Resources

A sovereign may find it optimal to repudiate outstanding debt contracts when current resources are sufficiently low. In order to avoid a default in these situations, large adjustments to expenditures or revenues would be required and these adjustments can be costly. Empirical evidence indicates that a sovereign tends to default in periods of low available resources. Using a historical data set with 169 sovereign defaults, Tomz and Wright (forthcoming) report that 62 percent of these default episodes occurred in years when the output level in the defaulting country was below its trend. Cantor and Packer

[9] Default episodes are often observed in periods of recessions. This means that a fraction of the low economic activity that is observed after a default episode can be explained by weak fundamentals existing prior to the default decision, and thus cannot be interpreted as a cost of defaulting (it is not triggered by the default decision).

[10] Cantor and Packer (1996) find that higher sovereign credit ratings—which reflect lower believed probabilities of a borrower not paying back his debts—are associated with lower interest rates.

(1996) find that sovereign credit ratings strongly respond to macroeconomic factors, such as the GDP growth rate and per capita income.

Government resources are low, for example, during a cyclical downturn. The countercyclicality of the interest rate paid by governments in developing countries (see Section 4) is consistent with sovereigns being more likely to default when economic conditions are worse. Higher interest rates may reflect a higher compensation to lenders who estimate a higher default probability.

Fluctuations of terms of trade (ratio of the price of exports to the price of imports) are an important driving force behind the business cycles in some emerging economies (see Mendoza 1995, Kose 2002, Broda 2004, and Broda and Tille 2003).[11] At the same time, several emerging economies strongly rely on commodity taxation as a source of public revenues and depend largely on imported intermediate goods that have no close substitutes. Some authors find that terms of trade fluctuations are a significant predictor of sovereign default and interest rate spreads in emerging economies (see Catao and Sutton 2002; Catao and Kapur 2004; Min et al. 2003; Min 1998; Caballero 2003; Caballero and Panageas 2003; Hilscher and Nosbusch 2004; and Calvo, Izquierdo, and Mejia 2004). A recent example of the relevance of commodity prices is found in Ecuador, where falling commodity prices led to a deterioration of the macroeconomic conditions and a sovereign default in 1999.[12] The sharp declines in oil prices during the second half of the 1990s have also been linked to the worsening of the macroeconomic and fiscal situation that led to the Russian default of 1998 (see Sturzenegger and Zettelmeyer 2006a).

Furthermore, episodes of sovereign default may be triggered by wars or civil conflicts that adversely affect a country's productivity (Sturzenegger and Zettelmeyer [2006a] describe such episodes). Defaults may also be triggered by a devaluation of the local currency when a relatively large fraction of the sovereign's debt is denominated in foreign currency and its revenues rely heavily on the taxation of nontradable goods. The magnitude of crises triggered by a devaluation of the local currency is likely to be amplified by currency mismatches in the banking sector, the corporate sector, and households.

Borrowing Costs

External factors that increase the cost of borrowing may also trigger a default episode. Both international interest rates and the total net lending to emerging

[11] For many countries, the term of trades of a few goods significantly affect their income. For example, according to the United Nations Conference on Trade and Development, 57 developing countries depended on three commodities for more than half of their exports in 1995 (see World Bank 1999).

[12] Oil and bananas together accounted for 59 percent of Ecuadorian exports in 2001. Ecuador was the first country to default on Brady bonds (Brady bonds arose from an effort in the late 1980s to reduce the debt held by less-developed countries that were frequently defaulting on loans).

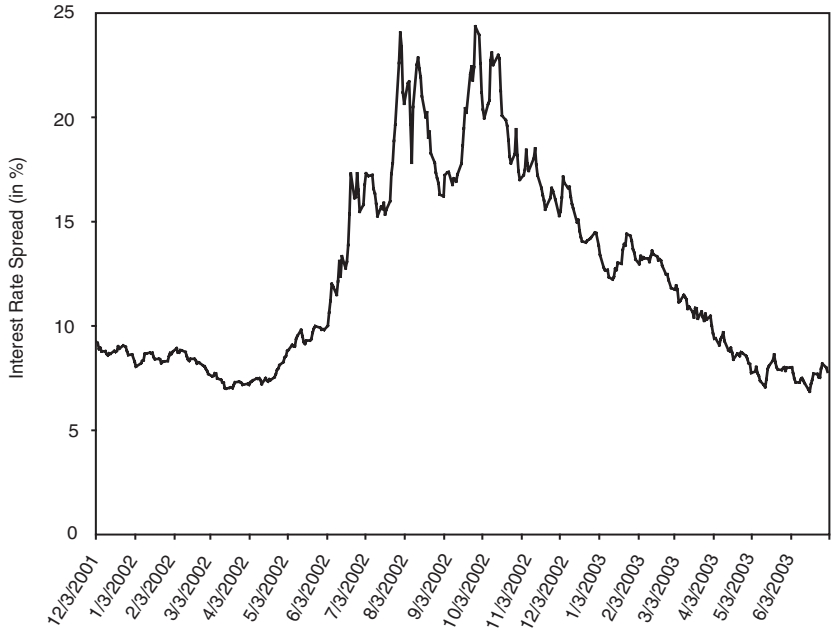
economies may influence lending to a particular developing country. Borrowing costs are particularly important in periods in which a country is trying to roll over its debt. The importance of external factors for the borrowing cost of developing countries is suggested by empirical studies that find that the interest rates paid by these countries have tended to move in the same direction as U.S. interest rates (see Lambertini 2001, Arora and Cerisola 2001, and Uribe and Yue 2006).

Political Factors

In addition to pure economic variables, political factors may also play a nontrivial role as determinants of defaults. There is a large literature discussing the links between political risk and sovereign defaults. Bilson, Brailsford, and Hooper (2002) define political risk as "the risk that arises from the potential actions of governments and other influential domestic forces, which threaten expected returns on investment." Sturzenegger and Zettelmeyer (2006a) conclude that "a solvency crisis could be triggered by a shift in the parameters that govern the country's willingness to make sacrifices in order to repay, due to changes in the domestic political economy (a revolution, a coup, an election etc.)." Similarly, Van Rijckeghem and Weder (2004) explain that it is reasonable to infer that a country's willingness to pay is influenced by politics, i.e., by the distribution of interests and by the institutions and power structures. Santiso (2003) writes, "One basic rule of the confidence game [in international financial markets] is then to be very careful when nominating the official government voicer. For investors it is mainly the ministry of economics or finance or the governor of the central bank."

Figure 3 illustrates the behavior of the sovereign spread in Brazil before and after the run-up to the presidential elections in October 2002. This behavior is often mentioned as an example of the importance of political factors as determinants of default decisions. The concerns raised by the left-wing presidential candidate Luiz Inácio "Lula" da Silva because of his past declarations in favor of debt repudiations is the most accepted explanation for the sharp increase in the country spread preceding the Brazilian election (see Goretti 2005). Spreads may have increased because of a decrease in the expected willingness to pay by the future government. More recently, the newly elected president of Ecuador, Rafael Correa, declared his intentions to restructure the country's debt. On January 17, 2007, two days after taking office, Ecuador's Minister of the Economy told a group of investors that the government may repay only 40 percent of its foreign debt as part of an effort to free up funds for health care and education. The day after, Ecuador's benchmark government foreign securities tumbled, driving the yield up 1.1 percentage points to 14.32 percent (see Pimentel 2007).

Figure 3 Sovereign Bonds Spread in Brazil



Source: JPMorgan (EMBI Global).

Empirical studies suggest that political factors are important in understanding sovereign default. Citron and Nickelsburg (1987) find that political instability is statistically significant as a determinant of a country's default probability. Along the same line, Balkan (1992) considers two dimensions of the borrower's political environment, a democracy index and a political instability index, and finds them statistically significant in explaining default probabilities. Rivoli and Brewer (1997) find that long- and short-term armed conflict in a country and changes in the long-term political legitimacy of the government are the most significant political predictors of debt reschedulings during the 1980s. Kohlscheen (2003) finds that parliamentary democracies experience a lower probability of default than presidential systems. He argues that this is explained by the higher number of veto players (i.e., political players with power to prevent a default) in parliamentary systems. Moser (2006) finds a significant effect of changes of the finance minister and/or the minister of the economy on a country's interest rate spreads. He argues that such events may reveal important signals about the government's future policy course. These signals may contain information that affect expectations both

about how the government will influence future growth and the policymakers' willingness to service debt.

The International Country Risk Guide's index of political risk for investors is used in recent empirical studies to account for the effect of political circumstances in environments where government priorities shift frequently (see Arteta and Hale 2006). The index is an attempt to evaluate the political risk faced by businesses in different countries. It is computed based on experts' subjective analysis. The index has also been interpreted as a proxy of the quality of institutions (see Reinhart, Rogoff and Savastano 2003, and Meyersson 2006). Similarly, the World Bank's Country Policy and Institutional Assessment database (CPIA) summarizes assessments on 20 scores in the general areas of economic management, structural policies, policies for social inclusion, and public sector management and institutions (see Gelos, Sahay, and Sandleris 2004).

Alfaro and Kanczuk (2005), Cole, Dow, and English (1995), and Hatchondo, Martinez, and Sapriza (2007) present models in which both default and difficulties in market access after a default may be triggered by political turnover. In their models, policymakers with different willingness to pay, alternate in power. When policymakers with a weaker willingness to pay take power, they may default on the debt issued by investor-friendly governments (those with a stronger willingness to pay). Following this, as long as policymakers with a weaker willingness to pay stay in power, governments experience difficulties in market access. It is more costly for these governments to borrow (because lenders understand that, other things being equal, these governments are more willing to default), and therefore they borrow less. Market access improves after the defaulting policymakers lose power. A clear example of this is discussed in Cole, Dow, and English (1995). They explain that "the ability of Reconstruction governments in Florida and Mississippi to borrow after the Civil War suggests that the old creditors could not block new loans once the states' reputations had been restored by an observable change in regime."

In Hatchondo, Martinez, and Sapriza (2007), we argue that the stability of investor-friendly regimes is key for these political defaults to occur. In our model, political defaults occur only if governments with a stronger willingness to pay are expected to stay in power long enough. Recall that the price received by the government for the bonds it issues incorporates a discount that mirrors the default probability. If an investor-friendly government chooses borrowing levels that would lead a less-friendly government to default, it has to compensate lenders for this contingency, i.e., for the contingency that less-friendly policymakers become the decisionmakers in the future. If the probability of this contingency is high enough (investor-friendly regimes are not stable), it is too expensive for a friendly government to choose borrowing levels that would lead less-friendly governments to default. In this scenario, friendly govern-

ments choose borrowing levels that even less-friendly governments will most likely choose to pay, and therefore it is unlikely that under these circumstances political turnover triggers a default.

In order to gauge the importance of political factors as determinants of some recent default episodes, in Hatchondo, Martinez, and Sapriza (2007) we study the behavior of International Country Risk Guide's index of political risk for investors in these episodes (we study Argentina, Ecuador, Pakistan, Russia, and Uruguay). We conclude that the Argentinean default in 2001 is the most likely to have been triggered by a change in political circumstances. Only Argentina and Uruguay exhibit a relatively high degree of political stability that is necessary in our model for a default to be triggered by political turnover. But while Argentina exhibits the widest difference in the average levels of political risk before and after its default, these two levels are almost identical in Uruguay.

4. BUSINESS CYCLES IN EMERGING ECONOMIES AND SOVEREIGN DEFAULT

This section discusses how understanding the economics of sovereign defaults helps to account for distinctive features of business cycles in emerging economies. The link between interest rates and business cycles has recently been the subject of intense research in international economics. For example, Neumeyer and Perri (2005) find that the dynamics of interest rates are important for understanding business cycle fluctuations in emerging economies. A similar finding is presented by Uribe and Yue (2006). To the extent that the interest rate paid by sovereigns is influenced by the probability of default, understanding the rationale of sovereign defaults may help one to understand business cycles in emerging economies.

Several studies have documented that business cycles in small emerging economies differ from those in small developed economies (see Aguiar and Gopinath 2007, Neumeyer and Perri 2005, and Uribe and Yue 2006). Table 3 presents average business cycle statistics for emerging economies (Argentina, Brazil, Korea, Mexico, and the Philippines) and developed economies (Australia, Canada, the Netherlands, New Zealand, and Sweden) computed by Neumeyer and Perri (2005); in the table, σ denotes a standard deviation and ρ denotes a correlation.

Table 3 shows that some moments are similar across the two groups of countries but other moments are noticeably different. For example, compared with developed economies, emerging economies feature:

1. More volatility—the volatilities of output, real interest rates, and net exports are higher.

Table 3 Average Business Cycle Statistics for Emerging and Developed Economies

	Emerging Economies	Developed Economies
σ**(GDP)**	2.79	1.37
σ**(R)**	2.32	1.66
σ**(NX)**	2.40	0.92
σ**(PC)/**σ**(GDP)**	1.30	0.92
σ**(TC)/**σ**(GDP)**	1.71	1.08
σ**(INV)/**σ**(GDP)**	3.29	3.44
ρ**(R,GDP)**	-0.55	0.20
ρ**(NX,GDP)**	-0.61	-0.23
ρ**(PC,GDP)**	0.80	0.67
ρ**(TC,GDP)**	0.79	0.68
ρ**(INV,GDP)**	0.88	0.73
ρ**(NX,R)**	0.51	-0.22
ρ**(PC,R)**	-0.55	0.24
ρ**(TC,R)**	-0.56	0.25
ρ**(INV,R)**	0.48	0.21

Notes: Net exports (NX) are exports minus imports over GDP. Real interest rates (R) are in percentage points. Total consumption (TC) includes private (PC) and government consumption, changes in inventories, and statistical discrepancy. Investment (INV) is gross fixed-capital formation. All series except net exports and real interest rates are in logs. All series have been Hodrick-Prescott filtered. Statistics are based on quarterly data.

Source: Neumeyer and Perri (2005).

2. Higher volatility of consumption relative to income—the ratio of volatilities is typically higher than one in emerging economies, while it is roughly equal to one in developed economies.

3. Countercyclical real interest rates in contrast with the procyclical real interest rates in developed economies.

4. More countercyclical net exports.

Other distinctive features of emerging economies are that most of these economies exhibit a procyclical government expenditure (government expenditure is acyclical or slightly countercyclical in developed countries) and a countercyclical inflation tax (the inflation tax is procyclical in developed countries). These features are documented by Gavin and Perotti (1997), Talvi and Vegh (2005), and Kaminsky, Reinhart, and Vegh (2004).

Default risk may help explain some of the distinctive features of emerging economies. In recent years, several authors have used the sovereign default framework proposed by Eaton and Gersovitz (1981) to account for the business

cycle regularities of emerging economies.[13] In this framework, the high interest rates paid by developing countries reflect a compensation for the default probability. Furthermore, the countercyclicality of spreads paid by developing countries is consistent with the fact that sovereigns are more likely to default when economic conditions are relatively bad (see beginning of Section 3). The tendency of sovereigns to default in bad times implies that in such times, borrowing is more expensive, and thus borrowing levels may be lower. This is consistent with the more countercyclical net exports in developing countries.[14] Lower borrowing levels in bad times may explain the higher volatility of consumption relative to income observed in emerging economies. Similarly, if borrowing is more expensive in bad times, then it may be optimal to tax more and decrease government expenditures in such times, which would help to explain the procyclicality of public expenditures and the countercyclicality of tax rates in emerging countries. Of course, a complete understanding of the differences between developed and developing countries would require a theory of why default risk is higher in developing countries.

5. CONCLUSIONS

Sovereign default episodes are widespread throughout history and are likely to continue to occur in the future. The discussion in this article suggests that even though there is a large literature studying default episodes, there is still a great deal to be learned. More research is necessary to assess the magnitude of the different costs of defaulting and to understand the precise role played by the determinants of a sovereign default. There are also open questions in other dimensions. For instance, it is not clear what explains differences in recovery rates on defaulted debt or differences in the duration of a default episode. Answering these questions, and thus advancing our understanding of the economics of sovereign default, seems a necessary step in order to completely comprehend the distinctive economic features of emerging economies.

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[13] See Aguiar and Gopinath (2006); Arellano (2005); Arellano and Ramanarayanan (2006); Bai and Zhang (2005); Cuadra and Sapriza (2006a,b); Eyigungor (2006); Hatchondo, Martinez, and Sapriza (2006, 2007, forthcoming); Lizarazo (2005a, 2005b); and Yue (2006).

[14] Similarly, in an environment with moral hazard and risk of repudiation, Atkeson (1991) shows that the optimal contract specifies that the borrowing country experience a capital outflow when the worst realizations of national output occur.

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