

# Crises and Sudden Stops: Evidence from International Bond and Syndicated-Loan Markets

Graciela L. Kaminsky

*The crises in Mexico, Thailand, and Russia in the 1990s spread quite rapidly to countries as far apart as South Africa and Pakistan. In the aftermath of these crises, many emerging economies lost access to international capital markets. Using data on international primary issuance, this paper studies the determinants of contagion and sudden stops following those crises. The results indicate that contagion and sudden stops tend to occur in economies with financial fragility and current account problems. They also show that high integration in international capital markets exposes countries to sudden stops even in the absence of domestic vulnerabilities.*

Keywords: Contagion; Financial integration; Globalization; International primary issuance; Sudden stops

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George Washington University and National Bureau of Economic Research  
(E-mail: [graciela@gwu.edu](mailto:graciela@gwu.edu))

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## I. Introduction

Myriad currency crises have plagued the last decade of the 20th century. These crises have not been confined to national borders, nor have they been confined to a particular region. The Thai crisis engulfed—within days—Malaysia, Indonesia, and the Philippines, while the Russian crisis spread as fast to countries as far apart as Brazil and Pakistan. Naturally, these events have triggered an intense debate about the seemingly contagious nature of crises and fueled a body of large and increasing empirical research on financial contagion.

Most of the empirical evidence on contagion has concentrated on the behavior of prices, be it stock market prices, exchange rates, or interest rates. The bulk of the studies have examined the comovement of financial prices in tranquil and crisis times.<sup>1</sup> The results are varied, with some of the episodes examined suggesting important spillovers across national borders, but with other crises being mostly confined to an individual country.

Other studies on contagion have focused on the ability of countries to access international capital markets in times of stress. For example, Calvo and Reinhart (1996) examine contagion in Latin America and find that when there are capital outflows in the large countries in this region, the smaller countries are also affected. Other researchers have examined the role of common creditors on triggering contagion in times of crises. Foreign banks can exacerbate the original crisis by calling loans and drying up credit lines from the crisis country, but can also propagate crises by calling loans elsewhere as they rebalance the overall risk of their portfolio following the initial losses. For example, Kaminsky and Reinhart (2000) and Van Rijckeghem and Weder (2003) examine the aftermath of the 1982 debt crisis and the 1997 Asian crisis and find that the countries most affected by capital flow reversals are those that borrow from the same group of international banks.

This paper contributes to this latter area of research. To examine emerging markets' access to the international capital market, I look at bond and syndicated-loan international gross primary issuance. These data can provide a better assessment of access (or lack thereof) to international markets than net capital inflows. While zero net capital inflows may reflect no access to international capital markets, they may also reflect full access to international capital markets in which inflows are just offset by outflows. Instead, gross issuance captures the ability of a country to both access new credit and to roll over the maturing debt. Using a new database on issuance in international capital markets,<sup>2</sup> this paper examines the ability of emerging markets to access the bond and syndicated-loan markets in the aftermath of the Mexican, Thai, and Russian crises and examines what type of economic, political, and financial conditions trigger the largest reversals in international gross issuance.

The rest of the paper is organized as follows. Section II describes the evolution of emerging market country access to international capital markets since 1980 and

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1. See, for example, Forbes and Rigobon (2001, 2002).

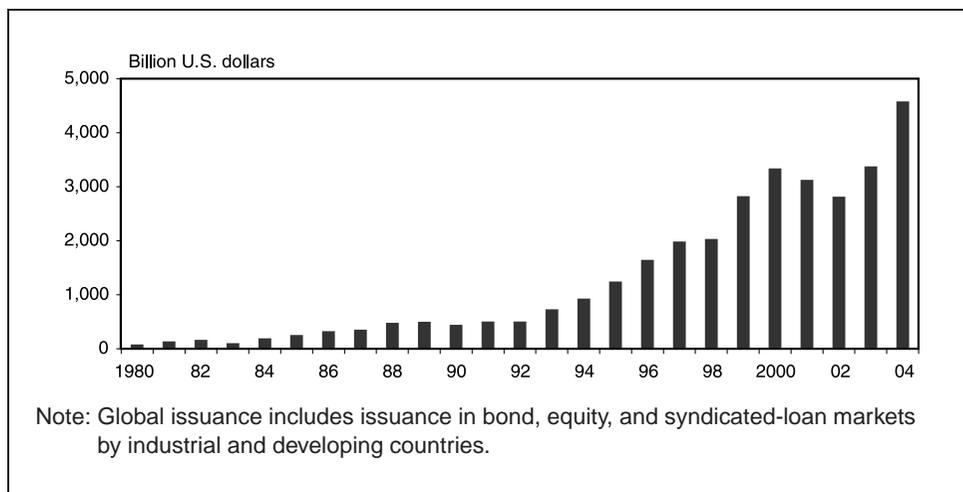
2. The information on bond and syndicated-loan issuance is collected by Dealogic. This database has detailed information on individual issues, including the amount of funds raised, the maturity, and the interest rate at which the debt is contracted. See the Data Appendix for detailed information on the database.

examines the changing nature of this issuance. This section also provides information on the importance of not only bond and syndicated-loan issuance but also equity issuance in foreign markets. Section III presents a higher resolution picture of bond and syndicated-loan markets in times of stress. Section IV reviews the theories of financial contagion and examines the links between sudden stops, international investors rebalancing portfolio strategies, and market fundamentals in emerging economies. Section V presents the conclusions.

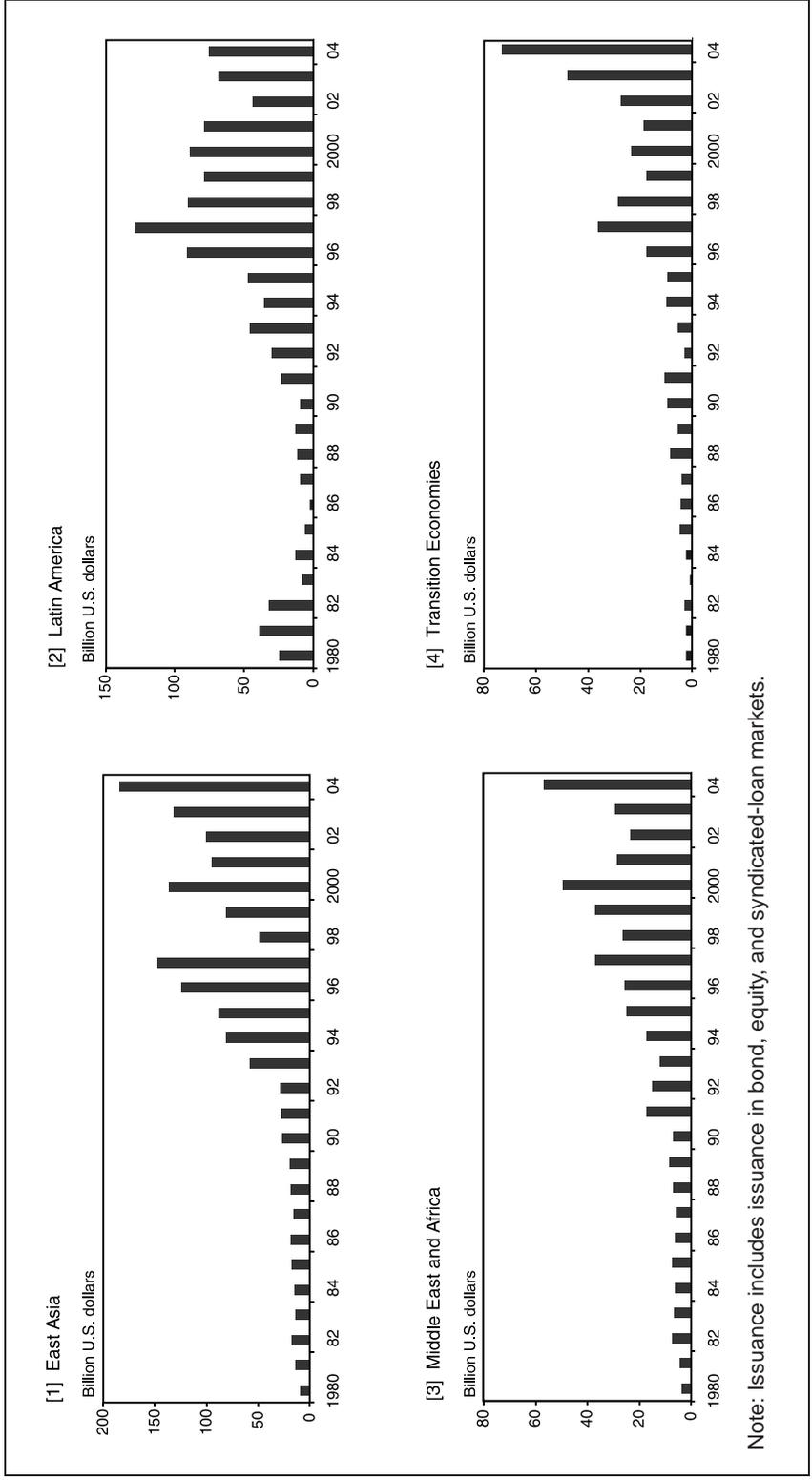
## II. A Brief History of Emerging Economies' Access to International Capital Markets

International financial integration dramatically increased in the last three decades. As shown in Figure 1, total issuance in international capital markets rises from US\$82 billion in 1980 to about US\$4.5 trillion in 2004. Perhaps the collapse of the Bretton Woods system in 1973 is the main driving force behind this explosion in international capital mobility. With no need to defend the peg, countries can choose their own monetary policy without having to restrict capital mobility, and thus a new era of financial liberalization begins. As early as July 1973, the United States, Germany, and Great Britain eliminate capital account restrictions, with Japan liberalizing in 1979. In the late 1970s, Latin American and some Asian countries also remove controls on capital account transactions and deregulate the domestic financial sector, with international issuance by these two regions increasing seven-fold, from US\$33 billion in 1980 to US\$260 billion in 2004 (see the top panels in Figure 2). In the 1980s, the wave of international financial liberalization also embraces Western European countries as they move toward the

**Figure 1 Global Gross Primary Issuance in International Capital Markets**



**Figure 2 Emerging Economies' Gross Primary Issuance in International Markets**



European Monetary System, with most Eastern European countries removing controls on capital flows in the 1990s.<sup>3</sup>

Emerging economies' access to international capital markets is first fueled by the oil shocks of the 1970s together with the growth of the Eurodollar market and amplified by a remarkable spurt of bank lending during 1979–81. As shown in Figure 3, the first international market to develop in the 1970s is the syndicated-loan market, with the Eurodollar market rapidly channeling the high savings of OPEC countries to all developing countries. As shown in this figure, loans are issued to the developing countries in Asia, the Middle East, Africa, and especially Latin America. The boom in syndicated lending to emerging markets peaks at US\$58 billion in 1981. Mexico's default in August 1982 triggers an abrupt halt in lending, with syndicated-loan issuance declining by 50 percent. With banks recalling their loans from all emerging markets, other defaults follow. Most Latin American countries suspend interest and principal payments, and they are also followed by countries in Asia, Eastern Europe, and Africa. The rest of the 1980s witnesses a collapse of access of emerging markets to the international syndicated-loan market: gross issuance of syndicated loans remains at half of the issuance reached in the early 1980s. The collapse of Latin America's issuance is even more dramatic, with loan issuance at 15 percent of the level reached in 1981.

By the end of the 1980s, a new development ends with the isolation of developing markets from international capital markets: the Brady plan and its initiative to restructure defaulted loans into bonds collateralized by U.S. treasuries in 1989<sup>4</sup> create, almost overnight, a market for sovereign emerging market bonds. As investor confidence in emerging market countries starts to recover gradually, both governments and the private sector start issuing bonds in international capital markets. Latin America benefits especially from the new international bond market. In fact, issuance in the bond market surpasses that of the syndicated-loan market, with Latin American countries' bond issuance increasing from US\$1 billion in 1990 to US\$64 billion in 1997.

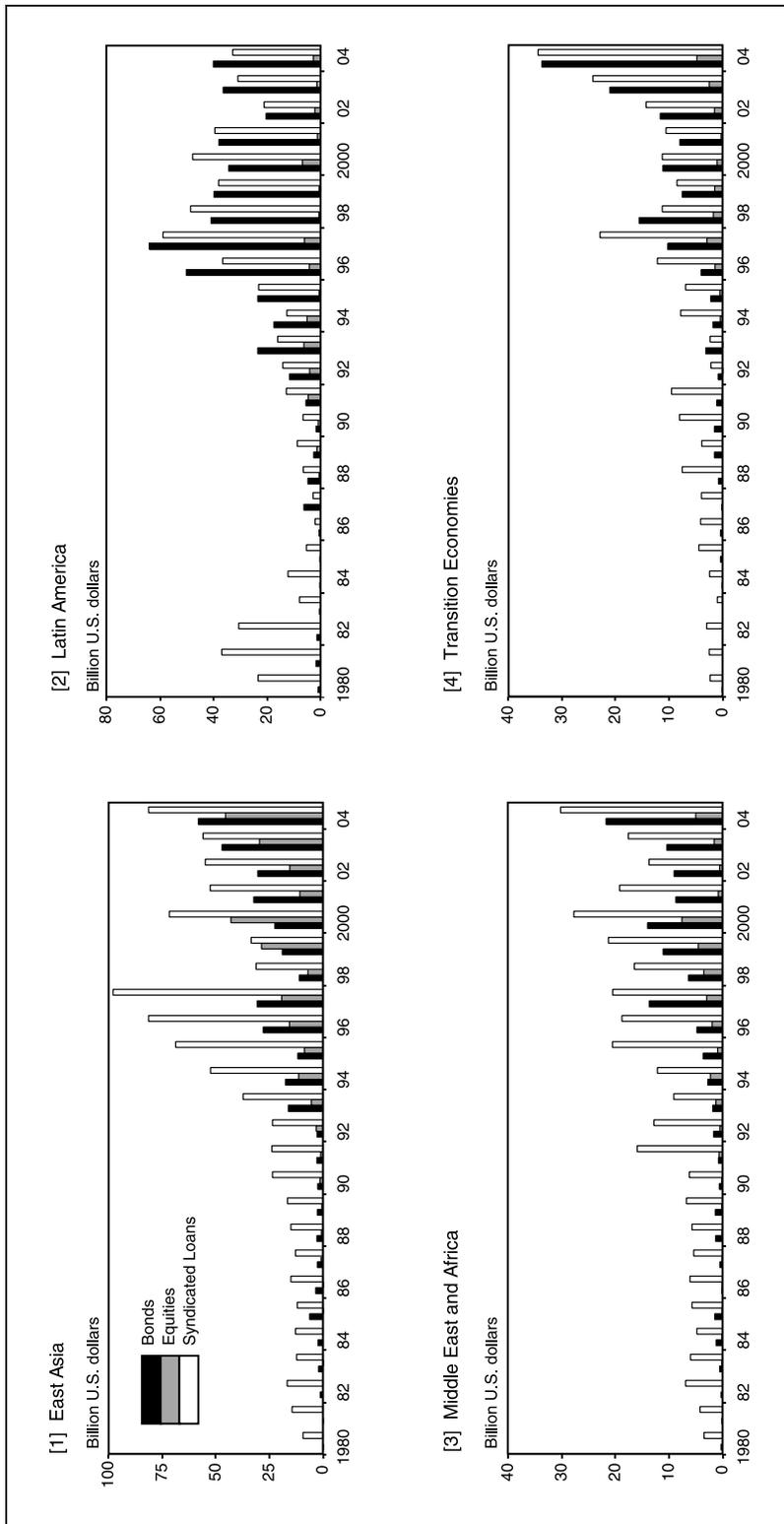
The Brady plan, with its initiative of restructuring distressed commercial bank loans, also provides a new impetus to the syndicated-loan market. Helped by the easy monetary conditions in industrial countries in the early 1990s, syndicated loans to emerging markets reach a new peak at US\$200 billion in 1997, almost four times higher than the level reached in the early 1980s. This time around, the largest beneficiaries in emerging markets are the East Asian countries, with gross issuance reaching almost US\$100 billion in 1997. The nationality of lenders also changes: while in the early 1980s most of the syndicates are composed of U.S. banks, in the 1990s Japanese and European banks play a leading role in lending to emerging markets, especially to East Asian countries.

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3. See Kaminsky and Schmukler (2008) for a chronology of financial liberalization in industrial and emerging countries.

4. Brady bonds are dollar-denominated bonds, named after U.S. Treasury Secretary Nicholas Brady, traded on the international bond market, allowing emerging countries to transform nonperforming debt into mostly collateralized bonds. Most of the bonds had the principal collateralized by specially issued U.S. Treasury 30-year zero-coupon bonds purchased by the debtor country using funding from the International Monetary Fund (IMF), the World Bank, and the country's own foreign exchange reserves. Interest payments on Brady bonds are in some cases also guaranteed by securities of at least double-A rated credit quality held with the Federal Reserve Bank of New York.

**Figure 3 Emerging Economies' Gross Primary Issuance in International Markets**



A new feature of financial integration in the 1990s is the forceful development of an international equity market. In this decade, corporations start not only to raise capital in the highly unregulated international bond and syndicated-loan markets but also to participate in regulated equity markets in various financial centers. For example, the liquid U.S. capital markets start attracting record numbers of foreign issuers and investors in the early 1990s. In particular, many foreign issuers find it easier to raise capital in the United States through the creation of American Depositary Receipt Programs.<sup>5</sup>

Again in the 1990s, as in the 1980s, booms are followed by capital flow reversals. The first reversal occurs in the immediate aftermath of Mexico's currency crisis in December 1994. In this case, access to international capital markets resumes for most countries within one year and returns to its peak value soon thereafter. The second, more severe reversal occurs in 1997 during the Asian crisis. This reversal is later aggravated by the Russian default in August 1998 and the Brazilian crisis in 1998–99. This time, the collapse in international issuance is more pronounced and long lasting, with Latin American total gross issuance declining about 40 percent in 1999 from its peak in 1997, and Asia total gross issuance declining 60 percent in 1998. The evidence from transition economies is similar to that of Asia and Latin America. In the early 1990s, gross issuance sharply increases, with a peak in 1997 at US\$36 billion. Also, as in Asia and Latin America, international issuance declines approximately 30 percent following the Russian crisis.

In 2003, following the decline in interest rates in industrial countries, capital flows to all emerging markets resumes, with gross issuance reaching its previous peak of the 1990s by 2005.

### **III. Crises and Sudden Stops: Preliminary Evidence**

This section shows a higher-resolution picture of emerging economies' participation in international capital markets and of the sudden stops in times of turmoil. While about 75 emerging economies participate in international capital markets at one time or another, only a small group of those countries participates actively in both markets. This paper will focus on this smaller group of countries, those that have at least participated in more than 10 percent of the quarters in both the bond and the loan markets during the capital inflows episode of the early 1990s before the start of the episodes of crises of the 1990s. Table 1 shows the panel of 24 countries. The panel includes 10 Asian countries, eight Latin American countries, three countries in the Middle East and Africa region, and three transition economies. Table 1 also shows the extent of their participation in the bond and syndicated-loan market during the 1990–94 period.

Figures 4 and 5 show the financial spillovers following the Mexican, Thai, and Russian crises. They respectively report the change in gross bond issuance and the change in gross loan issuance in the year following the crisis with respect to the

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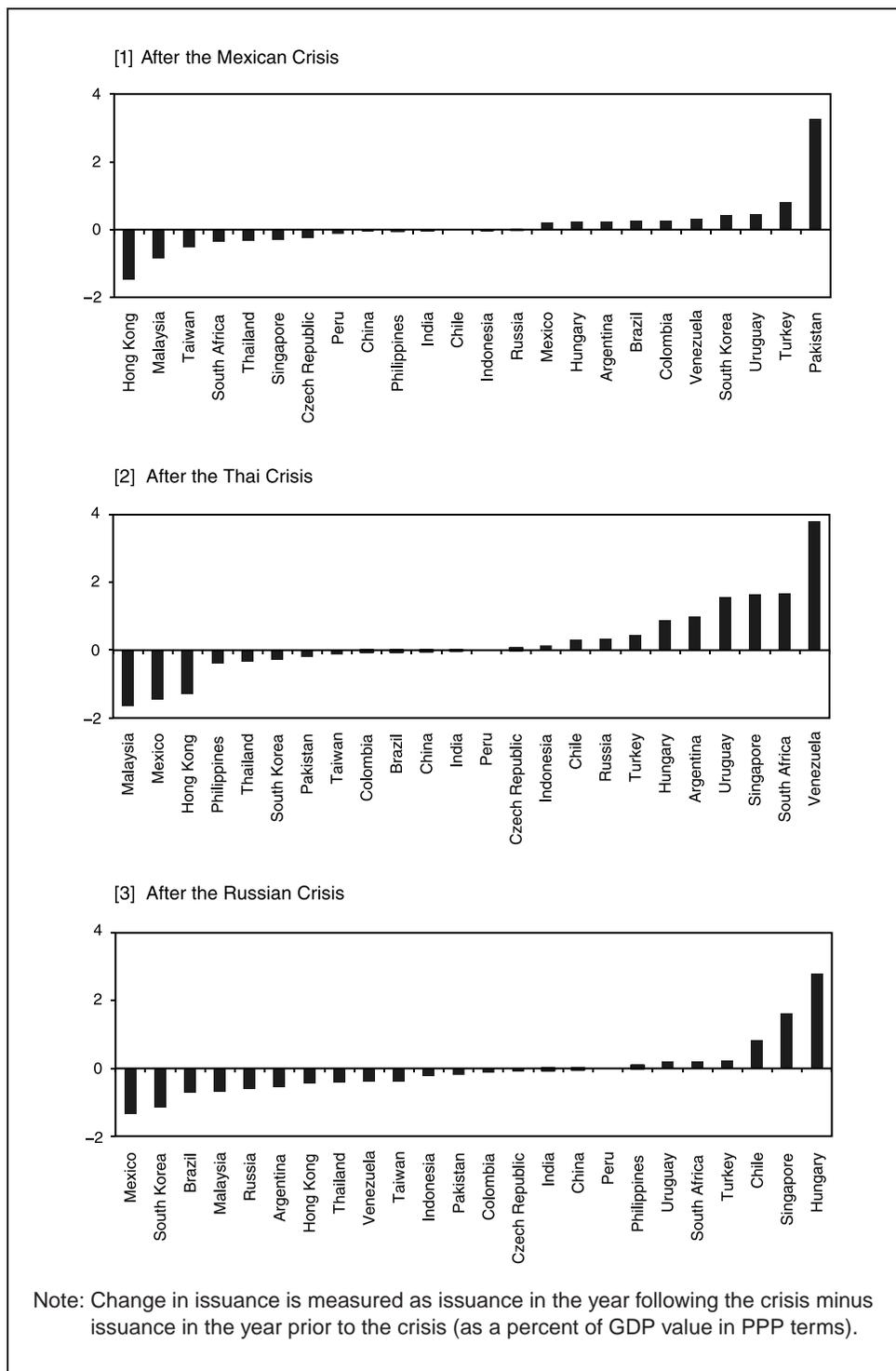
5. The magnitude of equity issues is not directly comparable to the magnitude of debt issues because unlike equity, bonds have finite maturities. Firms typically roll over bonds at maturity, and hence a part of the debt issues goes toward refinancing old debt and only the remaining part is new capital.

**Table 1 Number of Quarters of Participation in International Financial Markets (1990–94)**

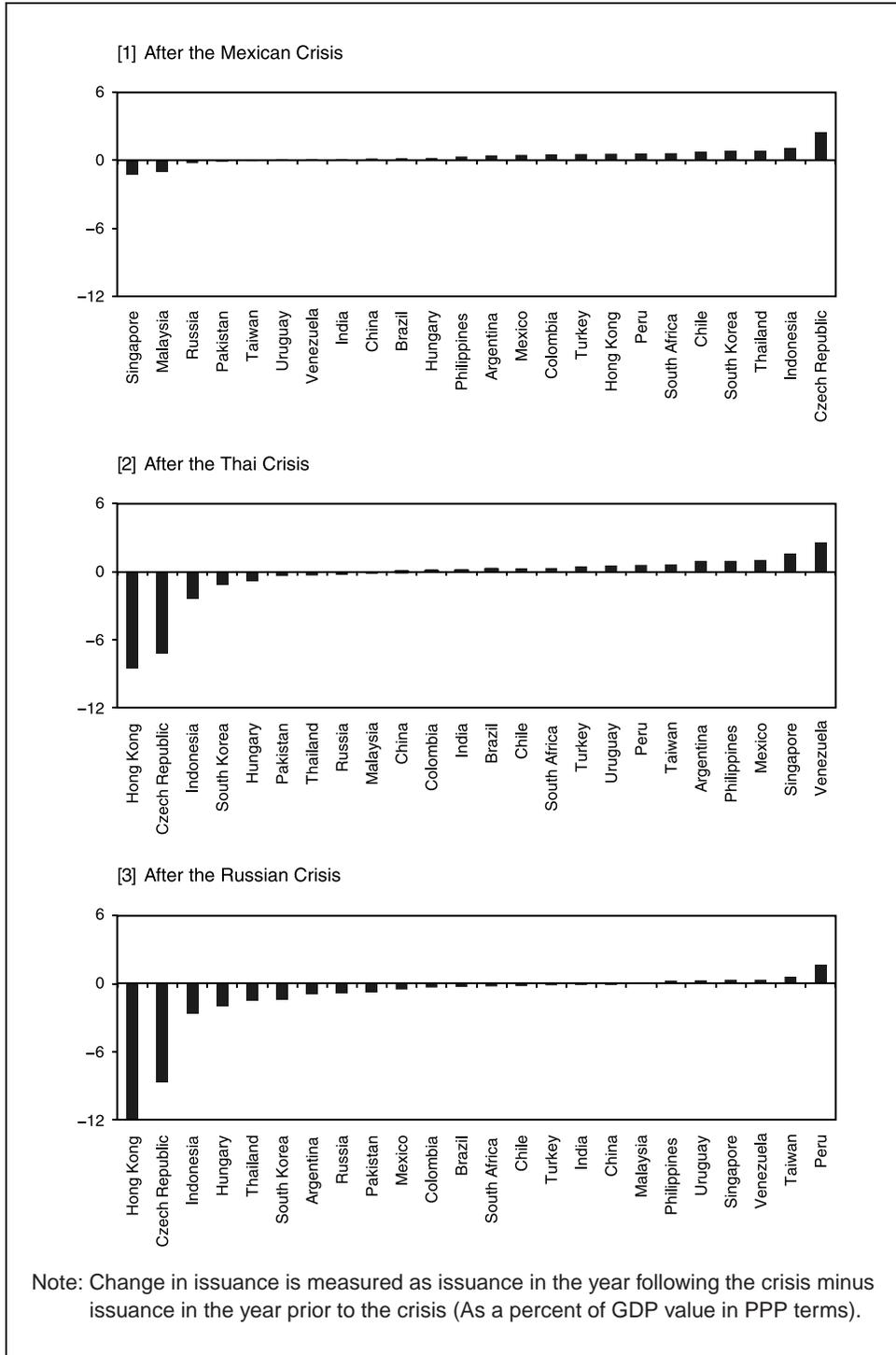
Countries	Asia		Latin America		Middle East and Africa		Transition economies	
	Bond	Participation in market Syndicated loan	Countries	Bond	Participation in market Syndicated loan	Countries	Bond	Participation in market Syndicated loan
China	60	100	Argentina	75	65	Pakistan	10	85
Hong Kong	95	100	Brazil	65	90	South Africa	30	55
India	35	100	Chile	10	80	Turkey	65	100
Indonesia	60	100	Colombia	25	75			
Malaysia	25	100	Mexico	100	100			
Philippines	40	80	Peru	10	20			
Singapore	25	95	Uruguay	15	20			
South Korea	100	100	Venezuela	55	95			
Taiwan	45	90						
Thailand	45	100						
						Czech Republic	20	75
						Hungary	90	85
						Russia	10	90

Note: The number of quarters of participation in international financial markets is in percent of total quarters in the 1990–94 period.

**Figure 4 Global Spillovers in the International Bond Market Change in Issuance (As a Percent of GDP)**



**Figure 5 Global Spillovers in the International Syndicated-Loan Market Change in Issuance (As a Percent of GDP)**



issuance in the year prior to the crisis (as a percent of GDP at purchasing power parity [PPP] value<sup>6</sup>). The top panels look at the aftermath of the Mexican devaluation in December 1994, the middle panels examine the aftermath of the collapse of the Thai baht in July 1997, and the bottom panels study the aftermath of the Russian devaluation and moratorium in August 1998. These figures capture three stylized patterns of the behavior of international capital markets in times of turmoil in the 1990s.

First, the extent of the sudden stops in the two markets in the aftermath of the three crises is substantially different, with the retrenchment in participation of emerging economies in international capital markets increasing progressively after the Thai and the Russian crises. The reversal in gross issuance in the aftermath of the Mexican crisis is confined to a small group of countries, especially in the syndicated-loan market where only 20 percent of the countries suffer reversals in issuance. The share of countries suffering reversals in issuance in the aftermath of the Thai crisis increases to 50 percent in the bond market (from 45 percent during the Mexican crisis) and to 42 percent in the syndicated-loan market. Finally, we observe a more general retrenchment in participation of emerging economies in the aftermath of the Russian crisis, with 70 percent of the countries in the sample suffering a decline in gross issuance in each market.

Second, while the flight away from emerging markets becomes more pronounced during the Thai and Russian crises in both markets, it is only in the syndicated-loan market where the reversals become massive. In this market, the countries in the 85th percentile suffer reversals of the order of 0.70 percent of GDP during the Mexican crises, with reversals increasing to almost 5 percent of GDP during the Thai crisis and to almost 6.5 percent of GDP during the Russian crisis. Instead, the size of the reversals in the bond market for the countries in the 85th percentile oscillates around 1 percent of GDP for all three crises.

Third, only during the Thai crisis does contagion have a regional pattern. During the Thai crisis, 70 percent of all the countries in Asia suffer pronounced reversals in both the bond and syndicated-loan markets. In contrast, in the aftermath of the Mexican crisis, none of the Latin American countries suffer reversals in the syndicated-loan market and only Peru suffers a small decline in issuance in the bond market. As discussed before, contagion during the Russian crisis is not contained within the region but spreads very quickly around the world.

#### **IV. What Triggers Sudden Stops?**

The experience in the 1990s, with booms and busts in international capital flows and crises sprouting around the world, has alarmed both the academic and policy communities and has fueled a large and growing theoretical and empirical research to explain financial contagion and sudden stops.

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6. I use GDP in dollars at purchasing power parity (PPP) values to eliminate the effect of the devaluations on the value of GDP in dollars.

Several authors have pointed out that contagion tends to be of a regional nature; it affects countries in geographic proximity. For example, Glick and Rose (1999) conclude that patterns of international trade are important in understanding how currency crises spread, above and beyond any macroeconomic phenomena. They examine contagion during five different currency crises (in 1971, 1973, 1992, 1994, and 1997) and show that currency crises affect clusters of countries tied together by international trade. They also show that trade linkages can help to explain cross-country correlations in exchange market pressure during crisis episodes, even after controlling for macroeconomic factors. Kaminsky and Reinhart (2000) also show that some crises are of a regional nature but question whether this is due to trade links or to financial links, particularly through the role played by banks. They claim that it is difficult to distinguish among the two because most countries that are linked in trade are also linked in finance. One potential channel of transmission stressed by Kaminsky and Reinhart (2000) is the role of international common lenders, in particular, commercial banks. The behavior of foreign banks can both exacerbate the original crisis, by calling loans and drying up credit lines, and also propagate crises by calling loans elsewhere. The need to rebalance the overall risk of the bank's asset portfolio and to recapitalize following the initial losses can lead to a marked reversal in commercial bank credit across markets where the bank has exposure. To evaluate the effect of this channel of contagion, Kaminsky and Reinhart (2000) examine crises from 1970 to 1999 using data for 20 developing and small industrial countries. They show that during the 1982 debt crisis most Latin American countries were borrowing from U.S. banks while in the Asian crises of 1997, with the exception of the Philippines, all the crisis countries were mostly borrowing from Japanese banks. When they group countries in accordance with their exposure to a common creditor, they find that knowing that there is a country in crisis in that core group has a higher predictive power about future crises in the group than knowing that a country has trade links with the "original" crisis country. Naturally, as emphasized by these authors, financial links do not need to be just regional; now contagion can have global reach.<sup>7</sup>

Most of the research on financial contagion stresses information asymmetries in capital markets. For example, Calvo and Mendoza (2000) present a model where the fixed costs of gathering and processing country-specific information give rise to herding behavior, even when investors are rational. Kodres and Pritsker (2002) also study contagion in a model with rational agents and information asymmetries. These authors stress the role played by investors who engage in cross-market hedging of macroeconomic risks. In Calvo (1999), financial contagion arises when a leveraged investor facing margin calls needs to sell (to an uninformed counterpart) his or her asset holdings. Because of the information asymmetries, a "lemon problem" arises and the asset can only be sold at a firesale price. A variant of this story can be told about an open-end fund portfolio manager who needs to raise liquidity in anticipation of future redemptions. In either case, the strategy will be not to sell the asset whose price has already collapsed but other assets in the portfolio. In doing so, however, other asset prices are depressed and

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7. See also, Kaminsky and Reinhart (2008) for an analysis of contagion in stock markets and the regional/global scope of spillovers.

the original disturbance spreads across markets. Hence, just as a commercial bank may call its loans to Malaysia after Thailand has a crisis, so can a diversified investor choose (or be forced by margin calls) to sell his or her Argentinean bond and equity holdings after Mexico devalues. In order to be of any consequence, however, this channel of transmission requires that there be sufficient asset market liquidity. In other words, all these models suggest that the channels of transmission arise from the global diversification of financial portfolios.<sup>8</sup> As such, they have the empirical implication that countries with more internationally traded financial assets and more liquid markets should be more vulnerable to contagion. Small, highly illiquid markets are likely to be under-represented in international portfolios to begin with and, as such, shielded from this type of contagion.<sup>9</sup>

Naturally, country fragilities will also matter when investors rebalance their portfolio in times of turmoil. Moreover, the last theory of financial contagion focuses on common fragilities. The so-called “wake-up-call hypothesis” (a term coined by Goldstein [1998]) relies on either investor irrationality or a fixed cost in acquiring information about emerging markets. In this story, once investors “wake up” to the weaknesses that were revealed in the crisis country, they will proceed to avoid and move out of countries that share some characteristics with the crisis country. So, for instance, if the original crisis country had a large current account deficit and a relatively “rigid” exchange rate, then other countries showing similar features will be vulnerable to similar pressures (see Basu [1998] for a formal model).

This section draws on these studies to empirically study why some countries suffer severe reversals but others are left unscathed in the aftermath of the Mexican, Thai, and Russian crises. The focus will be on country fragilities as well as on the role of the exchange rate regime, and on the role of liquidity of markets and regional proximity.

When examining country vulnerabilities, the research on crises and contagion has focused on the effects of expansionary monetary and fiscal policy, problems in the current account, fragility in the banking sector, and overall macroeconomic stability. Naturally, with a large panel of countries we have to limit the number of indicators so as to keep our panel balanced. CPI inflation is used to capture monetary policy. The government balance (as a share of GDP) captures fiscal policy. The current account balance (as a share of GDP) and deviations of the exchange from PPP are used to identify external imbalances. GDP growth rate deviation from growth during normal times is used to capture overall macroeconomic stability.<sup>10</sup>

Most of the currency crises of the 1990s occurred in the presence of banking problems. Since vulnerabilities of the banking sector are associated with rapid credit

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8. This type of spillover is clearly suggested by the *Wall Street Journal* on November 18, 1998, when explaining why the Mexican stock market plummeted in August and September as leveraged investors faced margin calls: “Earlier this year, so many families living in the fashionable suburb of San Pedro Garza Garcia invested in Russian bonds that it became known as San Pedrosburgo. Now this wealthy enclave feels more like Stalingrad.”

9. The finance literature has long recognized the importance of liquid asset markets, and many have studied the price effect of the liquidity premium. Most of this literature has concentrated on the experiences in mature financial markets. So, for example, many authors have examined the behavior of the on-the-run (newly issued) versus off-the-run U.S. Treasury bond yields.

10. The data for the current account balance, GDP in dollars at PPP values, GDP in domestic currency at constant prices, government balance, the nominal exchange rate (current and PPP values), and the CPI inflation rate are from the IMF World Economic Outlook Database.

creation (see, for example, Kaminsky [1998]), I use the growth rate of domestic credit/GDP to capture banking problems.<sup>11</sup> These crises were also preceded by large booms in international borrowing and extreme dollarization. Many have argued that moral hazard and government bailouts were the main culprits behind these excesses. For example, Dooley (2000) and Burnside, Eichenbaum, and Rebelo (2001) conclude that fixing the exchange rate offers free insurance to firms that borrow in dollars, creating moral hazard opportunities. These authors show that in the absence of government insurance, it is optimal for banks to hedge exchange risk in forward markets. The presence of government insurance eliminates the incentives to hedge the risk of devaluations, encouraging banks to magnify their exchange exposure as they reap additional returns in the event of no devaluation and are bailed out when devaluations erode the quality of loans. These models also suggest that sudden stops become more dramatic if countries adopt a fixed exchange rate regime. To examine the effect of the exchange rate regime, I first have to identify the episodes of fixed and flexible rates. The International Monetary Fund (IMF) reports an annual classification of countries that peg or float. This index is based on what governments say they are doing, a *de jure* classification. This approach, however, ignores the fact that many alleged floaters intervene in the exchange market to reduce exchange rate volatility, while some fixers devalue periodically to accommodate independent monetary policies. To address this problem, a variety of authors have proposed a *de facto* classification. In this section, I use the Reinhart and Rogoff (2004) classification. These authors classify episodes into five groups: pegs, crawling pegs, managed floating, freely floating, and freely falling. I divide the sample into two groups. The fixed exchange rate group comprises the pegs and crawling pegs episodes; the flexible exchange rate group comprises managed floating and freely floating. The exchange rate regime indicator takes a value of 1 for fixed and 2 for flexible-exchange rate regimes.

More recently, the literature on the determinants of crises and contagion has also focused on political vulnerabilities. To capture political risk, I use The Political Risk Rating published in the International Country Risk Guide (ICRG). This index includes 12 weighted variables covering both political and social attributes. The components of this index include the following indicators: Government Stability, Socioeconomic Conditions, Investment Profile, Internal Conflict, External Conflict, Corruption, Military in Politics, Religious Tensions, Law and Order, Ethnic Tensions, Democratic Accountability, and Bureaucracy Quality. The Political Risk index is based on 100 points. The country scores, ranging from zero to 100, are then broken into categories from Very Low Risk (80 to 100 points) to Very High Risk (zero to 49.5 points).

To examine trade and financial links of contagion, I use two variables. Since trade-link contagion is mostly of a regional nature, I use a distance indicator to capture this type of spillover. This indicator is equal to the distance of each country in the sample from the “original” crisis country, in our case, Mexico, Thailand, and Russia, respectively. But crises have also spread, in part because of worldwide financial diversification. For this channel of transmission to be of any consequence, there should be sufficient asset market liquidity. If bond and loan markets are so underdeveloped that

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11. The data for domestic credit (of commercial banks) is from the IMF International Financial Statistics.

portfolio flows are trivial, then clearly this channel of transmission is not likely to be quantitatively important. Thus, to capture this channel of contagion, I use a measure of each country's participation in the corresponding international capital market (the country's share in total emerging market issuance in the international bond [loan] market) to examine reversals in the bond (loan) market.

Naturally, an epidemic may arise when multiple individuals are exposed to a common virus. The global analogy to the common virus can be found in international interest rate fluctuations, which have had much to do in explaining the cycles in capital flows to emerging markets (see, for example, Calvo, Reinhart, and Leiderman [1993]). To account for the world common factors, I use the U.S. federal funds real interest rate and the growth rate of world output.

Tables 2 and 3 report the results of univariate regressions for the bond and the syndicated-loan market, respectively, and give us a preliminary reading on the role of the various factors on contagion. The panel model consists of three cross sections, one for each crisis. The cross-sections consist of data for the 24 countries in Table 1. The dependent variable, issuance in the year following the crisis minus issuance in the year preceding the crisis (as a percent of GDP in dollars at PPP value), is shown in Figure 4 for the bond market and in Figure 5 for the syndicated-loan market. To mitigate potential endogeneity biases, all the explanatory variables enter the regressions lagged one period.

The first two explanatory variables in the tables are those capturing monetary and fiscal policies. Interestingly, expansionary macropolicies cannot explain the extent of the spillovers in the bond and the syndicated-loan markets in the aftermath of the crises of the 1990s. In contrast, external fragility seems to capture a common trait among the countries that suffer larger reversals. In the bond market, countries with current account deficits of about 5 percent of GDP suffer issuance reversals of about 30 basis points of GDP larger than those with current account balances. In the syndicated-loan market, this effect is even larger, reaching half a percentage point of GDP for a country with a current account deficit of about 5 percent of GDP. Similarly, financial vulnerabilities as captured by the annual growth rate of domestic credit (as a share of GDP) can explain sudden stops in the bond market. In this market, countries in the 80th percentile of the distribution of credit growth have a reversal of approximately 40 basis points of GDP larger than those in the 20th percentile. This effect is smaller (and not statistically different from zero) in the syndicated-loan market. Liquidity (high participation in international capital markets) also contributes to both lower bond and syndicated-loan issuance in times of turmoil. In the bond market, countries with high participation in international issuance (those in the 80th percentile) suffer a reduction in issuance of 50 basis points of GDP larger than those with low participation (those in the 20th percentile). This effect is substantially larger in the syndicated-loan market, reaching 1.5 percentage points of GDP. World market conditions also seem to have been at the heart of withdrawals in the syndicated-loan market, with an increase of 1 percentage point in the world real interest rate leading on average to a decline in issuance of about 1 percentage point of GDP. In contrast, the results in Table 2 suggest that fluctuations in interest rates do not affect significantly issuance in the international bond market. Reversals in the loan

**Table 2 Global Spillovers in the International Bond Market Univariate Regression Results**

Indicators	Regressions										
	1	2	3	4	5	6	7	8	9	10	11
<b>Macro policy</b>											
Fiscal balance/GDP	0.01 (0.68)										
Inflation		0.00 (0.69)									
<b>External account</b>											
Current account balance/GDP			0.06 (0.01)								
Deviations from PPP				0.04 (0.72)							
<b>Real economy</b>											
GDP growth					-0.02 (0.57)						
<b>Financial vulnerabilities</b>											
Domestic credit/GDP						-0.02 (0.01)					
Exchange rate regime							0.23 (0.34)				
<b>Liquidity</b>											
Share in total bond issuance								-0.07 (0.01)			
<b>Institutions</b>											
Political risk index									-0.01 (0.74)		
<b>Regional patterns</b>											
Distance										0.02 (0.40)	
<b>World economic conditions</b>											
World economic growth											0.01 (0.31)
World real interest rate											0.05 (0.86)
Constant	0.11 (0.37)	0.08 (0.48)	0.18 (0.11)	0.01 (0.99)	0.11 (0.35)	0.12 (0.26)	-0.21 (0.53)	0.34 (0.01)	0.37 (0.67)	0.09 (0.42)	-0.93 (0.57)
Adjusted R <sup>2</sup>	-0.1	-0.01	0.09	-0.01	-0.01	0.08	-0.01	0.10	-0.01	0.00	-0.01
Number of observations	72	72	72	72	72	72	72	72	72	72	72
F-statistic	0.17	0.17	7.76	0.13	0.33	7.28	0.92	8.61	0.11	0.74	0.62
Prob. (F-statistic)	0.68	0.69	0.01	0.72	0.57	0.01	0.34	0.01	0.75	0.39	0.54

Note: Changes in bond issuance (issuance in the year following the crisis minus issuance in the year preceding the crisis) as a percent of GDP is the dependent variable. *P*-values in parentheses.

**Table 3 Global Spillovers in the International Syndicated-Loan Market Univariate Regression Results**

Indicators	1	2	3	4	5	6	7	8	9	10	11
<b>Macro policy</b>											
Fiscal balance/GDP	-0.08 (0.15)										
Inflation		0.00 (0.68)									
<b>External account</b>											
Current account balance/GDP			0.10 (0.06)								
Deviations from PPP				0.23 (0.40)							
<b>Real economy</b>											
GDP growth					0.10 (0.24)						
<b>Financial vulnerabilities</b>											
Domestic credit/GDP						-0.01 (0.52)					
Exchange rate regime							0.33 (0.57)				
<b>Liquidity</b>											
Share in total loan issuance								-0.30 (0.00)			
<b>Institutions</b>											
Political risk index									-0.08 (0.01)		
<b>Regional patterns</b>											
Distance										0.18 (0.03)	
<b>World economic conditions</b>											
World economic growth											0.01 (0.77)
World real interest rate											-1.23 (0.06)
Constant	0.64 (0.03)	-0.49 (0.08)	-0.32 (0.26)	-0.97 (0.14)	-0.55 (0.05)	-0.45 (0.11)	-0.91 (0.28)	0.62 (0.10)	5.23 (0.01)	-0.47 (0.08)	3.82 (0.33)
Adjusted R <sup>2</sup>	0.02	-0.01	0.04	-0.01	0.01	-0.01	-0.01	0.17	0.08	0.07	0.05
Number of observations	72	72	72	72	72	72	72	72	72	72	72
F-statistic	2.10	0.18	3.54	0.73	1.41	0.41	0.32	15.33	7.81	5.19	2.96
Prob. (F-statistic)	0.15	0.68	0.06	0.40	0.24	0.53	0.57	0.00	0.01	0.03	0.06

Note: Changes in loan issuance (issuance in the year following the crisis minus issuance in the year preceding the crisis) as a percent of GDP is the dependent variable. *P*-values in parentheses.

market seem to have been of a regional nature as captured by the indicator of distance from the “original” crisis country. This is not the case in the bond market. Finally, I do not find any statistically significant effects of the exchange rate regimes, institutions, or world output.<sup>12</sup>

Tables 4 and 5 report the estimates of the multivariate regressions for the bond and the syndicated-loan market, respectively. The explanatory variables in these tables are

**Table 4 Global Spillovers in the International Bond Market Multivariate Regression Results**

Indicators	Panel least squares					Cross-section random effects
	1	2	3	4	5	
Current account balance/GDP	0.04 (0.04)	-0.01 (0.07)	0.03 (0.11)	0.04 (0.04)	0.04 (0.05)	0.04 (0.05)
Domestic credit/GDP	-0.02 (0.01)	-0.02 (0.03)	-0.01 (0.49)	-0.02 (0.04)	-0.02 (0.02)	-0.02 (0.02)
Share in total bond issuance	-0.06 (0.01)	-0.07 (0.00)	-0.07 (0.00)	-0.05 (0.15)	-0.06 (0.01)	-0.07 (0.01)
<b>Thai crisis idiosyncratic effects</b>						
Current account balance/GDP		0.11 (0.01)				
Domestic credit/GDP			-0.03 (0.06)			
Share in total bond issuance				-0.00 (0.95)		
<b>Russian crisis idiosyncratic effects</b>						
Current account balance/GDP		0.05 (0.31)				
Domestic credit/GDP			-0.01 (0.60)			
Share in total bond issuance				-0.04 (0.40)		
<b>World economic conditions</b>						
World economic growth					0.01 (0.64)	
World real interest rate					0.11 (0.64)	
Constant	0.40 (0.00)	0.41 (0.00)	0.41 (0.00)	0.40 (0.00)	-0.63 (0.67)	0.41 (0.00)
Adjusted R <sup>2</sup>	0.22	0.27	0.24	0.21	0.20	0.20
Number of observations	72	72	72	72	72	72
F-statistic	7.66	6.19	5.45	4.69	4.63	7.00
Prob. (F-statistic)	0.00	0.00	0.00	0.00	0.00	0.00

Note: Changes in bond issuance (issuance in the year following the crisis minus issuance in the year preceding the crisis) as a percent of GDP is the dependent variable. *P*-values in parentheses.

12. For the syndicated-loan market, institutions have a coefficient with the wrong sign.

**Table 5 Global Spillovers in the International Syndicated-Loan Market Multivariate Regression Results**

Indicators	Panel least squares					Cross-section random effects
	1	2	3	4	5	
Current account balance/GDP	0.08 (0.11)	-0.09 (0.24)	0.08 (0.11)	0.07 (0.11)	0.08 (0.11)	0.09 (0.12)
Distance	0.16 (0.03)	0.17 (0.02)	0.11 (0.45)	0.09 (0.22)	0.12 (0.09)	0.15 (0.03)
Share in total loan issuance	-0.28 (0.00)	-0.27 (0.00)	-0.29 (0.00)	-0.07 (0.49)	-0.28 (0.00)	-0.28 (0.00)
<b>Thai crisis idiosyncratic effects</b>						
Current account balance/GDP		0.23 (0.04)				
Distance			0.31 (0.16)			
Share in total loan issuance				-0.23 (0.05)		
<b>Russian crisis idiosyncratic effects</b>						
Current account balance/GDP		0.29 (0.01)				
Distance			-0.02 (0.90)			
Share in total loan issuance				-0.44 (0.00)		
<b>World economic conditions</b>						
World economic growth					0.01 (0.72)	
World real interest rate					-0.98 (0.10)	
Constant	0.67 (0.07)	-0.30 (0.58)	0.76 (0.04)	0.70 (0.04)	3.91 (0.27)	3.91 (0.27)
Adjusted R <sup>2</sup>	0.23	0.29	0.30	0.35	0.26	0.26
Number of observations	72	72	72	72	72	72
F-statistic	8.11	6.78	5.59	8.79	6.04	6.85
Prob. (F-statistic)	0.00	0.00	0.00	0.00	0.00	0.00

Note: Changes in loan issuance (issuance in the year following the crisis minus issuance in the year preceding the crisis) as a percent of GDP is the dependent variable. *P*-values in parentheses.

those with coefficients significantly different from zero in the univariate regressions. In both tables, regression 1 is the baseline regression, regressions 2–5 allow for various idiosyncratic effects for each of the crises and a role for world market conditions, and the last regression includes random effects. The regressions for the bond market include the current account/GDP ratio, the growth rate of domestic credit/GDP, and the country share in total emerging market issuance in the international bond market as explanatory variables. The regressions explaining changes in issuance in the syndicated-loan market include the current account/GDP ratio, distance from the original crisis country,

and the country share in total emerging market issuance in the syndicated-loan market as explanatory variables. As seen in regression 1, all the variables have the expected sign and the coefficients are significantly different from zero at all conventional significance levels. Regression 2 allows for idiosyncratic external vulnerabilities. Note that external imbalances do not trigger more dramatic reversals in bond or loan issuance in the aftermath of the Mexican crisis. This is only a feature in the aftermath of the Thai and Russian crises (although the effect is imprecisely estimated for the bond market in the aftermath of the Russian crisis). The effect of external imbalances can be quite pronounced. For example, in the aftermath of the Russian crisis, a current account deficit (as a share of GDP) of 5 percent leads to a reversal in loan issuance of 1.5 percent of GDP. For the bond market, regression 3 allows for idiosyncratic effects of banking fragilities across the three crises. During the Thai crisis, a 10 percent increase in the domestic credit/GDP ratio leads to a decline in bond issuance of 0.3 percent of GDP but it has no statistically significant effect in the aftermath of the other crises. The estimates in regression 3 in Table 4 suggest that the Thai crisis was the only one with a regional scope. Regression 4 indicates that across all crises, the countries with more participation in the international bond market are those with more pronounced reversals in bond issuance (although the effect is imprecisely estimated in this regression). In contrast, the bank creditor channel is only statistically significant in the aftermath of the Thai and Russian crises. Overall, the  $R^2$  of these regressions ranges between 0.20 and 0.40, suggesting that domestic vulnerabilities (external imbalances and banking problems) and high participation in international capital markets contribute to explain the extent and duress of the reversals following these crises. In contrast, regression 5 indicates that once the effects of domestic vulnerabilities and liquidity are included in the estimations, world market conditions cannot explain the spillovers of the 1990s. To check for robustness, the last regression includes random effects. The results are not affected.

## V. Conclusions

This paper analyzes international issuance in the bond and syndicated-loan markets in the aftermath of the Mexican, Thai, and Russian crises. I examine a sample of 24 emerging-market countries. The results indicate that high integration in international capital markets exposes countries to sudden stops even in the absence of domestic vulnerabilities. Since reversals are mostly accompanied by large real depreciations and deep recessions, policymakers worry about sharp downturns in capital flows. This is why some countries have reintroduced capital controls in the midst of crises. While capital controls may work, at least in the very short run, the introduction of restrictions to capital mobility may have undesirable long-run effects. In particular, capital controls protect inefficient domestic financial institutions and thus may trigger even further financial vulnerabilities.<sup>13</sup> Capital controls may also delay improvements in corporate governance of nonfinancial firms because as countries liberalize their capital

13. Claessens, Demirgüç-Kunt, and Huizinga (1998) present evidence that liberalization of the capital account and foreign bank entry lead to improvements in banking system efficiency.

accounts, domestic corporations start participating in international capital markets, mainly through cross-listing in major world stock exchanges, with higher disclosure standards and under the jurisdiction of a superior legal system. This certainly promotes more transparency in the management of the firm and can trigger improvements in corporate governance (see, for example, Stulz [1999]). Thus, regulation of capital flows may not only provoke financial vulnerabilities but also lower economic growth. Moreover, the ability of governments to control international capital flows diminishes with globalization.

This suggests that capital controls may not be the optimal policy to deal with sudden stops; while they may work in the short run, they may have adverse effects in the long run. My results also suggest that larger reversals tend to occur in countries with banking and current account problems. Thus, conservative policies should be at the heart of dealing with volatile capital flows.

## **DATA APPENDIX: BOND AND SYNDICATED-LOAN ISSUANCE DATA**

I use data gathered by Dealogic, a data analysis firm that produces two datasets on financial asset issuance: Bondware, containing information on issuance in the international bond and equity markets; and Loanware, containing information on the syndicated-loan market.<sup>14</sup> Both databases start in 1980. Both datasets cover issuance by over 110 countries. For the bond and the syndicated-loan markets, the databases include borrowing by both the private sector and the government.

Bondware contains information on issuance of bonds, both in the international and in the domestic markets. In the paper, I restrict my analysis to issuance in international markets. Following the Bank for International Settlements (BIS) classification, for the bond market, I define international issuance as all foreign currency issues by residents and nonresidents in a given country and all domestic currency issues launched in the domestic market by nonresidents. In addition, domestic currency issues launched in the domestic market by residents are also considered international issues if they are specifically targeted at nonresident investors.<sup>15</sup>

The Loanware dataset contains information on syndicated loans, issued both in the international and in the domestic market since the 1980s. Syndicated loans are credits granted by a group of banks to a borrower. Although there is a single contract, every syndicate member has a separate claim on the debtor. As for the case of bonds, I am only interested in syndicated loans issued in the international market. I follow the BIS classification that identifies international loans as all syndicated loans where the nationality of at least one of the syndicate banks is different from that of the borrower.

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14. For a more detailed description of the Bondware and Loanware datasets, see Cipriani and Kaminsky (2007).

15. This definition covers Euromarket offerings (i.e., bonds issued and sold outside the country of the currency in which they are denominated, like dollar-denominated bonds issued in Europe or Asia), global bonds (i.e., single offerings structured to allow simultaneous placements in major markets: Europe, United States, and Asia), and foreign offerings (i.e., bonds issued by firms and governments outside the issuer's country, usually denominated in the currency of the country in which they are issued). Foreign bonds include Samurai and Yankee bonds.

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