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Sovereign Default Risk and Private Sector Access to Capital in Emerging Markets

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Abstract

"Top down" spillovers of sovereign default risk can have serious consequences for the private sector in emerging markets. This paper analyzes the effects of these spillovers using firm-level data from 31 emerging market economies. We assess how sovereign risk affects corporate access to international capital markets, in the form of external credit (loans and bond issuances) and equity issuances. The study first analyzes the impact of sovereign debt crises during the 1980s and 1990s. It goes on to examine the 1993 to 2007 period, using additional measures of sovereign risk—sovereign bond spreads and sovereign ratings—as explanatory variables. Overall, we find that sovereign default risk is a crucial determinant of private sector access to capital, be it external debt or equity. We also find that crisis resolution patterns matter and that defaults towards private creditors have stronger adverse consequences than defaults to official creditors.

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I. INTRODUCTION

Corporations in emerging markets have gained unprecedented access to international capital markets in recent years (see Figure 1 in the Annex). Many reasons have been cited for the strong rise in corporate external financing volumes in developing countries (see World Bank 2007 for a detailed discussion). One of the most prominent explanations is that sovereign risk has been very low over the past few years, as many emerging market countries made significant progress in reducing the vulnerability of their public sector balance sheets. It is widely believed that sovereign risk plays a crucial role in international capital flows and cross-border flows to individual firms (see, for example, Reinhart and Rogoff 2004). Despite this supposition, there is still little systematic evidence on the role of sovereign risk in capital flows to private corporations in developing countries.

This paper analyzes how sovereign default risk affects private sector access to international capital markets, in the form of external credit (loans and bond issuances) and equity issuances.[1] As a first step, building on Arteta and Hale (2008), the paper extends the existing research on the effect of sovereign debt crises on corporate external credit for the period 1980–2004. As a second step, it broadens the analysis by investigating the role of additional measures of sovereign default risk (sovereign bond spreads and sovereign ratings) using a shorter sample for a more recent period (1993–2007). The results provide new insights into corporate access to external capital in emerging markets, sovereign risk spillovers to the private sector, and the broad domestic costs of sovereign default.

Among the innovations of this paper is its focus on emerging market corporate access to external capital markets. Only a few studies explicitly investigate emerging market countries' corporate access to foreign capital, and even fewer have focused on the link between sovereign risk and private sector external capital.[2] The growing importance of corporate external financing for emerging market and developing countries calls for more systematic analysis.

This paper draws on extensive new datasets to analyze the link between sovereign risk and private sector access to capital markets. The dependent variables are constructed from firm-level data on corporate external loans, external bond issues, and equity issues from the Dealogic database. The advantage of this approach is that it avoids some potential biases of capital flow data on the aggregate country level and allows identification of capital flows to private corporations only (the data allows to distinguish between private and publicly owned firms). In addition to unique firm-level data, the analysis also takes advantage of a new,

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[1] There is a growing body of literature on "bottom-up" risk transfers and private sector contingent claims (see, for example, Honohan and Laeven 2005; Gray, Merton, and Bodie 2007; Gapen et al. 2008).

[2] Among the few studies conducted are Eichengreen and Mody (2000), World Bank (2007), and Arteta and Hale (2008).

comprehensive dataset on sovereign debt crises and associated debt-renegotiation processes of the past three decades. This database was built by systematically evaluating more than 20,000 pages of case study material on crisis cases, as well as all standard reference books and other data sources (Enderlein, Müller, and Trebesch 2008; Trebesch 2008, 2009).

For the period 1980–2004, the results indicate that sovereign defaults to private creditors cause a drop in private sector external borrowing of more than 40 percent, an effect that lasts for one year after the crisis ends. This result offers a new insight, as existing studies find a strong adverse impact only for defaults to official creditors (Paris Club). This research also finds that delays in debt negotiations have adverse effects for private sector credit, whereas International Monetary Fund (IMF) programs have positive effects. Interestingly, restructuring delays caused by holdouts and litigation have no significant negative spillovers. Apparently, government behavior in distress situations has more important consequences for the domestic economy than does creditor behavior.

The results for the more recent period of 1993–2007 confirm the crucial role of sovereign risk for private sector access to capital.[3] This part of the study assesses the role of sovereign default risk in a broader sense, that is, beyond the effect of defaults and debt restructurings. The analysis also extends the coverage of corporate access to capital to include equity issues, given that equity capital has become an increasingly important alternative source of financing for emerging market firms since the early 1990s. Specifically, we find that higher sovereign bond spreads (taken from J.P. Morgan's Emerging Markets Bond Index [EMBI] Global) and lower sovereign ratings (taken from Standard & Poor's [S&P] and Institutional Investor magazine) have a strong negative effect on the volume of corporate credit or equity issued. At the same time, we find little evidence of the co-movement of public and private access to capital. In particular, the volume of government debt issued is only weakly related to the volume of private debt issued, both in normal times and during crisis episodes.

This paper is organized as follows. The next section reviews the literature and provides a motivation for the need for more systematic research on the effects of sovereign risk and default on capital flows and private sector access to credit. The second section outlines the econometric methodology. The third section describes the analytical framework and presents the main results on the effects of sovereign defaults and crisis characteristics on private sector access to credit. The fourth section analyzes the effects of sovereign risk (spreads and ratings) on corporate capital access. The last section provides some concluding remarks.

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[3] The analysis does not extend to the period of the current global financial crisis, because adequate 2008 data were not available for the set of countries included.

II. RELATED LITERATURE

This section reviews the related literature. First, it presents the general literature on capital flows of and access to financial markets by developing and emerging market countries. Then, it looks at studies analyzing the role of sovereign risk and ratings in capital flows in general and corporate access to credit in particular. Next, it summarizes the literature on the cost and consequences of sovereign default for the domestic economy, focusing on capital flows and financial market access.

A. Access to Capital in Emerging Markets

A large body of literature examines the determinants of capital flows to emerging markets (see Jeanneau and Micu 2002 and Bloningen 2005 for reviews). Studies such as Taylor and Sarno (1997), Montiel and Reinhart (1999), and Mody, Taylor, and Kim (2001) analyze capital flows in terms of "push and pull" factors. They find that both global trends in capital flows (push factors) and country-specific characteristics that reflect domestic fundamentals and investment opportunities (pull factors) are important determinants of portfolio, debt, and foreign direct investment (FDI) flows.

Increasing attention has been devoted to the role of political risk and institutions in recent years.[4] Alfaro, Kalemli-Ozcan, and Volosovych (2008) present evidence that low-quality institutions are the main impediment to cross-border capital flows in the form of FDI and portfolio investments. They underline the relevance of their findings in solving the "Lucas paradox" of limited capital flows to the developing world.[5] A number of related studies confirm the important role of politics and institutions for capital flows. Busse and Hefeker (2007) find that political risk and institutional quality, as measured by the International Country Risk Guide (ICRG) risk indicators, are crucial for FDI flows. Government stability as well as law and order seem to exert a particularly strong impact on the investment decisions of multinationals. Using the World Bank's Governance Indicators, Daude and Stein (2007) find that government instability and poor-quality laws, regulations, and policies, especially those imposing an excessive regulatory burden, are major deterrents to FDI. Papaioannou (2005) finds that the ICRG political risk index can explain much (more than half) of the variability in gross bilateral bank flows.

Most of these studies employ aggregate capital flow or stock data from the World Bank's Global Development Finance database, the IMF's International Financial Statistics, data from

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[4] Portes, Rey, and Oh (2001), Gelos and Wie (2005), and Portes and Rey (2005) highlight informational frictions and lack of transparency as obstacles to equity and portfolio investments and financial asset transfers to emerging markets.

[5] The Lucas paradox is the observation of low net capital flows from developed countries to developing countries despite high rate-of-return differentials.

the Bank of International Settlement, or data from Lane and Milesi-Ferretti (2001). To date, however, few studies have differentiated between capital flows to private corporations and flows to governments or public companies.[6] Among the few studies that specifically analyze corporate capital market access in emerging markets are Eichengreen and Mody (2000) and World Bank (2007). Both studies estimate determinants of primary bond market credit spreads (issuance coupons) for corporate or sovereign borrowers using bond-by-bond and loan-by-loan data, respectively. They find that firm-level variables, as well as standard financial and macroeconomic variables, determine the level of corporate spreads. Fostel and Kaminsky (2007) also use firm-level issuance data. They analyze access to capital in emerging markets in a manner similar to that used in this paper, using aggregate firm-level data of debt and equity issuances from the Dealogic database. However, they aggregate total volumes (that is, sovereign, public, and corporate issues) and focus exclusively on six Latin American countries. Their results indicate that sound fundamentals do matter for capital market access in Latin America, but they attribute the rise in inflows since 2003 mainly to record increases in global liquidity.

B. Impact of Sovereign Risk and Ratings

Only a small body of literature examines the impact of sovereign risk on capital flows and corporate financial market access. Taking a broad historical perspective, Reinhart, Rogoff, and Savastano (2003) highlight the crucial role of sovereign risk for cross-border external capital. They show that countries usually lose all access to private capital markets when sovereign ratings fall below a critical threshold. In contrast, countries with very high ratings tend to have continuous access to capital, even during recessions and crisis periods. For the in-between group of countries—that is, middle-income emerging markets—access to capital is volatile and depends on various external and internal factors. In bad times, with ratings falling and fundamentals deteriorating, these countries face the risk of rapidly rising interest rates and a sudden loss of access to market financing.[7] The authors conclude that countries with weak political and institutional systems and a history of sovereign defaults are able to "tolerate" only very low levels of external indebtedness.Reinhart and Rogoff (2004) expand the argument, emphasizing the link between historical defaults and today's sovereign risk levels. They list a number of stylized facts to argue that sovereign risk and capital market imperfections should be seen as the main reason for the Lucas paradox.

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[6] A small body of literature examines the determinants of capital market access by sovereign borrowers (see, for example, Grigorian 2003; Gelos, Sandleris, and Sahay 2004; Erce 2008), and Fostel and Geanakoplos (2008) provide some stylized facts on sovereign bond issuances in emerging markets. However, the general link between sovereign and private sector access to external capital in emerging markets remains largely unexplored.

[7] Kaminsky, Reinhart, and Vegh (2004) highlight the fact that ratings of middle-income countries tend to show much greater variability than ratings of high- or low-income countries.

Kaminsky and Schmukler (2002) find that sovereign rating changes have a strong effect on both bond and stock markets in emerging markets. They show that a downgrade in ratings leads to an increase in bond market spreads of 2 percentage points and to a drop in stock market returns of 1 percentage point. Other studies find that sovereign risk has little impact. Alfaro, Kalemli-Ozcan, and Volosovych (2008), for example, find that sovereign risk, as measured by average ratings, is not a significant determinant of capital flows in a cross-sectional framework.[8]

In a similar vein, Kim and Wu (2008) analyze whether countries benefit when rating agencies assign credit ratings to the sovereign. They find that the provision of foreign currency long-term ratings by Standard & Poor's is associated with both financial development and cross-border capital flows. Ratha, De, and Mohapatra (2007, p. 3) confirm these findings, arguing that "having no rating…may have worse consequences than having a low rating." They conclude that sovereign risk ratings affect not only investment decisions in the international bond and loan markets but also the allocation of FDI and portfolio equity flows. Albuquerque (2003) tests the relationship between sovereign ratings and external capital flows more systematically. He finds ratings to matter substantially for the overall composition of country capital flows. Apparently, countries with lower ratings and higher political risk tend to have larger shares of FDI in total capital inflows. Albuquerque's findings are in line with those of Daude and Fratzscher (2008), who conclude that portfolio investments react more sensibly to changes in political risk than do FDI or debt flows.

The specific link between sovereign risk and corporate access to capital remains largely unexplored. Eichengreen and Mody (2000) and World Bank (2007) find that sovereign risk ratings do affect the size of corporate spreads and the likelihood of bond issuances. Hale (2007) concludes that sovereign risk can have an important impact on corporate financing choices between syndicated loans and bonds in emerging markets. Cruces (2007) finds sizable sovereign risk–related equity premia in stock markets of developing countries. According to him, corporations in countries with credit ratings in the default range have to pay much higher expected rates of return than companies based in nondefault countries. Borenzstein, Cowan, and Valenzuela (2007) indicate that sovereign risk can have a strong impact on corporate access to capital through the ratings channel. In particular, they find sovereign ratings to be the predominant explanatory factor for corporate ratings in a small set of emerging-market economies.

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[8] Bevan and Estrin (2004) find that FDI flows to Eastern European countries are not affected by sovereign ratings. Their results are at odds with those of Garibaldi et al. (2001), who do find an important role of sovereign risk for capital flows to transition economies.

C. Implications of Sovereign Defaults

As sovereign risk reaches peak levels during episodes of sovereign default, it is reasonable to expect "top-down" risk spillovers to be particularly strong during and after default episodes. A relatively small body of empirical literature on the domestic cost of sovereign defaults indicates that this may be the case (see the comprehensive survey by Panizza, Sturzenegger, and Zettelmeyer 2009). For the recent crises in Argentina and Uruguay, Levy-Yeyati, Martinez Peria, and Schmukler (2004) find that sovereign distress affects the behavior of depositors and may thus contribute to bank runs. Along similar lines, Borenzstein and Panizza (2008) provide evidence that debt crises may trigger systemic banking crises.[9]

With regard to aggregate capital flows, Fuentes and Saravia (2006) find that FDI falls during and after sovereign defaults, especially from creditor countries that are "hurt" by the default. Levy-Yeyati (2006) and Panizza, Sturzenegger, and Zettelmeyer (2009) provide evidence that private debt flows to developing countries tend to be procyclical, with strong outflows of loan and bond debt during and after debt-crisis episodes. Related to this, Richmond and Dias (2008) analyze the duration of capital market exclusion after sovereign defaults. They find that, on average, countries regain partial access to bond and bank transfers from private creditors after about five years. Both global liquidity and country characteristics, such as the sovereign risk rating and the budgetary balance, matter for the speed of renewed access.[10] They also find that, on average, larger economies regain market access twice as quickly as small countries.

To the best of our knowledge, only one study—Arteta and Hale (2008)—analyzes the specific effect of defaults on domestic corporations and their access to finance. (For related theoretical papers, see Sandleris 2008 and Mendoza and Yue 2008.) The authors use aggregate firm-level data on loan and bond issues from Dealogic as the dependent variable to assess the impact of default on corporate external borrowing. They find that sovereign debt crises and restructurings have a strong negative impact. After controlling for fundamentals and common shocks, they find the drop in foreign loans and bond issuance by domestic firms amounts to more than 20 percent during defaults. They find the decline in credit to be much more pronounced in defaults with official creditors; the effect of defaults to private creditors is small.

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[9] Rose (2005) and Martinez and Sandleris (2008) find that sovereign defaults also affect trade flows. Levy-Yeyati and Panizza (2005) and Borenzstein and Panizza (2008) suggest that defaults tend to cause output losses.

[10] A related study, by Zanforlin (2007), comes to roughly the same conclusion by applying probit and multivariate probit models.

III. ANALYTICAL FRAMEWORK

This study uses data from 31 major emerging-market economies to assess the effect of sovereign risk on the amount of capital issued by corporations (Table 1 in the Annex to this paper). The analysis consists of two main parts. In the first part, presented in the next section, we proxy sovereign risk by the occurrence of sovereign debt crises and analyze how sovereign defaults to private creditors affect private sector external credit. This part of the analysis builds on the econometric approach of Arteta and Hale (2008). It expands their dataon debt crises, enabling us to test the robustness of some of their results and gain additional insights into the effects of debt-crisis resolutions.

In the second part, presented in the following section, we depart from a mere analysis of debtcrisis effects and focus on the more recent period of 1993–2007. In this part, sovereign risk is proxied by the level of sovereign bond spreads and by sovereign rating changes.

Formally, we estimate the effect of sovereign default risk on corporate access to capital based on the following model:

$$C_{it} = \alpha_i + \alpha_t + \beta_1 SOV\_RISK_{it} + X'_{it}\gamma + u_{it} \quad (1)$$

where C_{it} is a measure of capital to private corporations; α_i and α_t are country and year fixed effects, respectively; SOV_RISK is a measure of sovereign risk, which can be either ratings, spreads, or debt-crisis episodes; X'_{it} is a large set of control variables; and u_{it} are robust errors clustered by country. The main dependent variable used is the volume of foreign bonds and syndicated loans issued by private domestic corporations by country and time period (month or quarter).[11] This variable is constructed by aggregating firm-level data on new debt issuances from the Dealogic database. Specifically, we retrieve all foreign corporate bond issues and foreign corporate syndicated loan contracts for 31 emerging-market economies for the period January 1980–December 2007. Later in the paper, we employ an additional dependent variable that captures the volume of equity securities issued by domestic corporations by country and quarter, again aggregating firm-level data from Dealogic.[12] Because of our focus on access to capital of private domestic corporations, we exclude government firms and firms owned by foreign companies or multinationals from our sample.

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[11] The Dealogic data on bond and, particularly, syndicated loan spreads are very incomplete, making average spread levels per country and month/quarter too noisy to allow for a meaningful analysis. We therefore focus on issued volumes only.

[12] It is not possible to disentangle the volumes of equity sold to domestic versus international investors. The results regarding equity thus represent corporate access to capital on both national and international markets.

For the selection of emerging-market countries, we follow Arteta and Hale (2008) and exclude countries that had only very limited access to foreign capital during the sample period.[13] The set of main explanatory variables, as well as the large set of economic control variables that might influence the supply and demand for credit and equity, is explained in detail in the next two sections.

IV. SOVEREIGN DEBT CRISES AND CORPORATE ACCESS TO CREDIT

We first analyze the effect of emerging-market debt crises on the volume of corporate external credit during 1980–2004. We provide novel evidence on the issue using an updated data set on debt-crisis duration and crisis related events from Trebesch (2008, 2009).

A. Measuring Debt Crises and Crisis-Resolution Processes

The key explanatory variables in this type of analysis are time dummies on the occurrence of a debt crisis or a debt restructuring. For this reason, the definition of sovereign defaults and related events becomes crucial. In contrast to Arteta and Hale (2008), we focus on episodes of sovereign defaults to private creditors only; defaults and restructurings with official (bilateral or multilateral) creditors are controlled for only to check robustness. In line with other empirical studies (for example, Reinhart, Rogoff, and Savastano 2003; Tomz and Wright 2007; Panizza, Sturzenegger, and Zettelmeyer 2009), we also choose a narrower definition of debt crises than Arteta and Hale (2008). In particular, voluntary debt exchanges and swaps, which are part of routine liability management operations and do not involve a debt reduction (Medeiros, Polan, and Ramlogan 2007), are not regarded as relevant restructuring events.[14] We also use revised data on the timing of restructuring agreements with private creditors.[15]

Another main difference between our work and that of Arteta and Hale (2008) is that they code the start of negotiations as the key event in capturing the start of debt-crisis episodes; periods of outright default without negotiations (for example, unilateral moratoria) are not measured explicitly.[16] We code not only negotiation periods but also crisis periods that are not accompanied by negotiations, such as instances in which governments refuse to talk to

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[13] Arteta and Hale (2008) exclude countries for which the total amount of bonds and loans is zero for more than 24 months out of the 264 months in the sample.

[14] Given the focus on sovereign risk, we also exclude restructuring events of private-to-private debt, such as those in the Republic of Korea in 1997 and Indonesia in1998.

[15] Arteta and Hale (2008) rely on the list of restructuring events in the Global Development Finance report (World Bank 2002, 2003), a comprehensive and widely used source. Our coding process revealed that these lists contain some errors and omission. Sometimes interim agreements are listed as final agreements. In other instances, agreements are listed as finalized although they were postponed or never implemented.

[16] Data could be furnished upon request.

creditors.[17] Accordingly, the start of debt distress is defined here as either the month of first missed payments beyond the grace period (the start of de facto default) or the beginning of debt talks and restructuring negotiations. The debt crisis ends with the successful closing of a debt-restructuring agreement. To assess the effect over the medium term, we include lags of up to three years of a debt-crisis dummy in the estimations. The three lag variables capture potential post-crisis effects for the period of 1–12 months, 13–24 months, and 25–36 months after the agreement.

In addition, we use new measures on debt-crisis characteristics as key explanatory variables, because we are particularly interested in the effects of delays and breakdowns in debt negotiations, as well as the occurrence of creditor coordination problems and litigation (for example, by vulture funds). Our focus on these issues stems from the extensive policy discussion on a standardized sovereign debt–restructuring mechanism and other mechanisms to improve debt crisis–resolution procedures (Krueger 2002; IMF 2003). One key claim in this debate was that delays in debt renegotiations, particularly delays induced by creditor coordination problems and creditor litigation, may lead to inefficient delays in debt restructurings and result in costly spillovers for the domestic economy. Very little evidence sovereign default risk and private sector access exists to analyze whether this is true. Here, we use three new variables to assess the relative role of government-induced crisis-resolution problems and creditor-induced delays, which could be caused by inter-creditor disputes, holdouts, or litigation. These variables draw mainly on Trebesch (2008, 2009) and partly on Enderlein, Müller, and Trebesch (2008), who compile an archive on past debt-crisis cases and restructurings utilizing extensive case study material.

The three additional variables measure the following phenomena:

- The first additional variable measures negotiation delays stemming from political events. The used time dummy takes the value of 1 when unilateral government behavior leads to a delay or even breakdown in debt negotiations of more than three months in any given year. Instances in which governments explicitly refuse to initiate negotiations are also coded as delays.[18]

- The second variable captures cases of pre-restructuring litigation toward debtor countries, which has been a frequent reason for delays in past crises. Episodes of litigation events take the value of 1 whenever we could identify that creditors had filed suit against a foreign sovereign and it was reported as an obstacle in the negotiations.

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[17] The definition of crisis episodes matters significantly. In some cases, such as Peru in the 1980s, governments were in default several years before engaging in restructuring negotiations with private creditors.

[18] Note that delays caused by creditor coordination failure or outright intercreditor disputes are explicitly excluded from the coding. Trebesch (2009) disentangles debtor- and creditor-induced delays explicitly.

- The third variable captures episodes of creditor holdouts and intercreditor disputes. The dummy takes the value of 1 when disputes and coordination problems within the group of creditors led to negotiation delays of more than three months. Such creditor-induced delays are observed when holdout creditors reject a majority agreement. We also include an annual dummy for IMF programs that were in effect for more than five months in any given year. (The data on IMF stand-by agreements are from Dreher 2006).

B. Controlling for Fundamentals and Common Shocks

Some discussion of the control variables is necessary before turning to the results. To identify the true effect of debt crises on private sector credit and to avoid omitted-variable bias, it is necessary to control for a large set of economic and financial factors that might affect both the supply of and the demand for credit. We choose a set of control variables similar to that used by Arteta and Hale (2008).[19] The set of explanatory variables is constructed through principal component analysis, thus summarizing a large set of mutually correlated variables, with the additional benefit of bridging data gaps in some of the series. All original series are taken as monthly percentage deviations from their 25-year country-specific averages.[20] The resulting composite indexes can be grouped into five broad categories: an international competitiveness index, an investment climate and monetary stability index, a financial development index, a long-run macroeconomic prospects index, and an index on the global supply of capital. (A detailed overview of the variables and data sources is presented in the Annex.) The indices of international competitiveness and long-run macroeconomic prospects may be viewed as proxies for a government's ability to pay. The index on investment climate and monetary stability and that on financial development proxy the corporate sector's financial and economic situation.

We explicitly control for currency and banking crises to account for common shocks. Currency crisis episodes are taken from Arteta and Hale (2007); data on systemic banking crises are from Laeven and Valencia (2008). In addition, to capture disruptions due to natural disasters, we use data on natural disasters from the International Emergency Disasters Database. In particular, we employ a dummy that takes the value of 1 whenever a government declared a state of emergency as the result of earthquakes, floods, storms, fires, or volcano outbreaks.[21] We also explicitly control for sudden stops in capital flows, as shown in the robustness analysis. Finally, we include the real exchange rate, to account for possible

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[19] We thank the authors for kindly sharing their extensive data set.

[20] For coherence, we also measured the dependent variable of corporate credit as a monthly deviation from the 25-year average. Following Arteta and Hale (2008), we also deflate the amount of credit using the U.S. consumer price index in this part of the analysis.

[21] To verify, we also use a dummy for cases in which the total number of affected people represented more than 5 percent of the population.

currency mismatch effects on firms' balance sheets. A currency depreciation (that is, an increase in the real exchange rate) could lead to a drop in the demand for foreign credit, particularly when most of firms' revenues are denominated in domestic currency. With a weaker domestic currency, they would also need less "hard currency" credit to cover the same amounts of investments and expenses in domestic currency (see Arteta and Hale 2008 for a related, more detailed discussion).

C. Discussion of Results

This section presents the main results on the impact of debt crises on private sector external credit (Table 2). Although the adjusted R^2 appears to be low, it tends to increase significantly (to 0.20–0.30) when the dependent variable is expressed in log form rather than as monthly percentage deviations from its 25-year average.[22] We therefore conclude that the low R^2 is not a major source of concern for the validity of our findings; for illustrative purposes, we prefer to show results as they are.[23] With this in mind, we find a strong negative effect of sovereign defaults on the volume of corporate borrowing. Even after controlling for a large set of fundamentals, we find that sovereign defaults to private external banks or bondholders lead to a drop in private sector credit by more than 40 percent, an effect that persists for one year after the crisis ends.

The strong adverse effect of defaults to commercial creditors is a novel insight on the domestic costs of default. It contrasts with the result of Arteta and Hale (2008), who find a strong adverse impact only for restructurings with Paris Club creditors. The impact coefficients for the variables capturing default episodes and restructuring agreements are also much larger than those in Arteta and Hale (2008), even though we employ the same dependent variable and a very similar set of explanatory variables. One likely explanation for these differences is our updated definition of debt distress episodes, and the more accurate data on debt restructuring events that we assembled.

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[22] This transformation does not alter the main results. The effect of defaults on private sector credit is highly significant and robust when using the dependent variable in log form.

[23] A main benefit of showing results as they are is that coefficient sizes are easy to interpret. In fact, the coefficients for the main dummy variable of default episodes simply represent the size of the percentage change in credit relative to what it would have been if no default had occurred that year. A further advantage is that results remain comparable to those in Arteta and Hale (2008).

**Table 1. The Impact of Sovereign Defaults on External Borrowing
of the Private Sector
(Entire Sample, 1980–2004)**

	(1)	(2)	(3)	(4)
Default Episode (Private Creditors)	**-56.51**** **(21.12)**	**-46.69**** **(19.69)**	**-44.87*** **(22.53)**	**-38.72*** **(22.01)**
Month of Restructuring (Private Creditors)	-60.46*** (17.33)	-53.18** (20.60)	-52.04** (22.38)	-46.68** (22.01)
Default Episode (Official Creditors)				-19.71 (13.79)
Month of Restructuring (Official Creditors)				-21.76* (10.79)
Lag 1 (First Year after Agreement)	-64.31*** (23.03)	-68.93** (26.34)	-69.53** (28.70)	-69.39** (28.43)
Lag 2 (Second Year after Agreement)	-31.13* (18.05)	-30.52 (27.97)	-32.95 (29.06)	-32.68 (28.77)
Index 1.1.		-3.73 (3.47)	-2.20 (3.39)	-2.34 (3.44)
Index 1.2.		-5.90** (2.20)	-5.05** (2.31)	-5.07** (2.28)
Index 2.1.		-2.80 (8.72)	-3.07 (8.24)	-3.29 (8.20)
Index 2.2.		7.77 (5.18)	3.16 (4.90)	2.29 (4.87)
Index 2.3.		2.30 (5.84)	2.06 (6.36)	1.67 (6.46)
Index 3.1.		15.81** (6.27)	16.32** (6.04)	15.99** (6.01)
Index 4.1.		9.51*** (3.07)	8.04** (2.97)	8.14** (2.97)
Index 4.2.		4.83 (4.91)	3.08 (4.55)	3.43 (4.58)
Index 6.1.		-61.70*** (16.84)	-77.53*** (19.84)	-77.18*** (19.80)
Index 6.2.		42.00*** (11.69)	54.59*** (14.15)	54.46*** (14.13)
Real Exchange Rate			-0.02*** (0.00)	-0.02*** (0.00)
Banking Crisis			-24.08 (14.31)	-25.02* (14.17)
Natural Disasters (Dummy)			-14.41 (15.22)	-14.96 (14.65)
Currency Crisis			-47.31*** (13.49)	-46.25*** (13.48)
Constant	-59.57*** (20.12)	147.72** (58.43)	199.69*** (69.01)	199.55*** (68.75)
Observations	8,975	7,193	6,716	6,716
Adjusted R2	0.042	0.051	0.054	0.054

Note: The dependent variable is the total amount borrowed (corporate bonds and loans) as a percentage deviation from the mean. Robust standard errors clustered on country are in parentheses. The regressions include year and country fixed effects and dummies for issuances by mining and chemical industries. *** Significant at the 1 percent level; ** significant at the 5 percent level; * significant at the 10 percent level.

To verify our results and assess the relative role of sovereign defaults to private versus official creditors, we also control for periods of Paris Club defaults and for agreements with official creditors. Hence, we add a dummy for debt renegotiation periods and a dummy for restructuring agreements with official creditors, relying on the original data by Arteta and Hale (2008). Defaults to private creditors appear to have a much stronger effect than those to official creditors (Column 4 of Table 1). The commercial default and restructuring dummies have much higher negative coefficients than those of Paris Club defaults, yet another difference between our results and those of Arteta and Hale (2008).

Our results also provide new insights into crisis dynamics and the role of policy in crisis resolution. For the subsample of default episodes, we find that successful IMF programs (in particular, stand-by agreements) have a positive effect on private sector credit (Table 2, Column 2). This finding is in line with the literature on the catalytic role of IMF financing (see, for example, Bordo, Mody, and Nienke 2004; Mody and Saravia 2006) and provides some indication of the potential benefits of crisis-prone countries' cooperation with the IMF. Along similar lines, we find that breakdowns in debt renegotiations and outright refusals to negotiate with creditors have an additional negative effect on corporate borrowing, although the coefficient is only weakly significant (Column 1). Overall, we find some evidence that defaults and the government's negotiation stance during default matter for private sector access to credit.

A further finding relates to creditor actions during debt distress episodes. Creditor coordination problems have been the subject of much policy debate and a growing body of literature.[24] Yet, as can be seen in Table 2, the effect of pre-restructuring litigation and holdouts is not significant. There is little indication that troublesome creditor actions during debt crises have negative spillovers on domestic firms and their borrowing abilities.

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[24] See e.g. Sturzenegger and Zettelmeyer (2007); Pitchford and Wright (2008).

Table 2. The Role of Debt-Crisis Characteristics
(Subsample of Default Episodes)

	(1)	(2)	(3)	(4)
Breakdown or Refusal of Negotiations	-22.24*			
	(10.57)			
IMF Program (SBA)		16.05**		
		(7.06)		
Litigation by Creditors (Vulture Funds)			13.33	
			(16.62)	
Holdouts by Creditors (Intercreditor Disputes)				-6.10
				(16.84)
Index 1.1.	4.72	5.72	7.02	5.80
	(5.99)	(5.97)	(6.29)	(5.60)
Index 1.2.	5.12	3.81	3.82	4.37
	(2.91)	(3.23)	(2.72)	(2.95)
Index 2.1.	6.98*	7.73*	6.93*	7.49*
	(3.37)	(3.68)	(3.27)	(3.64)
Index 2.2.	0.17	0.73	0.51	0.72
	(2.28)	(2.36)	(2.14)	(2.45)
Index 2.3.	-2.40	-2.38	-2.56	-2.91
	(1.83)	(1.86)	(1.85)	(2.24)
Index 3.1.	19.84**	19.51**	19.06**	19.28**
	(6.79)	(7.14)	(6.93)	(7.43)
Index 4.1.	8.35**	13.25**	11.41**	11.43**
	(3.32)	(5.02)	(4.06)	(4.72)
Index 4.2.	8.87*	8.22	8.18	8.57
	(4.76)	(4.84)	(4.62)	(5.21)
Index 6.1.	-40.51	-37.57	-38.68	-38.79
	(32.17)	(31.85)	(31.71)	(31.94)
Index 6.2.	25.94	23.59	24.03	24.25
	(22.96)	(22.82)	(22.42)	(22.81)
Constant	215.72	192.99	198.73	201.36
	(144.21)	(145.02)	(146.59)	(146.80)
Observations	1,041	1,041	1,041	1,041
Adjusted R2	0.086	0.085	0.084	0.084

Note: The dependent variable is the total amount borrowed (corporate bonds and loans) as a percentage deviation from the mean. Robust standard errors clustered on country are in parentheses. The regressions include year and country fixed effects and dummies for issuances by mining and chemical industries. *** Significant at the 1 percent level; ** significant at the 5 percent level; * significant at the 10 percent level.

To validate the main findings of this section, we conducted a set of robustness checks (Table 9 in the Annex). First, we reran all regressions using random instead of fixed-effect models. This proved not to have any major effect on the results. Second, we estimated the effect for various subperiods. Interestingly, the effect of defaults and restructurings on private sector credit is much stronger in the 1990s than in the 1980s, a finding that is in line with Arteta and Hale (2008). One likely reason for this finding is the generally low supply of

capital to emerging-market firms during the second half of the 1980s. Emerging-market external corporate borrowing reached precrisis (1981) levels only after the first Brady deals were concluded, in the early 1990s (see Sturzenegger and Zettelmeyer 2007 for a description of the Brady debt restructuring initiative).

Finally, we evaluate the extent to which the results depend on the specification and the number or type of variables included. In general, our results are very robust to specification changes, even when adding a variable on sudden stop episodes, taken from Frankel and Cavallo (2008) or Calvo, Izquierdo, and Mejia (2008).[25] However, our finding of the positive effect of IMF programs during crises turns out not to be overly robust. The variable for IMF programs turns insignificant in some specifications, in particular when adding a dummy variable for banking crises. Hence, the result on the possible catalytic role of IMF programs should be considered with some care.[26]

V. IMPACT OF SOVEREIGN RATING AND SPREAD CHANGES ON CORPORATE CAPITAL ACCESS

Having analyzed the effect of sovereign default in detail, we broaden our focus to additional measures and types of sovereign risk. This section first outlines the main effects of three other indicators of sovereign risk—sovereign bond spreads, sovereign credit ratings, and the volume of sovereign debt issuance—on corporate debt and equity issuances. It then presents our empirical findings, based on quarterly data from[27] major emerging-market economies for the period 1993–2007.

A. Measures of Sovereign Risk beyond Default Episodes

Following the exponential growth of emerging-market bond financing in recent years, sovereign default episodes have become a less representative measure of sovereign risk and thus a less reliable indicator of sovereign debt distress. Pescatori and Sy (2004) suggest the use of a broader indicator that takes into account turbulence in emerging bond markets, as measured, for example, by J.P. Morgan's EMBI. Along these lines, we analyze whether country-level sovereign bond spreads have an effect on quarterly corporate capital volumes. Typically, a government is regarded as distressed whenever the spread of its foreign bonds over U.S. Treasury securities of equivalent maturity exceeds 1,000 basis points.

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[25] Our main results on the effects of sovereign risk were robust even in an empirical setup with quarterly data for the post–1993 period.

[26] Note, however, that the positive effect of IMF programs can be replicated in the quarterly data setup for the post–1993 period used below.

[27] Based on the literature on the determinants of sovereign credit ratings (see Ratha, De, and Mohapatra 2007 for an overview), we include the following set of explanatory variables in the first stage: inflation, growth, log of GDP per head, total external debt to GDP, and total external debt to exports.

We employ another continuous measure of sovereign default risk: sovereign ratings. As a baseline measure, we use the sovereign rating published in Institutional Investor magazine every March and September. Based on a large, standardized survey of leading banks and money management and security firms, the Institutional Investor Rating (IIR) is widely used in research. It has the advantage of having covered a large number of countries since the early 1980s (see Cruces 2006 for details). The IIR ranges from 0 to 100. A rating of 100 represents countries with the strongest debt-service capacity and the least possibility of defaulting; a rating of 0 represents countries with the weakest debt-service capacity and highest default risk.

Although nominal ratings are a good starting point, there is a possibility that the IIR measure is correlated with some of the fundamental variables that we aim to control for in the regressions. To address this issue, we regress our rating measure on a set of standard fundamentals, following Eichengreen and Mody (2000) and Garibaldi et al. (2001). The residuals of this first-stage regression are then used as the explanatory variable instead of the nominal IIR measure, with higher residual values indicating lower risk. This approach allows us to test whether country rating perceptions matter over and beyond changes in fundamentals. To further validate our findings, we use ratings data from Standard & Poor's. To this end, we transform the S&P rating scale into numerical values ranging from 0 (selective default) to 22 (AAA rating), with values averaged by quarter.

As a third indicator of the potential impact of sovereign risk on private sector capital access, we construct a "sovereign debt issuance" variable. This variable represents the volume of public debt raised on international capital markets for each of the countries in the sample. The rationale for employing this variable is that periods of no or low public debt issuance and higher sovereign risk spreads and lower ratings should also be associated with corporate "market closures" (Fostel and Geanakoplos 2008).[28] To construct this variable, we first retrieve all individual external bond issues and new syndicated loans by the government and publicly owned companies of each country, relying on the comprehensive Dealogic database. Then we aggregate the volumes of bond issues and loans by quarter and take their logarithms and construct a new dummy variable, "no sovereign issuance." This variable takes the value of 1 if no debt was raised by the public authorities or public corporations of a sample country in a given quarter.

B. Control Variables

Controlling for country fundamentals and global developments is important to properly identify the effects of sovereign risk on corporate capital access. In accordance with the

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[28] Of course, low volumes of government debt issuances may also be driven by demand effects (for example, periods during which the sovereign does not wish or need to borrow). See the discussion in Gelos, Sandleris, and Sahay 2004.

previously cited literature on the determinants of capital flows, we include relevant variables that control for some of the main domestic and external factors. Annex Table 8 provides an overview of the explanatory variables employed, including summary statistics and data sources.

With regard to domestic factors, we include a quarterly measure of inflation based on the annual change in the consumer price index (CPI). Inflation is often taken as a first-best proxy for the stance of fiscal and monetary policies, with high rates of inflation indicating macroeconomic instability and weak economic policies.[29] As a second domestic factor, we use real (deflated by CPI) annual GDP growth. Strong economic activity may increase the domestic demand for external capital, and it may signal stronger ability to make future repayments to foreign investors. As an alternative measure, we also use growth based on quarterly industrial production indices (this indicator is available only for a much smaller number of observations). When equity issuances are considered, a more appropriate measure might be the growth in country stock market indices, measured on a quarterly basis. Given that this variable has reasonable coverage in the sample, we include it as a determinant of equity issuances in the baseline regressions. We expect a positive effect of stock market rallies on volumes issued.

To account for economic size effects, we include GDP per capita on a purchasing power parity basis in log form. In general, we expect more advanced emerging market countries to raise considerably more capital and to have more preferential access to external finance. We also include the real exchange rate to account for possible accounting effects (see above). In addition to these domestic economic factors, we include a measure of political stability, proxied by the composite score of political risk by the International Country Risk Guide (ICRG), which is available monthly. We expect higher values of political stability to foster capital access, as periods of stability are associated with a reduction of uncertainties, which serves as a positive investment signal.

Turning to external factors, we include a set of measures that are widely used in the literature. We include a proxy for the total capital flows to emerging markets. The variable used sums total bond, syndicated loan, and equity issuances of private sector firms in all of the 31 emerging markets listed in Table 7 on a quarterly basis (Figure 1 shows the issuance of aggregate volumes over time). This measure (in log form) is intended to capture fluctuations in global liquidity. It is found not to be highly correlated with a country's capital

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[29] In the robustness analysis, we also use the ratio of budgetary balance to GDP to validate the findings relating to inflation. Fiscal account data are available only for a subset of countries and years, limiting the number of observations.

issuance.[30] We expect total emerging-market issuance to have a strong positive effect on volumes issued by a country.

A second measure of investor perceptions about emerging-markets as a whole is the spread on the composite EMBI (quarterly average). This variable proxies risk aversion to debt investments in emerging-market economies and captures periods of emerging-market crises (such as the Asian and Russian crises in 1997 and 1998), which are usually accompanied by hikes in the composite EMBI spread. We expect higher overall EMBI spreads to reduce a country's corporate debt and equity issuance. Finally, investor risk appetite can be proxied by VIX, the volatility index calculated by the Chicago Board Options Exchange. The VIX "fear index" measures market expectations of near-term volatility conveyed by S&P 500 stock index option prices. We also use the spread on high-yield corporate U.S. bonds, using the Lehman Brothers High Yield Bond Index.

C. Discussion of Results

Tables 3 and 4 show the main results on the effects of sovereign ratings. Table 3 shows a strong positive impact of the IIR and S&P rating on the volume of private sector borrowing, even after controlling for fundamentals and even when using the rating residual instead of nominal ratings. The better the country risk perceptions by investors and rating agencies, the larger the external borrowing volumes by domestic firms.

To illustrate the quantitative importance of the individual factors, we multiply all estimated coefficients by the standard deviation of the respective variables. A one standard deviation increase in IIRs (16.4) results in a sizable increase in its coefficient (1.5). Only GDP per capita (Column 3) has a larger quantitative effect. Another variable that is found to have a sizable economic effect is total issuance volumes in emerging markets. This finding indicates the crucial role of global liquidity for a country's level of access to international capital markets, confirming the results of Fostel and Kaminsky (2007). The effects of sovereign ratings on equity issuances are weaker (Table 4). Although the S&P rating has a positive and quantitatively important effect (Column 2), its coefficient becomes insignificant when additional variables are controlled for, even when using the rating residual instead of nominal ratings. However, the crucial importance of total emerging-market issuance volumes and GDP per capita is confirmed. As expected, total capital flows to corporations in emerging markets and the size of the economy have a strong impact on the amount of equity issued by private firms in these countries.

Our results also confirm the results of other studies on the role of political risk. We find the ICRG index to be a significant and quantitatively important determinant of both debt and

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[30] The simple correlation of total capital volumes (log) with logged countrylevel debt and equity issuances is 0.27 and 0.31, respectively.

equity volumes, with higher stability leading to higher cross-border capital flows. The coefficient ofthe composite EMBI spreads is significant and has a sizable quantitative effect. The higher overall sovereign risk of emerging-market countries leads to a drop in country-level access to foreign capital. In contrast, the effects of the VIX Index and the spread level on U.S. high-yield bonds, as measured by the Lehman Index, are insignificant.[31]

Other interesting findings relate to the role of sovereign bond spreads for private sector access to capital (Table 5). EMBI spreads are a highly significant determinant, with regard to both external borrowing and equity issuances. This effect is quantitatively significant, as illustrated by the high negative coefficient of EMBI 1,000 (a dummy variable for periods in which spreads surpass the critical threshold of 1,000 basis points above the U.S. Treasury rate). This is further confirmation of our result that sovereign risk is a crucial factor for private sector access to capital in emerging markets.

We find only a weak link between public debt issuances and corporate access to capital (Table 6). For the whole sample, the variable capturing the total amount of sovereign issuances is barely significant and has a low quantitative effect on corporate debt volumes and equity issuances; the dummy for the incidence of sovereign issuances by quarter is insignificant throughout. We obtain a similar result even when we examine a subsample of crisis periods. Although the "sovereign debt issuance" variable turns significant in a sample of debt-crisis periods (as defined above), the effect depends heavily on how crisis and distress episodes are defined. We find no effect of sovereign issuance on corporate issuance when a subsample of crisis episodes is identified by EMBI spreads above 1,000 basis points or by periods in which country credit ratings are in the default range (that is, when the IIR is below 25).[32] Thus, we find very weak evidence for a co-movement between public sector and private corporations' capital market access.

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[31] Results are not reported but are available upon request.

[32] Even an interaction term between sovereign ratings and sovereign debt issuance turned out to be insignificant with regard to corporate debt issuance.

Table 3. The Effect of Sovereign Ratings on Corporate External Borrowing

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Rating (Inst. Investor)	0.09***	0.04**					
	(0.01)	(0.02)					
Rating (S&P)			0.18***				
			(0.04)				
Rating (Residual)				0.18***	0.16***	0.18***	0.18***
				(0.04)	(0.03)	(0.04)	(0.04)
Inflation		-0.00**	-0.00	-0.00	-0.00	-0.00	-0.00
		(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Growth		-0.01	-0.03	0.01	0.01	0.01	0.01
		(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
GDP per head (PPP, log)		4.73***	4.39***				
		(0.96)	(0.88)				
Real Exchange Rate		-0.04***	-0.04***	-0.05***	-0.04***	-0.05***	-0.05***
		(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Total Capital Flows to EMEs		1.19***	1.06***	1.18***			
		(0.24)	(0.25)	(0.25)			
Political Stability (ICRG)					0.04*		
					(0.02)		
Composite EMBI						-0.00***	
						(0.00)	
VIX Volatility Index							-0.01
							(0.01)
Constant	0.42	-49.65***	-49.52***	-19.07***	-5.79***	-0.61	-4.24*
	(0.60)	(8.18)	(7.67)	(3.64)	(1.96)	(1.78)	(2.18)
Observations	1,828	1,356	1,311	1,382	1,367	1,382	1,382
Adjusted R2	0.168	0.191	0.198	0.164	0.151	0.155	0.147

Note: The dependent variable is the log of total amount borrowed (corporate bonds and loans). Robust standard errors clustered on country are in parentheses. Regressions include year and country fixed effects. *** Significant at the 1 percent level; ** significant at the 5 percent level; * significant at the 10 percent level.

Table 4. The Effect of Sovereign Ratings on Equity Issuances

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Rating (Inst. Investor)	0.03		0.01				
	(0.02)		(0.03)				
Rating (S&P)		0.17**		0.13			
		(0.06)		(0.08)			
Inflation			-0.00	-0.00	-0.00**	-0.00	-0.00*
			(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Growth			-0.00	-0.01	-0.00	-0.00	-0.00
			(0.03)	(0.03)	(0.02)	(0.02)	(0.02)
GDP per head (PPP, log)			4.33**	2.64	3.89*	4.46**	4.54**
			(2.06)	(1.83)	(1.92)	(2.04)	(2.05)
Real Exchange Rate			-0.02***	-0.02**	-0.01	-0.03***	-0.02***
			(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Stockindex (growth p.a.)			0.01***	0.01***	0.01***	0.01**	0.01***
			(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Total Capital Flows to EMEs			1.06***	1.11***			
			(0.28)	(0.29)			
Political Stability (ICRG)					0.06**		
					(0.02)		
Composite EMBI						-0.00***	
						(0.00)	
VIX Volatility Index							-0.02
							(0.02)
Constant	0.64	0.12	-44.19***	-31.47**	-33.60**	-32.67*	-34.44*
	(0.98)	(0.97)	(15.77)	(14.07)	(16.26)	(17.99)	(17.45)
Observations	1,828	1,600	1,145	1,138	1,218	1,219	1,219
Adjusted R2	0.210	0.216	0.237	0.259	0.246	0.247	0.235

Note: The dependent variable is the log of total corporate equity issued (in US$). Robust standard errors clustered on country are in parentheses. Regressions include year and country fixed effects. *** Significant at the 1 percent level; ** significant at the 5 percent level; * significant at the 10 percent level.

Table 5. Sovereign Bond Spreads and Private Sector Access to Capital

	Bonds & Loans		Equity	
	(1)	(2)	(3)	(4)
EMBI (Country Level)	-0.00***		-0.00***	
	(0.00)		(0.00)	
EMBI above 1000 (Dummy)		-0.83**		-1.20**
		(0.36)		(0.51)
Inflation	-0.00***	-0.00***	0.00	0.00
	(0.00)	(0.00)	(0.00)	(0.00)
Growth (p.a.)	-0.05**	-0.05**	-0.01	-0.02
	(0.02)	(0.02)	(0.03)	(0.03)
GDP per head (PPP, log)	5.10***	5.68***	3.48**	4.11***
	(1.24)	(1.51)	(1.28)	(1.36)
Real Exchange Rate	-0.00**	-0.00**	0.00	0.00
	(0.00)	(0.00)	(0.00)	(0.00)
Total Capital Flows to EMEs	1.18***	1.21***	1.13***	1.14***
	(0.32)	(0.32)	(0.32)	(0.33)
Political Stability (ICRG)	0.04*	0.05**	0.04	0.04**
	(0.02)	(0.02)	(0.02)	(0.02)
VIX Volatility Index	0.01	0.01	-0.02	-0.02
	(0.01)	(0.01)	(0.02)	(0.02)
Constant	-51.89***	-57.97***	-39.01***	-45.12***
	(10.75)	(13.06)	(10.06)	(10.73)
Observations	809	809	809	809
Adjusted R2	0.207	0.198	0.308	0.305

Note: The dependent variable in columns 1 and 2 is the log of total amount borrowed (corporate bonds and loans). The dependent variable in columns 3 and 4 is the log of total corporate equity issued. Robust standard errors clustered on country are in parentheses. The regressions include year and country fixed effects. *** Significant at the 1 percent level; ** significant at the 5 percent level; * significant at the 10 percent level.

We find only a weak link between public debt issuances and corporate access to capital (Table 6). For the whole sample, the variable capturing the total amount of sovereign issuances is barely significant and has a low quantitative effect on corporate debt volumes and equity issuances; the dummy for the incidence of sovereign issuances by quarter is insignificant throughout. We obtain a similar result even when we examine a subsample of crisis periods. Although the "sovereign debt issuance" variable turns significant in a sample of debt-crisis periods (as defined above), the effect depends heavily on how crisis and distress episodes are defined. We find no effect of sovereign issuance on corporate issuance when a subsample of crisis episodes is identified by EMBI spreads above 1,000 basis points or by periods in which country credit ratings are in the default range (that is, when the IIR is

below 25).31 Thus, we find very weak evidence for a co-movement between public sector and private corporations' capital market access.

We check the validity of our results with additional analytical tests (Table 10 in the Annex). First, we alter the specifications in various ways and include additional explanatory variables, in particular, variables capturing the development of domestic capital markets (domestic credit/GDP and stock market capitalization/GDP), taken from the updated data set of Beck, Demirgüç-Kunt, and Levine (2000). We include external and domestic factors (for example, U.S. interest rates, trade openness, G-7 growth, and a measure of sudden stop episodes, taken from Frankel and Cavallo (2008). Our main results are little affected, although the number of observations drops as a result of missing values in some of the additional variables.

Some results change when the regressions are run with random effects, with some variables showing higher coefficients at higher significance levels. In particular, we find a significant effect of rating levels on equity issuances. However, simple Hausman tests clearly indicate that it is necessary to include controls for fixed effects. Therefore, the baseline results that control for initial country conditions appear more reliable.

Table 6. The Role of Sovereign Market Access

	Equity		Bonds & Loans				
	Entire Sample		Entire Sample		Sub-Sample of Crisis Periods		
					Sov. Default & Restructuring	EMBI Spread > 1000	IIR < 25 (Rating in Default Range)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Volume of Sovereign Debt Issuance (by country and quarter, log)	0.05* (0.03)		0.05* (0.03)		0.28*** (0.03)	0.00 (0.08)	0.04 (0.09)
No Sovereign Issuances (Dummy for quarters without issuance)		0.23 (0.16)		0.23 (0.19)			
Rating (Inst. Investor)	0.01 (0.03)	0.01 (0.03)	0.04** (0.02)	0.04** (0.02)	0.05 (0.07)	0.13** (0.05)	
Inflation	-0.00 (0.00)	-0.00 (0.00)	-0.00** (0.00)	-0.00** (0.00)	-0.01** (0.00)	0.00 (0.00)	-0.00 (0.00)
Growth	-0.00 (0.03)	-0.00 (0.03)	-0.01 (0.02)	-0.01 (0.02)	0.26*** (0.03)	0.06 (0.04)	-0.26*** (0.06)
GDP per head (PPP, log)	4.21* (2.04)	4.25** (2.04)	4.66*** (0.94)	4.68*** (0.95)	62.52*** (4.15)	-0.90 (3.93)	-2.52 (2.96)
Real Exchange Rate	-0.02*** (0.01)	-0.02*** (0.01)	-0.04*** (0.01)	-0.04*** (0.01)	-11.27** (2.93)	-22.79* (11.23)	0.12*** (0.01)
Total Capital Flows to EMEs	1.07*** (0.28)	1.08*** (0.28)	1.19*** (0.25)	1.20*** (0.25)	-1.16 (0.86)	-0.58 (1.10)	0.67 (1.61)
Stockindex (growth p.a.)	0.01*** (0.00)	0.01*** (0.00)					
Constant	-43.35** (15.60)	-43.83*** (15.59)	-49.18*** (7.95)	-49.49*** (8.04)	-538.01*** (30.49)	19.25 (47.59)	12.39 (39.20)
Observations	1,145	1,145	1,356	1,356	44	68	72
Adjusted R2	0.239	0.238	0.194	0.193	0.266	0.203	0.234

Note: The dependent variable in columns 1 and 2 is the log of total amount borrowed (corporate loans and bonds). The dependent variable in columns 3–7 is the log of total corporate equity issued. Robust standard errors clustered on country are in parentheses. The regressions include year and country fixed effects. Columns 5, 6, and 7 are based on periods of sovereign debt distress only, defined as outright default or ongoing restructuring negotiations. *** Significant at the 1 percent level; ** significant at the 5 percent level; * significant at the 10 percent level.

Finally, we estimate the model for different subperiods. In the more recent period (for example, the subsample 2001–07), the coefficients of domestic factors (such as ratings, inflation, and GDP per capita) tend to become smaller and less significant, whereas the coefficients for external factors (such as the composite EMBI spread or total emergingmarket issuance volumes) tend to remain the same and are much more robust. This finding is in line with the findings of Fostel and Kaminsky (2007), who show that the role of global factors with respect to domestic factors has become more pronounced in the post–2000 period of high global liquidity.

VI. SUMMARY OF MAIN FINDINGS

The main findings of our analysis for the periods 1980–2004 and 1993–2007 can be summarized as follows:

- For the period 1980–2004, sovereign defaults have a strong negative impact on corporate external borrowing , leading to a drop of up to 40% after controlling for fundamentals and shocks. Defaults to pirvate creditors have a stronger impact than defaults to official creditors.

- Crisis resolution patterns play an important role for corporate access to capital. Delays in debt renegotiations caused by government behavior have a negative spillover effect. However, creditor holdouts, intercreditor disputes and creditor litigation against the sovereign appear to have no impact.

- Sovereign risk is also decisive in the sample period 1993–2007. A deterioration in risk perceptions (higher sovereign bond spreads and lower sovereign ratings) has a strong negative impact on corporate access to capital, in particular, the volume of corporate external borrowing.

- The volume of equity issuances is closely linked to the level of country bond spreads but little affected by sovereign ratings.

- Economic development (per capita GDP) and global factors (such as total capital flows to emerging markets) are additional main determinants of corporate access to external credit and equity.

- There is no evidence for close co-movement between public and corporate access to capital.The volume of sovereign loans and bond issuances has no statistically robust impact on the volume of corporate credit and equity in either the full sample or the subsample of crisis episodes.

VII. CONCLUDING REMARKS

Very few empirical studies have analyzed "top-down" risk spillovers from sovereign to private entities in emerging-market countries, particularly with regard to corporate capital access conditions. Using micro data from 31 emerging economies, this paper provides new empirical evidence on the role of sovereign risk for private sector access to international capital markets. The results show that an increase in sovereign risk can have strong negative effects on the volume of corporate credit and equity issued.

The first part of the empirical analysis focuses on the role of sovereign debt crises. We provide novel evidence that defaults to private (not official) creditors have a strong impact on corporate external borrowing. Beyond the default effect per se, we find that debt-crisis characteristics matter. Delays in debt negotiations have adverse effects for private sector credit. Furthermore, we find (weak) indications that successful IMF programs have a positive effect on private sector access to credit during debt-crisis periods. Interestingly, however, there are no negative spillovers of delays caused by holdouts or litigation. It thus seems that in distress situations, government behavior has a greater impact than creditor behavior. Policymakers should take this finding into account when facing debt-restructuring negotiations.

The second part of the empirical analysis investigates the effect of sovereign risk in a broader framework and for a more recent period (1993–2007). It shows that both increasing sovereign spreads and deterioration in sovereign ratings have strong adverse effects on corporate external borrowing. Periods of higher sovereign risk are associated with a considerable drop in external debt issuances by major firms in the emerging-market countries under consideration. This result notwithstanding, we do not find persuasive evidence of co-movement of public and private market access. In fact, sovereign debt issuance is not an important predictor of the volume of external corporate capital raised in a given quarter.

Overall, emerging-market governments need to be aware of the potentially adverse effects for their domestic economies of negative country-risk perceptions by international investors and rating agencies. Government actions affecting sovereign risk (for example, threats to default on sovereign debt or delayed debt renegotiations) may have unintended consequences for the country's corporations. Put differently, emerging-market governments interested in fostering the development and growth prospects of domestic private firms should avoid policies or rhetoric that negatively influences the country's sovereign spreads and rating.

In view of the current financial crisis, it is possible that sovereign risk in emerging-market economies will be on the rise again. Our results indicate that this possible outcome could add to the potential constraints in the future external financing of firms in emerging-market and developing countries.

Appendix. Data and Descriptive Statistics
Figure 1. Bond, Syndicated Loan, and Equity Issuance by Private Domestic Firms in Emerging Markets, 1993–2007
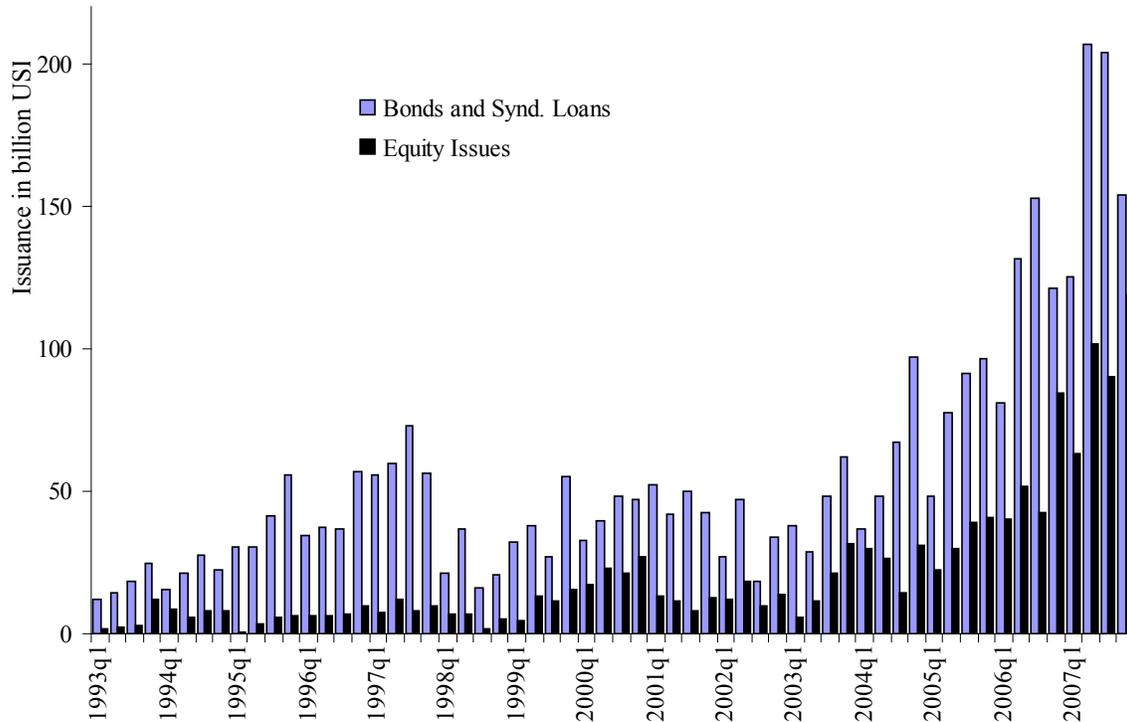
Note: Authors' compilation base on data from Dealogic. The figure shows aggregate equity and external debt (bonds and syndicated loans) issuance by domestic firms in 31 emerging market countries. Firms owned by the government or other public entities and firms owned by foreign companies are excluded. q1 = first quarter.

Construction of Index Variables (Sample 1980–2004)

The main control variables used in the analysis of debt-crisis effects are taken from Arteta and Hale (2008), who kindly shared their dataset of explantory variables. They group their control variables in five broad categories and compose them in a set of indexes in the following way (data sources are shown in parentheses).

International Competitiveness. The degree of international competitiveness is likely to have an effect on firm performance and thus corporate demand for external credit. The index is constructed using data on changes in the terms of trade (United Nations Conference on Trade and Development), changes in the current account (IMF's International Financial Statistics [IFS]), changes in the real exchange rate (IFS), price indexes of each country's export commodities (Global Financial Data [GFD], IFS), and the volatility of export revenues (IFS). The index is scaled by trade openness (imports + exports/GDP [IFS, GFD]). We use the same two principal components retained by Arteta and Hale (2007), naming them Index 1.1 and Index 1.2.

Investment Climate and Monetary Stability. This index accounts for foreign and domestic demand for investment and credit in the country, as well as short-run macroeconomic developments. It is composed of data on sovereign credit risk (IIR), the ratio of debt service to exports (Joint External Debt Hub), the ratio of investment to GDP (IFS), the real interest rate (IFS), the ratio of lending interest rate to deposit interest rate (IFS), the inflation rate (IFS), the ratio of domestic credit to GDP (IFS), and changes in the domestic stock market index (Ibbotson; GFD; Bloomberg). Three principal components used by Arteta and Hale (Indexes 2.1, 2.2, and 2.3.) are retained.

Financial Development. The development of the domestic financial system can be an important determinant of the demand for external credit in emerging markets. The index of financial sector development is constructed based on the ratio of stock market capitalization to GDP (GFD, IFS); the ratio of commercial bank assets to GDP (IFS); and the degree of financial account openness (IMF 2003; Glick and Hutchison 2005). The first principal component used by Arteta and Hale (Index 3.1.) is retained.

Long-Run Macroeconomic Prospects. Indicators of long-term macroeconomic prospects are likely to affect risk assessments of both domestic and foreign agents and thereby the demand and supply of corporate external credit. This index is constructed using the ratio of foreign debt to GDP (Joint External Debt Hub), the growth rate of real GDP (IFS), the growth rate of nominal GDP measured in U.S. dollars (IFS), and the unemployment rate (IFS). The first two principal components used by Arteta and Hale (Indexes 4.1 and 4.2) are retained.

Global Supply of Capital. The index capturing global "push" factors is based on the following variables: the Yale School of Management investor confidence index, the growth rate of the U.S. stock market index (GFD), the U.S. Treasury rate (Federal Reserve), the volume of gross international capital outflows from member countries of the Organisation for Economic Co-operation and Development (Lane and Milesi-Ferretti 2001), and the Merrill Lynch High Yield spread. Two principal components used by Arteta and Hale (Indexes 6.1. and 6.2.) are retained.

Finally, we include a small set of firm-level dummies. Some industries, such as firms in the chemical or mining sector, are particularly capital intensive; on average, these firms raise much larger bond or loan volumes than most other corporations. To capture some of the noise caused by financings of major investment projects in these sectors, we also include monthly dummies for debt issuances by chemical and mining corporations.

Table 7. Economies Covered in the Analysis

Defaulters	Non-Defaulters
Argentina	China
Brazil	Colombia
Chile	Croatia[a]
Mexico	Czech Republic[a]
Pakistan	Egypt, Arab Rep. of
Peru	Hong Kong, China
Philippines	Hungary
Poland	India
Romania	Indonesia
Russian Federeation[a]	Korea, Rep. of
South Africa	Malaysia
Turkey	Qatar
Venezuela, R. B. de	Saudi Arabia
	Singapore
	Slovak Republic[a]
	Taiwan, China
	Thailand
	United Arab Emirates

Note: Authors' compilation based on Standard & Poor's 2007 and Enderlein, Müller, and Trebesch 2008. For the purposes of this study, defaulters are countries whose governments defaulted on debt obligations toward foreign private creditors between 1980 and 2004 or whose governments arranged a distressed debt restructuring at terms less favorable than the original terms. [a] Economies included from 1993 on only.

Table 8. Further Control Variables, 1993–2007

Variable	Observ.	Mean	Std. Dev.	Min	Max	Data Source
Institutional Investor Rating	1828	49.62	16.37	12.80	91.80	Institutional Investor Magazine
S & P Rating (numerical)	1600	13.21	4.09	0.00	22.00	Standard & Poor's
EMBI (country level)	861	492.67	781.72	20.41	6626.88	JP Morgan/Datastream
EMBI above 1000	861	0.08	0.28	0	1	JP Morgan/Datastream
Inflation	1661	17.42	136.19	-5.87	4448.81	Economist Intelligence Unit
Growth (real)	1608	4.64	4.97	-23.08	47.88	Economist Intelligence Unit
GDP per head (PPP, log)	1604	8.85	0.96	6.57	12.29	Economist Intelligence Unit
Real Exchange Rate	1760	4.53	17.24	0.01	183.67	Economist Intelligence Unit
Political Stability	1896	68.56	9.36	40.00	90.00	Economist Intelligence Unit
Stock Market Index (Growth)	1420	22.10	48.54	-68.89	873.24	Economist Intelligence Unit
VIX Volatility Index	1920	18.94	6.36	10.42	35.09	CBEO/Bloomberg
High Yield Spread	1920	9.87	1.84	6.99	14.02	Lehman Brothers/Bloomberg
Total Capital Flows to EMEs (log)	1888	11.04	0.66	9.77	12.61	Dealogic

Table 9. Robustness Analysis on the Effect of Sovereign Defaults

	Entire Sample			Subsample of Default Episodes	
	Random Effects Estimation	With Sudden Stop	1980s Only	Specification Check (Additional Variables)	
	(1)	(2)	(3)	(4)	(5)
Default Episode	-21.90*	-46.47**	-9.53		
(Private Creditors)	(13.17)	(21.96)	(11.84)		
Month of Restructuring	-39.57**	-54.38**	-18.56**		
(Private Creditors)	(17.90)	(21.54)	(8.91)		
Lag 1 (First Year after Agreement)	-62.43**	-72.45**	-20.23*		
	(25.78)	(27.94)	(11.74)		
Lag 2 (Second Year after Agreement)	-24.96	-34.88	2.72		
	(22.43)	(27.53)	(19.62)		
Sudden Stop		-42.99**			
		(20.29)			
Breakdown of Refusal of Negotiations				-24.84**	
				(11.09)	
IMF Program (SBA)					14.27
					(8.44)
Index 1.1.	0.39	-2.07	1.82	1.57	2.81
	(2.83)	(3.43)	(2.47)	(7.05)	(7.22)
Index 1.2.	-5.20**	-4.83**	3.08	4.67	3.37
	(2.37)	(2.35)	(4.05)	(2.70)	(3.14)
Index 2.1.	-3.70	-3.04	-0.39	9.04*	9.55*
	(7.80)	(8.24)	(1.14)	(4.28)	(4.86)
Index 2.2.	7.00	3.02	2.52	0.90	1.47
	(4.65)	(4.83)	(2.69)	(2.28)	(2.41)
Index 2.3.	4.72	1.90	2.19	-4.18	-4.09
	(5.62)	(6.43)	(1.29)	(2.60)	(2.73)
Index 3.1.	15.19**	16.91**	-4.22	23.06**	22.48**
	(5.91)	(6.23)	(3.37)	(7.65)	(8.30)
Index 4.1.	8.21***	7.62**	-0.04	5.53	10.57**
	(2.91)	(3.10)	(4.67)	(3.87)	(4.04)
Index 4.2.	4.21	2.77	6.05	7.98	7.21
	(4.28)	(4.66)	(5.64)	(5.72)	(5.94)
Index 6.1.	-77.42***	-77.41***	-0.61	-44.21	-41.38
	(19.99)	(19.83)	(5.89)	(35.62)	(35.28)
Index 6.2.	54.55***	54.51***	3.75	29.48	27.04
	(14.30)	(14.14)	(4.25)	(24.70)	(24.55)
Real Exchange Rate	-0.01**	-0.02***	0.01	0.01	0.02
	(0.00)	(0.01)	(0.01)	(0.05)	(0.07)
Banking Crisis	-23.33*	-21.78	4.78	27.31*	25.16*
	(12.87)	(14.50)	(8.40)	(12.79)	(12.75)
Natural Disasters (Dummy)	-12.72	-14.57	-4.94	3.25	3.57
	(14.87)	(14.76)	(6.29)	(11.73)	(13.07)
Currency Crisis	-41.32***	-42.74***	-15.03***	-8.75	-12.79
	(13.59)	(13.15)	(4.37)	(7.80)	(9.22)
Constant	197.02***	198.42***	-69.07***	255.72	232.18
	(67.85)	(68.73)	(21.33)	(156.79)	(158.01)
Observations	6,716	6,716	2,508	992	992
Adjusted R2		0.055	0.020	0.086	0.083

Note: The dependent variable is the total amount borrowed (corporate bonds and loans) as a percentage deviation from the mean. Robust standard errors clustered on country are in parentheses. The regressions include year and country fixed effects and dummies for issuances by mining and chemical industries. *** Significant at the 1 percent level; ** significant at the 5 percent level; * significant at the 10 percent level.

Table 10. Robustness Analysis on the Effect of
Sovereign Ratings, 1993–2007

	Random Effects		Extended Specification		Post-2000 period	
	Bonds & Loans	Equity	Bonds & Loans	Equity	Bonds & Loans	Equity
	(1)	(2)	(3)	(4)	(5)	(6)
Rating (Inst. Investor)	0.06***	0.04*	0.04**	-0.02	0.04*	0.04
	(0.01)	(0.02)	(0.02)	(0.03)	(0.02)	(0.03)
Inflation	-0.00**	0.00	-0.00	-0.00	-0.01	0.00
	(0.00)	(0.00)	(0.00)	(0.00)	(0.01)	(0.01)
Growth	-0.00	0.04*	-0.01	-0.01	-0.04	0.01
	(0.02)	(0.02)	(0.02)	(0.03)	(0.03)	(0.03)
GDP per head (PPP, log)	1.02**	0.34	4.80***	7.76***	6.01**	-0.35
	(0.47)	(0.40)	(1.67)	(1.93)	(2.85)	(1.93)
Real Exchange Rate	-0.03***	-0.01**	-0.03***	-0.01	-0.08***	0.00
	(0.00)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Total Capital Flows to EMEs	1.14***	1.10***	1.04***	1.17***	0.99***	0.75**
	(0.24)	(0.26)	(0.31)	(0.32)	(0.29)	(0.30)
Stockindex (growth p.a.)			0.00	0.01***		
			(0.00)	(0.00)		
Sudden Stop			-0.18	0.02		
			(0.22)	(0.45)		
Trade Openness			-0.82	-1.69*		
			(0.80)	(0.89)		
Stockmarket Capital. to GDP			-0.45	0.46		
			(0.34)	(0.73)		
G7 Growth			-0.61	1.29		
			(1.90)	(2.98)		
Constant	-18.29***	-13.67***	-49.25***	-78.71***	-62.87**	-3.39
	(4.61)	(4.18)	(14.34)	(16.92)	(25.40)	(17.72)
Observations	1,356	1,356	820	820	789	789
Adjusted R2			0.137	0.140	0.178	0.278

The dependent variable in colums 1, 3, an 5 is the log of the total amount borrowed (corporate loans and bonds). The dependent variable in columns 2,4, and 6 is the log of total corporate equity issued. Robust standard errors clustered on country are in parentheses. The regressions include year and country fixed effects. *** Significant at the 1 percent level; ** significant at the 5 percent level; * significant at the 10 percent level.

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