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#### Research Summaries

## Transmission of the Great Recession from Advanced to Emerging Economies

Andrew Swiston



*The widespread impact of the global financial crisis of 2008–09 has spurred researchers to examine how the associated recession was transmitted from advanced to emerging economies. Recent IMF studies have found that pre-crisis vulnerabilities such as large current account deficits, rapid credit growth, and high levels of short-term debt were strongly associated with the magnitude of spillovers. Trade, bank lending, and financial markets served as key transmission channels.*

The global financial crisis of 2008–09 set off a great recession that hit both advanced and emerging economies. Many emerging markets without direct exposure to the toxic assets at the root of the financial crisis in advanced economies experienced sharp output declines nonetheless. Predictions of a decoupling among emerging markets did not materialize, as economic activity in both advanced and emerging countries declined by over 4 percent in 2009 relative to April 2008 fore-

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## Sovereign Debt and Default

Emine Boz



*Recent developments in Europe have once again brought sovereign debt and default to the top of the global economic agenda. Studying sovereigns' decisions to repay or repudiate requires an understanding of the costs of default, the process of renegotiation during default, and the contractual features of available instruments such as private sector credit and IMF debt. This article describes the theoretical research conducted at the IMF on sovereign debt and default.*

While public attention has focused on when and why sovereigns default, the academic literature has analyzed a seemingly different question: why do sovereigns repay their debt? Since—unlike with corporate defaults—lenders do not have the legal right to seize the assets of sovereigns and the enforcement of any penalty is difficult, it has been hard to reconcile why sovereigns repay their debt. If sovereigns' assets cannot be seized, default may be costless for them, so rational lenders would optimally choose not to lend, and in equilibrium there would be no debt or default. This argument, however, does not help explain the empirical facts because the data reveal positive levels of debt—in some cases high levels of debt compared to the country's GDP—along with several episodes of default, suggesting that there must be costs associated with default. (continued on page 4)



## Transmission of the Great Recession from Advanced to Emerging Economies

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casts. Of the 33 emerging markets for which seasonally-adjusted quarterly real GDP data are available, 29 experienced downturns over the most intense part of the recession, the last quarter of 2008 and first quarter of 2009. Real exports fell in all these countries by an average of nearly 15 percent.

Attempts to identify *ex ante* determinants of the impact on emerging markets and its variation across countries have drawn from the previous literature on crisis determinants (see, for example, Kaminsky and Reinhart, 1999). Three cross-sectional studies find that financial vulnerabilities are strongly associated with the impact of the crisis. In Blanchard, Das, and Faruquee (forthcoming) the pre-crisis ratio of short-term external debt to GDP and GDP growth among trading partners are significant determinants of the magnitude of the downturn during the crisis for a sample of 29 major emerging markets. In Lane and Milesi-Ferretti (forthcoming) high pre-crisis current account deficits and rapid pre-crisis credit growth, in addition to economic activity among trading partners, explain the growth of economic activity in 2009 across advanced and emerging economies. In Berkmen and others (2009) pre-crisis loan-to-deposit ratios and credit growth are negatively associated with output revisions in emerging markets. These studies found no effects on growth outcomes from the level of international reserves or openness variables such as ratios of trade or financial assets to GDP.

Most studies of the transmission channels through which the crisis affected emerging economies rely to some extent on pre-crisis data, but illustrate the potential variety and magnitude of transmission mechanisms. This review focuses on trade, bank lending, and financial markets.

The sharp observed drop in global trade and the importance of partner-country growth in the above studies underline the importance of trade channels in transmitting the impact of the crisis. Bems, Johnson, and Yi (2010) construct a global input-output model for 55 countries covering a sizable majority of global output. They find that Canada, Mexico, and emerging Europe were hit particularly hard by their ties to the United States and the EU-15, respectively, with comparable effects on Japan and emerging Asia through links to both regions. Di Giovanni and Levchenko (2010) provide micro evidence on these linkages via a cross-country, industry-level panel dataset, showing that sector pairs that trade more exhibit stronger bilateral comovement.

Two studies have explored the role of distress in advanced-country banks in propagating the crisis domestically. Barajas and others (2010) examine a panel of large U.S. banks and find that lending fell by more at banks with lower capital ratios entering the crisis, as well as at those whose capital declined by more during the crisis. Iliashova and Koeva Brooks (2009) employ a distance-to-default measure based on equity values and balance sheet variables. They trace out the links between euro area banks' increased financial stress, cutbacks in loan supply, and declines in aggregate economic activity.

Several studies, in turn, examine the links between advanced-country banks' distress and their operations in emerging markets. For example, Bakker and Gulde (2010) outline the links between the retrenchment in Western European banks' flows to emerging European economies and the sharp declines in domestic demand experienced in the region. In line with the overview studies mentioned above, the intensity of the downturn was strongly associated with the pre-crisis rate of private sector credit growth and current account deficit. Using Bank for International Settlements data, Maechler and Ong (2009) and Árvai, Driessen, and Ötker-Robe (2009) calculate that for some emerging European economies, cross-border banking exposures had grown quite large relative to GDP, facilitating the rapid rise in private sector credit. Kamil and Rai (2010) ascribe some of Latin America's relatively better performance during the crisis to the greater reliance of the region's banking system on domestic sources of funding. Tong and Wei (2009) perform empirical tests that shed light on how the reduced supply of bank lending affected the corporate sector and report that firms more intrinsically dependent on external finance, especially for working capital, experienced larger declines in stock prices. These effects were mitigated in countries that relied on foreign direct investment for a large proportion of their pre-crisis financing, while countries that depended on portfolio and bank flows were hit harder.

The first tremors of the crisis in advanced economies were felt in financial markets, and these also served as a potent channel of transmission to emerging economies. Balakrishnan and others (2009) construct financial stress indices for 18 emerging markets, following the methodology of Cardarelli, Elekdag, and Lall (2009) on advanced economies. These indices cover sovereign and bank risk, stock market returns and volatility, and exchange rate pressure. They find that advanced economy financial stress can explain about 70 percent of emerging-market financial stress, on average. Chen and others (2010) examine the transmission of distress from advanced to emerging economies using distance-to-

default measures for both banks and nonfinancial corporations, within a global vector autoregression (GVAR) model. Bank or corporate distress in advanced economies spurs similar distress in both advanced and emerging economies, bringing about a sharp drop in equity prices and declines in industrial production. Galesi and Sgherri (2009) also employ a GVAR and find that negative shocks to U.S. equity markets lead to lower equity prices, private sector credit, and economic activity among several advanced and emerging European countries.

Some studies have attempted to quantify within a single framework the contributions of multiple transmission channels. Swiston (2010) enters trade and financial variables as exogenous regressors in vector autoregressions for several Central American countries, and finds that even for a region with relatively low international financial integration, financial channels transmit over half of U.S. growth spillovers on average, while trade channels contribute a third. The study finds that both trade and financial spillovers were stronger during the crisis period than pre-crisis. Moriyama (2010) estimates a panel generalized method of moments for emerging markets in the Middle East and North Africa and finds that slightly more than a third of the slowdown in real GDP growth in these countries during the crisis was due to financial stress, while slightly less than a third was due to external demand.

The simultaneous downturn in global trade, capital flows, and financial markets in 2008–09 strongly affected emerging economies. The impact of the crisis was less a function of the degree of international integration than of specific vulnerabilities—including pre-crisis credit booms, high short-term debt levels, and large current account deficits. Those countries that exercised strong financial supervision so as to avoid the emergence of asset bubbles or unsustainable borrowing, as well as those that maintained space for countercyclical policy, found themselves better placed to weather the storm, and the implementation of these policies on a more widespread basis would help to prepare for the next one.

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## Sovereign Debt and Default

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Hence, researchers have aimed at understanding potential costs of default.

The sovereign debt literature considers two main costs of default: reputational costs and direct sanctions. Reputational costs operate through loss of access to international capital markets (autarky) and hence inability to smooth consumption over time. Direct sanctions refer to trade sanctions that are likely to lead to a disruption in trade and therefore a reduction in output. The empirical relevance and relative importance of these costs have been disputed and the recent sovereign debt literature has modeled the reputational costs rigorously but has captured the other direct sanctions simply as a decline in output during default.

On the modeling of reputational costs, Eaton and Gersovitz (1981) provide a tractable, incomplete markets framework. They model a sovereign that optimally chooses to default or to repay. If the sovereign chooses to repay, it also chooses how much to borrow. There is a single lender that represents perfectly competitive private sector creditors. The punishment for default is permanent exclusion from international capital markets. The endogenous default probability of the sovereign pins down the equilibrium interest rate.

More recently, Arellano (2008) studied the quantitative implications of Eaton and Gersovitz's setup by introducing stochastic output and exclusion from capital markets for a period with stochastic length and direct output losses to capture direct sanctions during default. This model delivers many of the observed patterns in emerging markets' data such as high volatility of interest rates, higher volatility of consumption relative to output, a negative correlation of interest rates and output, and a negative correlation of the trade balance and output. Most importantly, in line with the data, the model implies that the sovereign finds it optimal to default in bad times, that is, when output is below its trend. Intuitively, to avoid low levels of consumption, the sovereign is more likely to choose default when faced with lower output—an important implication not present in earlier studies of sovereign debt featuring a complete asset market.

Following Arellano (2008), several studies have extended this basic setup to include other relevant features of debt and default such as renegotiation of debt, international reserve holdings, long maturity bonds, and political-economy-related ingredients. For example, Bi (2008) enriches Arellano's setup to incorporate a stochastic bargaining game to model debt renegotiation. In a related paper, Hatchondo, Martinez, and Saprizza (2010) highlight the impact of solution-method choice on the quantitative results of models with default.

Boz (2009) introduces an international financial institution (IFI) to the canonical setting of Arellano (2008), which had modeled the private sector creditors as the only type of lender, and documents the business-cycle properties of IFI debt. She examines the sovereign's allocation of its financing needs between private sector creditors and the IFI to account for the cyclical properties of IFI lending, and to map the features of these different types of debt contracts to various patterns in observed flows. The theoretical framework features a sovereign, private sector creditors, and an IFI. The sovereign cannot commit to repay its debt to private sector creditors and thereby strategically defaults depending on the level of its commercial debt, official debt, and output. Similar to Arellano (2008), the interest rate charged by private creditors is determined by endogenous default probabilities, and the punishment for default is exclusion from the commercial credit markets and direct output losses.

Using the IMF's Stand-By Arrangements, Boz (2009) shows that in emerging markets, the cyclical properties of lending by IFIs are in stark contrast to those of lending by private sector creditors. The average correlation of IMF debt flows with output for a group of emerging-market economies is  $-0.19$ , while the same correlation in the case of commercial debt flows is  $0.37$ . In addition, the variability of commercial debt flows is about four times as large as that of IMF debt ( $0.82$  versus  $3.91$  percent). Finally, borrowing from the IMF is intermittent; the unconditional probability of the use of IMF credit is around 50 percent. This pattern also contrasts with commercial debt as most emerging-market economies are indebted to private sector creditors at all times.

The IFI offers a different type of contract than the private sector creditors. First, contracts with the IFI are enforceable, while those with commercial creditors are not. Boz (2009) considers this to be loosely implied by the IFI having a preferred creditor status and also the fact that the IMF has almost always been repaid, particularly by emerging-market economies. Second, the interest rate associated with IFI lending is assumed to be the sum of the risk-free rate and a charge that increases with the amount borrowed from the IFI. This specification for the IFI interest rate captures the surcharges that may apply in the case of Stand-By Arrangements, depending on the amount borrowed. This specification is significantly different from commercial interest rates that depend on the endogenous default probability determined by the "riskiness" of the sovereign. Finally, conditionality associated with IFI debt is accounted for by a higher discount factor in periods when the sovereign is indebted to the IFI. In this setting, a higher discount factor tilts the con-

sumption profile by shifting consumption from the present to the future, thereby lowering debt levels and default probabilities. This can be interpreted as similar to implementation of tighter fiscal policies that traditionally have been part of IMF conditionality.

In line with the data, Boz's model generates procyclical commercial debt as well as countercyclical IFI debt. This is driven by two intertwined features of the model. First, the fact that IFI debt contracts are enforceable leads to a canonical consumption-savings type prediction for the cyclical properties of the sovereign's borrowing from the IFI. With commitment, consumption-savings models predict more borrowing in bad times and less in good times, hence countercyclical debt flows. On the contrary, defaultable commercial debt is procyclical, highlighting the role of lack of commitment to account for the cyclical characteristics of this kind of debt flow. Second, the inelasticity of the IFI interest rates with respect to country characteristics leads the sovereign to find it optimal to borrow more commercially at relatively lower rates in good times with lower default probability and without incurring the costs associated with borrowing from the IFI. However, in bad times, in order to avoid the high risk premia charged by private sector creditors, the sovereign reallocates its portfolio by giving more weight to borrowing from the IFI.

Utilizing this theoretical framework, Boz (2009) concludes that conditionality explains the intermittent nature of borrowing from the IFI. In other words, unlike commercial debt that the sovereign holds at all times except when in default, IFI debt holdings in general are positive in relatively bad times. The fact that IFI debt contracts are enforceable and the price of IFI debt, that is, the surcharge, does not depend on the level of commercial debt helps explain the countercyclicality of IFI debt.

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## Visiting Scholars, July–September 2010

Kevin Clinton; 4/29/10–4/29/11

Donald R. Davis; Columbia University; 6/11/10–8/31/10

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Olivier Blanchard

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## Seven Questions on How Institutions Shape Financial Markets

Bernardin Akitoby



*How do institutions shape financial markets? The question is highly relevant in the context of the global financial crisis. This article reviews recent studies on the effect of institutions on financial markets, focusing on the “Lucas paradox” of capital inflows, the pricing of risk, and access to*

*capital markets. There is strong empirical evidence to support the hypothesis that institutions, in various forms, are important determinants of financial market development.*

### Question 1: Can institutions explain why capital does not flow from rich to poor countries?

Recent research provides an affirmative answer to this question. For example, Alfaro, Kalemli-Özcan, and Volosovych (2008) empirically investigate the factors behind the lack of capital flows from rich to poor countries, the so-called “Lucas paradox.” They argue that during 1970–2008, low institutional quality was the most important factor behind that paradox. The empirical findings suggest that improving Turkey’s institutional quality to the U.K.’s level could lead to a 60 percent increase in foreign investment, while improving Peru’s to Australia’s could quadruple the level of foreign investment. Drawing the policy implication from their study, Alfaro Kalemli-Özcan, and Volosovych conclude that countries aiming to attract capital flows should strengthen protection of property rights, law and order, bureaucratic quality, and government stability.

### Question 2: Do institutions shape the pricing of sovereign risk?

The simple answer is that institutions have some independent influence on sovereign spreads beyond the fiscal and economic outcomes they shape. Akitoby and Stratmann (2009; forthcoming (a) and (b)), using a panel of 32 emerging-market countries during 1994–2003, find that institutions indeed matter for the pricing of sovereign risk. Democracy, regardless of how it is measured—the Kaufmann voice and accountability index, the Freedom House index of political rights, the Polity index, or the International Country Risk Guide (ICRG) democratic accountability index— was found to be negatively associated with spreads. Specifically, a one standard deviation in the ICRG

democratic accountability index reduces spreads by about 25 percent. Stronger civil liberties also exert a negative impact on spreads, as civil liberties foster democracy. These results lend support to the idea that financial markets reward democratic regimes. Put differently, the markets tend to penalize nondemocratic regimes by charging them relatively higher spreads. Since the study shows that more government accountability lowers spreads, creditworthiness will benefit from stronger checks and balances. Akitoby and Stratmann also report that the ICRG political risk factor has a negative and statistically significant impact on spreads. Similarly Baldacci, Gupta, and Mati (2008) confirm that political factors matter for credit risk in emerging markets, with lower political risk leading to tighter spreads.

### Question 3: Do financial markets discriminate between political institutions?

Yes, there is some evidence suggesting that financial markets indeed discriminate between political institutions in the sense that, for the same fiscal outcome, market participants differentiate between right- and left-wing governments, or between majoritarian and proportional electoral systems. Akitoby and Stratmann (2008; forthcoming (b)) examine how fiscal variables interact with political institutions to affect sovereign spreads. They find strong evidence that financial markets penalize left-wing regimes that undertake spending-driven expansion. The penalty is estimated at about 3 percent higher interest rates. This may be because right-wing governments are often associated with fiscal conservatism and smaller-size government, while left-wing governments are often proponents of larger government and broader social transfer programs. The findings also show that financial markets reward left-wing governments more than right-wing ones when government revenues increase. Put differently, right-wing governments get lower benefits from a revenue-based consolidation. One reason for this could be that government spending is already low when the government is conservative, so the marginal benefit from consolidation is less than if government spending is high.

With regard to the differentiation between majoritarian and proportional electoral systems, the results show that financial markets penalize “majoritarian” regimes—as opposed to proportional regimes—that undertake spend-

ing-driven expansion, presumably because these regimes are often associated with larger government and broader transfer programs. This finding is also consistent with the view that the majority-rule countries tend to have what is called in the United States “pork barrel” spending, which is spending targeted to electoral districts. Financial markets may believe that such spending increases when current expenditures and government investment rise. Much of what may be contained in the category of government investment (building roads and bridges) may have low returns under a majoritarian system when it is spending targeted to districts or swing states.

#### **Question 4: How do institutions shape bank loans?**

Given the prevalence of bank-based financial systems across the world, a large body of research has focused on how bank loans respond to laws and institutions. Using a sample of loans in 43 countries, Qian and Strahan (2007) investigate the effects of creditor rights on the ownership and terms of bank loans. They find that stronger creditor protection leads to more concentrated ownership, longer maturities, and lower spreads. The findings suggest that creditor rights interact with borrower characteristics to shape bank loans.

Bae and Goyal (2009) examine whether laws and enforcement are equally important to the three aspects of loan contracting—maturity, spreads, and size. Using over 63,000 loans to firms in 48 countries during 1994–2003, they conclude that it is enforcement, not merely the laws, that shape loan contracting. They show that better enforcement results in loans with bigger size, longer maturity, and lower spreads.

#### **Question 5: How do institutions shape the pricing of corporate risk?**

Institutions also affect corporate spreads. Using syndicated loans issued by firms in 38 emerging markets during 1990–2006, Agca and Celasun (2009) examine how external debt interacts with creditor rights to affect the pricing of corporate risk. They find that external debt has a significant and robust effect on corporate spreads in emerging markets. This adverse impact is magnified in countries with weak creditor rights.

#### **Question 6: How do institutions shape private access to capital markets?**

Research shows that institutions shape sovereign risk. A critical issue is how sovereign risk in turn affects private sector access to capital in emerging markets. Using firm-level data from 31 emerging-market economies, Das, Papaioannou, and Trebesch (2010) investigate how sovereign risk influences private sector access to international capital markets. They find that sovereign default exerts a strong negative impact on external borrowing volumes by domestic firms. Put differently, improved country risk perceptions enhance corporate borrowing. The study also concludes that political risk, as measured by the ICRG index, has an independent negative effect on both private sector debt and equity issuances. The policy implication of these findings is that countries can help promote private sector development by taking measures to reduce sovereign risk and avoid perceptions of default risk. Here, well-functioning institutions will go a long way.

#### **Question 7: How do institutions shape stock market development?**

It is widely believed that stock markets play a critical role in promoting saving and efficient allocation of financial resources. It is therefore critical to investigate what determines stock market development. Using a panel data of 42 emerging countries for 1990–2004, Yartey (2008) investigates the institutional and macroeconomic determinants of stock market development. After controlling for macroeconomic variables, he shows that political risk, as measured by the ICRG index, is a leading determinant of stock markets. To find out what types of institutions matter, the study further disaggregates political risk into four components: law and order, democratic accountability, bureaucratic quality, and corruption. All four components were found to be statistically significant in explaining stock market development.

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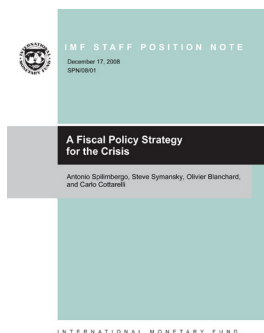
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