Categories, Creditworthiness and Contagion: How Investors' Shortcuts Affect Sovereign Debt Markets

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Abstract: How *sovereign* is a country's sovereign credit risk? Existing research tends to examine market constraints faced by national governments in relative isolation from the relationships between global capital and other sovereign governments. Where such commonalities are observed, they are typically understood to be grounded in shared exposure to global shocks, such as tightening liquidity or short-term contagion from crisis. We challenge this perspective: we argue that the price at which governments borrow internationally is shaped in the long term by investors' assessments of other countries with which a government is categorized. Explaining government access to capital markets thus requires that we understand how market actors categorize governments. For it is through such categories that interdependence in sovereign credit risk across nations may be explained. We test this claim through cross-national analysis of sovereign credit risk, measured in secondary market spreads for external sovereign debt and in the price of credit default swaps. We find that risk is shaped by the average credit risk for "peer" nations, where peers are defined by distinct investment categories including region, risk rating, and varying levels of development. An error correction model reveals significant long-term interdependencies in sovereign risk assessments in each category, net of global and domestic predictors of sovereign risk. In addition, short-term (monthly) changes in sovereign credit risk among peer countries bring about shifts in a government's sovereign risk, the effects of which persist throughout the subsequent year.

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What determines the prices that governments pay to access international capital markets? Sovereign borrowers have long experienced differences in their abilities to access international credit markets, as well as in the terms on which they can borrow. The interest rates paid by governments are influenced heavily by investors' appetites for risk and sovereign credit ratings, as well as by economic factors such as inflation and debt levels. In eras of high financial integration, global market conditions also affect the terms on which governments are able to borrow: high global liquidity and risk acceptance allows for easier access, all else equal; system-wide risk aversion or capital shortages result in more difficult access and perhaps, even, credit rationing.

Although recent research on financial market-government relations has pointed to the fact that different types of governments are differently constrained by global capital markets – for instance, developed versus developing nations; commodity versus manufacturing exporters; or governments that borrow from commercial banks versus from bond markets (Campello 2012, Mosley 2003, Kaplan 2012, Wibbels 2006) – scholars of political economy have yet to explore the role of countries' categorizations, and the "peer pressure" that results, in determining risk premia. In addition to considering how political institutions and events – such as the ideology of the governing party, the degree of democratic governance (Archer et al 2007, Saiegh 2005, Vaaler et al 2006), or the occurrence of elections (Bechtel 2009, Hardie 2006, Jensen and Schmith 2005, Spanakos and Renno 2009) -- affect sovereign risk premiums, we also need to theorize about how investors' classifications of countries generate differences in financial market-government relations.

We explore two aspects of "peer group effects," both of which can be illustrated by recent events in Europe. First, investors sort countries into categories, and these categories are used as heuristic devices. Therefore, the category in which a sovereign borrower is placed matters for market access. For instance, investors' changing categorizations of peripheral EU member states – from "emerging Europe" in the 1990s to "eurozone" in the 2000s to "PIIGS" in the 2010s – are

associated with shrinking or widening risk premiums, over and above country-specific outcomes. Although changes in risk premiums are partly the result of shifts in economic fundamentals -- fiscal burdens expanded markedly throughout Europe in the way of 2008's banking crises, bursting real estate bubbles and recessions – we posit that they also reflect shifts in how investors sort countries into groups. When investors are more optimistic about a given group of countries, each country in that group will experience an improvement in market access. But when investors are more pessimistic about a particularly set of countries, every borrower in that category will suffer – even if the country's fundamentals do not warrant such pessimism.

Hence, a sovereign borrower with "responsible, risk-free" peers is treated differently, all else equal, than one with "frontier market, risky" peers. This first aspect suggests a country with the same general economic and political profile will be treated differently depending on how professional investors categorize it: for instance, Turkey is evaluated differently when it is placed in "emerging Europe" or among "future EU members," rather than as a member of "Middle East/North Africa," "West Asia" or "emerging markets." Similarly, Brazil may have been assessed quite differently when it came to be known as one of the high-growth "BRICs" compared to when it was lumped alongside other Latin American countries which have long struggled to overcome legacies of past defaults and thus have been unable to borrow in their own currency (Eichengreen, Hausmann and Panizza 2003).

Recent events in Europe also illustrate a second aspect of "peer group effects:" how one's peers behave, in terms of economic and political outcomes, matters for investors' assessments of country-specific behavior. Put simply, investors evaluate sovereign borrowers not according to an objective set of criteria ("fiscal deficits greater than four percent of GDP are bad"), but according to what other, similarly-categorized countries are doing ("Spain's 2010 deficit may seem high relative to its fiscal position in 2007, but it's not nearly as large as Greece or Ireland's 2010 deficit"). If one's

peers pursue fiscal restraint, than an "average" country will look riskier than its peers. But if one's peers are fiscally profligate, the same "average" country will appear safer than its peers. Therefore, we can expect that, over time and across groups of countries, the same objective outcomes – a debt level of 60 percent of GDP, for instance – will have different effects on governments' capacity to access markets. Here, the identity of one's peers matters because other countries in the same category are used as the comparison group for policy outcomes.

In this paper, we analyze the effect of a country's category, and the behavior of other countries in that category, on the risk premiums paid by sovereign borrowers. Our statistical analyses lend evidence to the claim that peer group effects explain some of the variation in market constraints: the risk premium on a country's sovereign debt is predicted not only by its own fundamentals, but also by market assessments of countries with which it is categorized. As such, the results support the proposition that the nature of financial market constraints on governments varies, not only as a country's specific economic and political profile varies, and not only as global capital market conditions vary, but also as country groupings and behavior of countries in one's grouping vary. Hence, the way in which professional investors conceptualize and categorize individual sovereign borrowers can affect governments' capacity to access capital markets. "Peer group effects," for instance, allow financial crises – or, at least, higher risk premiums -- to spread within groups of countries, sometimes affecting borrowers that have experienced few changes in their objective circumstances. And these effects can persist over a number of years.

Crucially, however, we also find that there is a long-term correlation among the sovereign risk premia on government debt in different peer categories in non-crisis times as well. Short-term changes may disrupt these equilibria, but they are variously restored and, in many instances, persist over several months and years. These results force us to reconsider the extent to which sovereign debt markets are indeed "sovereign," and whether we can treat such market responses to

government actions as independent of such responses to events lying well beyond the nation's borders. Indeed, our results suggest another way in which governments fall victim to "push factors" which emanate from beyond their borders.

I. Investors, Sovereign Borrowing and Government Policies

The contemporary era of financial globalization, which has its roots in the collapse of Bretton Woods as well as in an ideational shift toward market-based liberalism, presents governments with opportunities as well as constraints.[1] Reduced barriers to cross-border capital flows offer governments -- as well as their citizens and firms -- access to a much wider set of potential investors. These investors, which include banks, mutual funds, official entities (such as foreign central banks) and individual (retail) investors, provide capital which allows governments to issue debt, finance their fiscal policies, and smooth consumption.

Access to global capital markets, however, comes with a cost: in order to maintain access to global capital markets – or to maintain access at relatively low rates of interest – governments must be attentive to the preferences of international investors. Because investors are concerned with minimizing the risk of sovereign default and of a loss of real value of their assets (Bernhard and Leblang 2006, Mosley 2003, Tomz 2007), they focus on assessing the prospects for future inflation (which may be affected by current monetary policy, the institutional structure of monetary institutions, and the level of public debt), as well as the willingness and ability of governments to repay their obligations. As such, investors could pressure borrowing governments to pursue monetary restraint, to limit debt levels and, in some instances, to enact neoliberal-oriented policy reforms. This "golden straightjacket" (Friedman 2005, Rodrik 2007) allows governments to do many

[1] On the determinants of capital account liberalization, see Brooks 2004, Brooks and Kurtz 2007, Mukherjee and Singer 2010, Quinn and Toyoda 2007, Simmons and Elkins 2004.

things ("golden," then), but also requires them to foreswear a broad swath of "big government" sorts of policies (the "straightjacket").

The logic of capital market constraints implies a cross-national, downward convergence of government policy choices and outcomes, in which governments privilege the need to satisfy international investors over domestic policy preferences and demands, and in which cross-national diversity in government policies was is eliminated. Empirical analyses of the convergence prediction, however, have suggested that the power of market actors vis-à-vis governments is often limited. Much cross-national diversity in economic and social policies persists, even as governments have become more similar in terms of overall monetary and fiscal policy outcomes (Mosley 2003, Wibbels 2006). Even among developing countries, the pressures generated by financial openness often were not sufficient to overwhelm the impact of domestic institutions and ideology (Avelino et al 2005, Brooks 2009, Plümper et al 2009).

At the same time, scholarship on financial market-government relations finds that investors' assessments of sovereign borrowers vary both across groups of countries and over time. In terms of the former, developed and developing nations are treated differently by investors, even when their economic fundamentals are similar (Mosley 2005). During most of the era of financial globalization, investors have assumed that wealthy, established democracies are very unlikely to default on their sovereign obligations. As a result, investors looked only at overall macroeconomic outcomes when deciding whether to invest (and at what price) in developed countries. And because these countries were free from the "original sin" that tainted emerging market sovereign debt (Eichengreen et al 2005), governments of developed democracies could borrow in their own currencies, and at relatively long maturities. These features served to insulate such governments somewhat from shifts in market sentiment, and they facilitated the continued cross-national divergence in many policy areas. Fiscal deficits that would be treated as "excessive" in the context of Latin America, for

example, sometimes were taken as more "normal" among European countries. A "developed nation discount" existed in private capital markets, and where a country was placed in investors'categorizations of countries ("developed," "emerged," "emerging") helped to determine its access to global capital markets.

In developing nations, however, default risk remained of central concern to investors. Many low and middle income countries were tainted not only by being identified as "developing," but also more specifically by the legacy of debt accumulation and debt crises. In the post-structural adjustment era of the 1990s, these governments were able to access international capital markets, but they did so with much greater scrutiny from investors. Investors worried about default and currency, as well as inflation, risk; this meant sustained attention to a wide array of government policies (a "broad" financial market constraint; see Hardie 2006) as well as the frequent need to borrow in foreign currencies and at shorter maturities (Eichengreen et al 2005). Financial flows were more volatile than those to rich countries, and, in terms of cross national convergence, economic globalization was associated with reductions in public spending (Rudra 2008, Wibbels 2006).

Cross-country variation in financial market pressures also results from the extent to which and they way in which governments access capital markets. Certainly, governments that borrow less from private capital markets – perhaps, for instance, because they are natural resource exporters and therefore have fewer financing needs (Campello 2012) – are less exposed to pressures from investors. Additionally, if bank lenders evaluate sovereign borrowers less stringently than do portfolio market lenders (see Devlin 1989, Kaplan 2012), then those governments that rely more heavily on bond market-based financing will find themselves more constrained. And, in terms of debt management, governments with longer-term, domestic currency-denominated debt will be less exposed to rollover and currency risk than are governments whose debt is shorter-term and foreign-

currency denominated. Although recent research has begun to investigate these more subtle variations across countries in financial market-government relations, much work remains to be done.

Turning to variation over time in financial market pressures, recent financial history suggests that investors' appetite for risk ebbs and flows. When global liquidity is higher, investors are more risk acceptant, and the premiums they charge for "suboptimal" government policies are smaller. Investors are more willing to invest in high-risk, high-return locations, and governments will have easier access to sovereign finance – as in 2006 and 2007, when many governments of low-income countries issued internationally-rated bonds for the first time. Such global liquidity booms serve to increase governments' autonomy vis-à-vis capital markets (Campello 2012). When global liquidity is lower, however, investors tend to behave more cautiously, perhaps even tending toward panic (Kindleberger 1978). Investors seek out low risk, low return assets, and they exact large penalties for policies and events that appear to increase the risk of default. At the extreme, investors' "flight to quality" leads to credit rationing for riskier sovereign borrowers. In the wake of the Latin American debt crisis of the 1980s as well as the Asian financial crisis of 1997-1998, risk aversion was a hallmark of global capital markets.

Variation over time in global market conditions means that, for sovereign borrowers, the (interest rate and credit access) costs associated with a given policy (for instance, a high level of debt, or a generous public pension system) also vary over time. When global liquidity is high, even borrowers with "questionable" policies can get credit at low rates of interest. But, in periods of low liquidity, even the "prettiest" (to invoke Keynes' "beauty contest" analogy) borrowers may find themselves unable to tap global credit markets. The mood of global capital markets also affects developing nations more than their developed country counterparts: for developing nations, "push" (external) factors often are as important as, if not more important than, country-specific ("pull") factors to determining the cost and availability of financing (Eichengreen and Mody 2000).

While scholars of international political economy have noted the variation over time and across groups of countries in how investors evaluate sovereign borrowers, extant research has not yet explored the precise ways in which this variation affects the risk premiums paid by governments (and, therefore, the capacity of governments to act vis-à-vis capital markets). Variation across groups of countries suggests that governments will be more or less constrained by capital markets by virtue of the groups into which they are placed. The "original sin" argument, for instance, implies that countries that are deemed to be "developing" will have difficulty accessing markets, particularly at longer maturities and in their domestic currencies. The assumption underlying "original sin," though, is that being classified as "developing" is completely endogenous to economic and political fundamentals, and that these classifications are often very sticky (so that countries rarely graduate from, or are demoted from, a given grouping). Yet, beyond noting the differences in developed and developing nations, scholars have done little to explore the effects of changes in categorizations on sovereign access to credit, or the mechanisms by which investment professionals classify and reclassify countries.[2]

Moreover, changes over time in investors' risk attitudes implies that the impact of a given policy outcome (for instance, the government budget balance) on interest rates also will vary. A budget deficit of 3 percent of GDP may lead to a 100 basis point premium – compared to a balanced budget – in a period of capital market risk aversion, but be associated with only a 30 basis point premium in a period of risk acceptance. While most scholarship assumes that "financial market constraints" are constant over time (at least during the contemporary period of financial openness), the occurrence of booms and busts suggests otherwise. One implication of such variation is that policy outcomes that are remarkable in one period – for instance, a budget deficit of 6 percent

[2] Another implication of this variation across countries is that the effect of a given economic or political factor on sovereign risk premiums – for instance, the effect of government debt/GDP – should be conditional on country category. That is, we might find that the slope estimates (as well as the intercepts, perhaps) for the independent variables are different across groups of countries.

of GDP – may be viewed as quite normal in other periods.[3] As a result, what a country's peers are doing (are they pursuing fiscal restraint or fiscal expansion?) can affect how a country is evaluated. Indeed, credit ratings agencies often remind observers that their assessments are of relative, not absolute, risk;[4] if most sovereign borrowers are pursuing loose monetary policy and fiscal expansions, then those countries with inflation rates of 3 percent and budget deficits of 4 percent of GDP may still receive AAA ratings (IMF 2010).[5] Such peer effects, which we discuss in more detail below, also suggest that variation over time in market constraints goes beyond broad patterns of gluts and shortages in the global capital system.

II. Country Categorizations and Peer Group Effects

The professional investors who purchase sovereign debt, either at the time of issue or in secondary markets, are concerned with assessing the risk and return of government bonds. These investors often manage portfolios that include a range of asset types – not only sovereign debt, but also corporate debt, equities, derivatives and cash – and they often invest in a range of locations. Given investors' need to compare across numerous countries, multiple instruments, and dozens of individual issues, they often rely on information shortcuts. For instance, investment professionals may use outcomes on and trends in main macroeconomic indicators – budget deficits, debt and

[3] Again, this variation also can affect how we ought to conduct statistical analyses of sovereign risk premiums. The effects of independent variables may be conditional on underlying risk attitudes. Including global market conditions as a control variable is an insufficient empirical fix: it is not only that global market conditions are an important independent variable (as in Hill et al's 2010 study of sovereign ratings), but that the effects of other independent variables are conditional on global market conditions. Empirically, it is the slope, as well as the intercept, of our regression estimates that may vary as market attitudes vary.

[4] See, for instance, http://www.standardandpoors.com/ratings/definitions-and-faqs/en/us.

[5] This is, in some ways, akin to Tomz's (2007) argument that what matters for sovereign borrowers' reputations is not only whether a government has repaid its debt in the past, but the economic conditions under which it repaid (or failed to repay) its debt. Governments that always default ("lemons") suffer the most pronounced reputation effects, while those that always repay, even during economically difficult times ("stalwarts") experience the greatest reputational boost.

inflation – as indicative of a country's investment risk. Reliance on a limited set of indicators was common practice when assessing sovereign debt issued by advanced democracies, where it was assumed (until the Great Recession and the subsequent European debt crisis) that default was a very distant possibility. When evaluating developing country issuers of debt, however, investment professionals looked at a broader set of indicators, including supply-side policies, elections and government ideology, as well as macroeconomic outcomes (Mosley 2003).

These differences in information shortcuts meant that some governments faced greater financial market-based pressures than others. Being classified as a "developed" rather than as a "developing" nation gave governments greater autonomy vis-à-vis financial markets. An important part of financial market-government relations, then, concerns the ways in which investors sort and categorize countries. For instance, countries that move from "developing" to "developed" should experience access to financing at lower costs; when such a country's economic fundamentals deteriorate, or when its political situation becomes more volatile, investors will give it the benefit of the doubt.

To take an example, when investors moved Greece from "emerging Europe" (in the 1990s) to "eurozone," it enjoyed a large drop in government bond rates. And those countries that received the "emerging markets" label in the 1990s were assumed to have better prospects for growth, and were better able to access capital markets, than were their "frontier market" counterparts. Categorization, therefore, can be beneficial to sovereign borrowers who are placed in a group populated by more stable, lower-risk sovereign borrowers.

We posit that country categorizations have other implications for how sovereign borrowers are assessed by financial markets: first, investors' risk acceptance and aversion varies across categories. As a result, contagion – of enthusiasm or of pessimism – occurs not only at the global level (as many observers have suggested) but also at the peer group level. For example, when a crisis

prompts private investors or credit ratings agencies to reassess similar borrowers, it is borrowers in the same category – rather than sovereign borrowers generally – who are reassessed. These categories, and the contagion they facilitate, may be geographic (as in the East Asian financial crisis of the late 1990s), or they may be based on structural position in the world economy (commodity exporters, emerging markets). Crucially, such interdependence may not be confined only to times of crisis or panic, nor merely a symptom of declining risk appetites. Rather, contagion of sovereign risk assessments may occur throughout the global liquidity cycle: contagion effects may occur as part of a long-run equilibrium among countries of the same category.

Although previous research establishes the importance of country-specific events and policies, as well as global market liquidity and attitudes, to sovereign risk assessments (e.g. Campello 2012), we draw attention to an intermediate level of influences. In their assessments of a specific sovereign borrower, investors are more sensitive to what is happening in that borrower's "neighborhood" than they are to what happens in the world as a whole:

> ***Sovereign risk premiums will be significantly associated with the risk premiums paid by other borrowers in the category, even controlling for macroeconomic policies and global market conditions (Hypothesis 1).***

We expect country categories are meaningful, above and beyond the economic and political characteristics that may typically be associated with them; even if a country is placed in a category for reasons related to its policy profile (so that categories might seem endogenous to country characteristics), the stickiness of these categories and the diversity of countries within these categories render such peer group classifications important in a way that goes beyond economic fundamentals.

We discuss in more detail in Section III how we operationalize "peer groups:" because professional investors rely on a variety of categorization schemes, we estimate peer group effects on the basis of geographic region (e.g. Latin America, sub-Saharan Africa); level of economic and

market development (e.g. developed market, emerging market, frontier market); and credit quality (countries that are in the same, or similar, sovereign ratings categories). One striking fact about peer effects is that country categorizations can be quite sticky over time. In the mid- to late 1990s, those governments that were assumed to be poised for EMU membership benefited from a virtuous circle, based on a recategorization from "emerging Europe" to "Europe" or "developed country." Interest rate premiums declined, allowing debt to be serviced more cheaply, facilitating the reduction in overall levels of debt, and additional declines in risk premiums. The declines appeared to be over and above what would be produced from improvements in macroeconomic outcomes alone (like inflation and fiscal balances), although that certainly was part of the dynamic.[6] Even as many EU governments ran "excessive" (by the Maastricht criteria) deficits, violated the Stability and Growth Pact and accumulated public debt in the mid-2000s, investors assumed that euro-zone governments were, as a group, safe. In the wake of the European debt crisis, investors have revised their classification, treating the "PIIGS" (Portugal, Ireland, Italy, Greece and Spain) as characterized by greater default risk than their eurozone counterparts. But this change was slow to occur, illustrating the fact that changes in categorizations often lag far behind changes in fundamentals.

Indeed, the government of Korea has complained for several years that MSCI, one of the main providers of portfolio market indices and other products, has refused to reclassify Korea from "Emerging Markets" to "Developed Markets." MSCI concedes that Korea is comparable, in many ways, to developed nations; but it has cited various market-related issues as the basis for its annual decisions.[7] Implicit in the Korean government's campaign for a change in status (it was reclassified

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[6] Gray (2009) argues that investors perceived EU membership as something that would analysis locks governments into a set of policies. As such, the financial market rewards were driven not only by concrete reforms as part of the accession process, but also by expectations about EU (or EMU) membership as a reform anchor.

[7] See the discussion in MSCI's 2012 classification review: http://www.msci.com/eqb/pressreleases/archive/Mkt_Class_2012.pdf

by FTSE, another index provider, in 2009) is the claim that investors will be more inclined to invest in Korean stocks and bonds, or to invest with lower risk premiums, if Korea is treated as among the ranks of the developed.[8]

Country categorizations also may reflect marketing by investment professionals, rather than fundamental similarities among nations in a category. "Emerging markets" was a term coined in 1981 by Antoine van Agtmael, an investment professional who found "the developing world" or "the Third World" to be "too depressing" as descriptions of low and middle income nations.[9] While Agtmael, who worked at the International Finance Corporation (an arm of the World Bank), used the term to refer to the developing world *writ large*, investment professionals now draw distinctions among countries, classifying some as emerging and others as frontier markets. Although countries within these categories have many things in common – for instance, levels of economic development, liquidity of equity markets or degrees of respect for rule of law – there often are significant differences among them, including in fiscal policies and sovereign debt management strategies. Yet peer group effects mean that such countries often are treated similarly, in terms of risk premiums, by private investors.

Likewise, the BRICS – Brazil, Russia, India, China and now South Africa – represent a set of large emerging economies and often are treated as comparable to one another. Goldman Sachs' James O'Neill coined the term in a November 2001 paper;[10] he predicted that the four BRIC countries would grow at higher rates, and amass more wealth, than their developed country counterparts. The term gained popularity in the mid-2000s and particularly in the wake of the Great

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[8] Such changes are somewhat rare: the FTSE (another major index provider) included 59 nations in its indices in 2011; these were categorized as Developed, Advanced Emerging, Secondary Emerging and Frontier. In 2011, only three countries (the Czech Republic, Malaysia and Turkey) were recategorized. Indeed, while many countries were added to the FTSE system with the FTSE's move in 2009 from three to four categories, only 6 countries have been recategorized since 2001.
[9] "An Emerging Challenge." *The Economist*, April 15, 2010.
[10] James O'Neill, "Building Better Global Economic BRICs." Goldman Sachs Global Economics Paper 66, November 2001.

Recession, as much of the growth in the global economy was centered on large developing nations. The BRIC countries, though, have many differences among them, including their political institutions, their level of development and their export profiles. To the extent that investors assume that the behaviors and outcomes in one BRIC will predict behavior and outcomes in others, this constructed peer group will have important implications for governments' relations with international capital markets. Interestingly, BRIC country leaders have begun to act as a political entity, attempting to use this market-created grouping as a basis for coordinating behavior in the global economy. In 2009, the BRIC leaders held their first annual summit meeting. South Africa was formally invited to join the group in December 2010;[11] O'Neill has since argued that South Africa fits uneasily with the original four BRIC nations.

No matter their origins, by defining the relevant comparison group for a given sovereign borrower, country classifications can have a second type of effects on sovereign risk premiums. Investors' assessments of sovereign risk are likely to be relative ones. Most investors active in sovereign debt want to hold *some* amount of sovereign debt, rather than avoiding sovereign debt completely. Although investors may sometimes "flee to quality" (demonstrating a preference for low risk, low return assets) and at other times "seek returns" (evidencing a desire to hold high risk, high return issues), they rarely avoid sovereign debt entirely. Given this, investors will sometimes find themselves comparing countries which all have large government budget deficits, or which all have pursued policies of fiscal restraint. As the behavior of countries varies, so will investors' reactions to a fixed policy outcome: an annual inflation rate of 3 percent will be rewarded when most countries' inflation rates exceed 5 percent, but penalized when most countries' inflation rates are below 1 percent.

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[11] Contemporary observers noted that both Egypt and Nigeria also had been candidates for an invitation to join the BRIC entity.

Country categorizations enter this process by defining for investors the relevant comparison group: given the need to sort countries and to use information shortcuts, investors are more likely to compare sovereigns to a subset (e.g. frontier markets, emerging markets, Latin American nations, AAA-rated borrowers) of all borrowers rather than to all borrowers globally. Therefore, we can expect that

> ***Sovereign risk premiums are associated, all else equal, with what other borrowers in the same category are doing (in terms of government budgets, and deficits). The fiscal management of one's peers, as well as one's own fundamentals, is correlated with a government's sovereign credit risk. (Hypothesis 2)***

Our second hypothesis moves from the effort to establish whether interdependence exists in sovereign risk assessments among peers, to an attempt to establish the basis for those assessments of sovereign risk. The implication of this hypothesis is that market evaluations of whether a country is a risky investment or not depends not simply on the nature of its "peers" but also on a subjective assessment of what constitutes a risky investment. If latter is shaped by the inconstant performance of a set of countries (which shares a regional or risk categorization) outside the nation's borders, this is additional evidence of the highly subjective and time-varying nature of investors' behavior. To the extent that market assessments of risk – and hence the price at which governments can borrow on international capital markets – is shaped by the riskiness of peer countries, net of common shocks and domestic fundamentals, we have even more reason to rethink the extent to which sovereign debt is indeed sovereign.

In the next section, we provide a preliminary test of these hypotheses in data that allow us to estimate whether commonalities among countries in market risk assessments are merely episodic responses to crisis or changes in global liquidity, or whether they represent persistent, long-term interdependencies in the relationship between global capital and groups of national governments.

III. Data and Empirical Model

Dependent Variables. Our analysis of market responses to national government policies focuses on two principal metrics of sovereign risk. The first is the sovereign spread, or the difference between the yield on a given country's government debt and what is considered to be risk-free government bond of an equivalent duration (*Spread*). Sovereign spreads are said to capture both the expected losses from default as well as a risk premium associated with the possibility of unexpected losses (Remolona et al. 2007). Sovereign spreads are widely employed in analyses of sovereign credit risk to capture the market evaluation of the creditworthiness of a government (Block and Vaaler 2004; Obstfeld and Taylor 2003). In this research, riskier investments are associated with higher spreads, which also are correlated with lower sovereign risk ratings (Cantor and Packer 1996; Kaminsky and Schmukler 2002). We test our hypotheses here using data sets of annual and monthly stripped spreads from the principal index of emerging market debt prices, the JP Morgan EMBI Global Bond Index, for 26 countries from 2001 – 2010.[12]

Our second dependent variable draws upon credit default swap (CDS) contracts on external sovereign debt. The CDS is a leading form of credit derivative through which investors hedge the risk of default on fixed income investments. In essence, the CDS allows investors to purchase insurance against default or restructuring of fixed income investments, be they sovereign or corporate debt. In a typical CDS contract, the purchaser of default protection pays a fee to the other party, the seller of default protection, during the term of the CDS contract; if the government defaults or restructures its debt, the seller of the CDS must compensate the buyer for the loss (Longstaff 2011, Mengle 2007). By capturing the premium that investors will pay to hedge a default risk, CDS prices also approximate the market perception of the creditworthiness of sovereign

[12] By definition, the EMBI indices include only emerging (not developed) markets with sufficiently liquid public debt issues. A bond's stripped spread adjusts the market price of the bond by subtracting (stripping) the present value of the collateralized cash flows from the price of the bond. The Appendix provides a complete list of variable definitions and sources.

borrowers. Moreover, CDS markets are more liquid than sovereign debt markets and thus are said to more closely approximate the perception of risk associated with government borrowing at any given time (Longstaff et al. 2011). We examine a set of monthly CDS prices for a 26 developed and developing countries from October 2000 to January 2010.

Independent Variables. We regress our two measures of sovereign risk on an array of domestic and global variables meant to capture the principal determinants of sovereign risk. At the domestic level, scholars have found that defaults are closely associated with the state of the domestic economy (Grossman and Van Huyck 1988). In addition, empirical research has shown that domestic macroeconomic and government financing variables are among the principal determinants of sovereign risk ratings (Archer et al 2007, Cantor and Packer 1996). We include the following domestic economic variables in our analysis: government consumption, the ratio of sovereign debt to gross national income, the average maturity on new external debt commitments, the budget balance, and inflation. We also include a measure of capital account openness, which may be taken by investors to signal the creditworthiness of the government to the extent that it is willing to subject itself to the 'discipline' of capital flight (Bartolini and Drazen 1997). Capital account openness also allows governments to gain access to broader capital flows, which may decrease the price at which governments borrow.

In addition, we include an array of political variables that have been found in previous research to affect market risk assessments. These variables include the level of democracy, the partisanship of the executive and largest opposition party, year in the electoral cycle, and whether the country's electoral institutions are presidential or parliamentary (Bernhard and Leblang 2006, Biglaiser and DeRouen 2007, Freeman et al 2000, Saiegh 2005).

We control also for international market trends which affect country-specific sovereign risk spreads. These include measures of the U.S. prime lending rate, which has been shown to have a

negative impact on investors' demand for emerging market debt: as interest rates in the U.S. rise, global liquidity declines, as do the risk appetites of international market actors (Eichengreen and Mody 1998, Kaminsky and Schmuckler 2002). We include a measure of US stock market returns (US Market), since bond spreads for developing nations have been shown to also covary with US stock market volatility (Pan and Singleton 2008). We also control for the chance in yields on US Treasury bonds, which may indicate shifts in US growth, and hence in the global business cycle, as well as any flight to-quality dynamics that may affect sovereign credit spreads (Longstaff et al. 2011).

Interdependence in Sovereign Risk. The independent variables above have been shown by a rich body of political economy research to have some long-term correspondence to the principal measures of sovereign risk (Mosley 2003, Tomz 2007). Such equilibrium relationships may be disturbed by common shocks such as crises or sharp changes in global liquidity. Indeed, Longstaff and colleagues found that credit spreads reveal a high level of commonality over time (2011: 76). Yet, it is not clear to what extent co-movements in country risk are simply temporary disruptions of each country's own risk status, occurring in exceptional market conditions, or whether there exist long-term and persistent interdependencies in the ways that markets assess the riskiness of, and hence affect the 'room to move' (Mosley 2003) afforded, a national government.

Our analysis seeks to identify whether, net of the domestic and global variables shaping country risk, the risk premiums attached to sovereign debt – and hence the price and possibility for fiscal autonomy – are interdependent across countries. Such interdependence would emerge if investors' evaluations of one country are shaped by evaluations of other countries with which that nation is categorized. If co-movements in risk evaluations are only temporary disturbances, such as in times of crisis, and do not correlate over the long-term, then we may consider such interdependencies to be exceptional, such as instances of well-known contagion. However, if country risk evaluations c-vary over the long term among countries that share a categorization – be

it "emerging markets" or AAA-rated sovereign borrowers -- then the basic relationship between states and markets should be reconsidered, along with central assumptions of independence in our analyses of international political economy. Like Longstaff and colleagues, we seek to understand the extent to which sovereign credit risk is in fact "sovereign" and how much owes to factors based in the political economy of other nations.

We treat such interdependencies in market evaluations of sovereign creditworthiness as a type of diffusion process. Such processes are said to occur when outcomes in one country are affected systematically by the outcomes of commensurate processes in other countries. Increasingly, scholars have treated cross-national diffusion processes as a form of spatial autocorrelation, rather than merely a spatial error term (Franzese and Hays 2007). Such an approach seeks to model interdependencies in theoretically-relevant ways rather than simply treating contemporaneous correlations among countries' risk spreads as a nuisance parameter. To the extent that there is contagion or interdependence in market outcomes across multiple countries, then we wish to identify, measure and determine the basis of such commonalities. Such a task turns our attention to the question of defining the relevant peer groups, or channels of diffusion in sovereign credit risk. Thus, we model the interdependence in market responses as the weighted average of the outcome variable—here, CDS prices and bond spreads —among "proximate" nations, where proximity here is defined by four theoretically-relevant categories rather than only by geographical distance.[13]

We follow the standard model for estimating the presence of diffusion in the term $\varrho(WY)_{it-1}$, wherein the W matrix specifies which countries' risk evaluations are expected to influence that of country i at time t. Crucial to this task is the creation of a matrix of weights that captures the influence that market responses to one category of 'sending' countries will have on the receiving nation. The coefficient on the spatial weight permits us to answer the question of how membership

[13]Beck, Gleditsch, and Beardsley 2006.

in different peer groups or categories affects the standing of a sovereign government in the eyes of international bond market actors, net of the array of features (country-specific and global market-specific) that may directly affect that market evaluation.

We specify a series of spatial lags, or **W** matrices, to operationalize four important peer groupings which professional investors use to categorize countries.[14] The first recognizes the tendency of professional investors to lump nations – often reflected in the existence of region-specific investment funds -- into geographic portfolios. This spatial lag estimates the extent to which the average sovereign risk assessment of other countries in the region affects a government's own sovereign credit risk. Thus we create the variable *Region*, which groups nations into the following major geographically-based categories: Asia, Western Europe, post-Communist Europe, Latin America, Non-Latin Caribbean, Middle East and North Africa, North America, South Asia, and Africa.

Next, we test whether investment behavior reveals patterns of interdependence among countries that are classified by level of development. Specifically, we test whether investors utilize a blunter, 3-tier categorization, or whether indices that acknowledge differences among emerging markets as well reveal systematic interdependence in sovereign credit risk. The first of the development-level categorizations, *FTSE*, groups countries according to five major investment categories: Emerging Markets; Frontier; Developed; Advanced Emerging; and Secondary Emerging. According to the FTSE, such categorizations are based on "a range of criteria which was developed in conjunction with international investors" which are reviewed annually.[15] The next development-

[14]Franzese and Hays 2007.

[15] http://www.ftse.com/Indices/Country_Classification/. The FTSE uses these classifications when it compiles its various stock market indices. In 1999, the FTSE integrated its index with Baring's Emerging Market Data series. The resulting All World Index sorted countries into three categories. In 2004, in an effort at greater transparency, the FTSE announced its classification rules. Based on

level peer category is defined by a blunter 3-tiered categorization of countries, developed and utilized by the investment firm MSCI, namely: Emerging Markets; Frontier Markets; and Developed Markets. Like the FTSE, MSCI employs criteria for categorization that are said to be developed on the basis of discussion with the investment community.[16] In this sense, the categorizations recognize both objective differences in levels of development, and subjective terms on which market actors place countries in different investment categories. As with the FTSE, the countries included in each category are reviewed (and in some cases re-classified) annually. Crucially, the FTSE and MSCI categories cross-cut the geographic peer groups, allowing us to test an important hypothesis about the ways in which countries are classified by market actors. For instance, MSCI's "Emerging Markets" group includes Brazil, Chile, Colombia, Mexico and Peru in the Americas, and groups these with the Czech Republic, Egypt, Hungary, Morocco, Poland, Russia, South Africa and Turkey as well as China, India, Indonesia, Korea, Malaysia, Philippines, Taiwan and Thailand in Asia.

Finally, we test the hypothesis that countries are categorized into peer groups according to their sovereign credit rating (*Risk Rating*). To the extent that a sovereign in the AA category, for instance, experiences a default, restructuring or other unexpected credit event, it is possible that investors may begin to re-evaluate the meaning of that category and assign a higher risk premium to other countries in that grouping. Sovereign risk ratings are qualitative measures of the probability of default that are published by three major credit rating agencies (Standard and Poor's, Moody's and Fitch) on the basis of a broad set of economic, social, and political factors (Jaramillo and Tejada 2011). The ratings attempt to capture both the willingness and the ability of governments to repay

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consultations with market participants, the FTSE issues an annual review of classifications, putting some countries on "watch" and reclassifying others.

[16] http://www.msci.com/products/indices/country_and_regional/em/. MSCI launched the first emerging markets index in 1998; they introduced the "frontier markets" category in 2008.

their obligations. We utilize the weighted average Fitch Sovereign Rating for each country and year, removing the +/- designations (so that AA+, AA and AA- country-years are treated as a single group) and transforming ratings into integers ranging from 1-12 with higher scores representing higher risk. Our analysis will test whether such categories serve as meaningful channels of diffusion of sovereign credit risk.

Empirical Model. Because we are interested in measuring whether interdependencies among market responses to a given nation are merely episodic – such as a temporary crisis - or whether they represent long-term equilibrium relationships, or both, we employ an error correction model (ECM) to estimate these relationships. Although such models are known to be well-suited for the analysis of cointegrated data, they are appropriate also for the analysis of stationary data series that are not cointegrated but for which we have theoretical reasons to explore both long- and short-term relationships (De Boef and Keele 2008). In general, error correction models estimate the rate at which Y_t returns to equilibrium after a change in X_t. The single-equation ECM takes the following form:

$$\Delta Yt = \alpha_0 - \alpha_1(Y_{t-1} - \beta_1 X_{t-1}) + \beta_0 \Delta X_t + \varepsilon_t$$

In our case, we estimate changes in Y (sovereign spreads and CDS prices) as a function of the vector of lagged X political and economic variables known to affect sovereign risk, and of the short-term changes that bring these variables out of their equilibrium. Among the independent variables, we include the spatial weights to capture the impact of different categories of nations on whose market evaluations a government's own risk premium may depend. In the equation above, the short-term effect of changes in X on Y is captured by β_0, and the long-term or equilibrium relationship between those variables is estimated in the coefficient β_1. The rate at which the

correction or re-equilibrium is achieved – i.e., the error correction – is measured by the coefficient α_1 (De Boef and Keele 2008). The equation above can be rewritten and estimated in OLS as:

$$\Delta Y_{it} = \alpha + \phi Y_{i,t-1} + \beta_k \Delta X_{i,t-1} + \beta_j X_{i,t-1} + \varepsilon_{it}$$

Our estimation strategy relies on a pooled cross-sectional time-series analysis. We employ a generalized least squares estimator, and include country fixed effects and a linear time trend to control for country and temporal dynamics not explicitly modeled in the data. We also correct for first order serial correlation and heteroskedasticity in the errors. The use of country dummies restricts our analysis to within-country effects, which, along with the panel-corrected standard errors, sets up a rather conservative test of our hypotheses as there is typically more cross-sectional than intertemporal variation in sovereign risk. Yet, the use of fixed effects is particularly important for our purposes as we wish to set aside country-specific legacies that may affect sovereign ratings such as 'original sin' of historic default, or the difficult-to-measure qualities that make Argentina, Argentina. We first examine bond spreads on sovereign debt for a set of 26 countries and then turn to monthly changes in sovereign risk measured both by CDS prices and bond spreads.

IV. Results

As noted above, our model rests on the premise – well-supported by theoretical and empirical research – that there are significant long-run relationships between a government's sovereign credit risk and an array of domestic political and economic variables. To the extent that such relationships are disturbed either by domestic events such as elections, or international shocks such as changes in liquidity or a debt crisis elsewhere, we expect the equilibrium relationships to be restored with the passing of these crises. Controlling for these long and short-term trends, however, we expected that market assessments of sovereign creditworthiness for one country may be tied also

to corresponding market evaluations of the credit risk of countries lying beyond the nation's border, specifically, in countries with which a government is categorized.

Table 1 offers an initial test of our hypothesis in annual data on the stripped spreads on sovereign debt. In this and the other tables, country fixed effects are included in the analysis but are not reported for the sake of brevity. The results provide support for our hypothesis of long-term interdependence among country risk spreads, while also indicating that short-term movements in sovereign risk respond to contagion, or deviations from that long-term relationship within distinct categories. The magnitude of interdependence, however, depends heavily on the nature of the category: in the annual data we find evidence of long and short-term interdependence in sovereign credit risk within geographic regions. When we use the *FTSE* 5-tiered scale, however, there is only a long-term correlation among the spreads. Turning to the monthly data, however, we find that the contagion of sovereign risk assessments persists into the future in some investment categories; in other categories, we find evidence of both short- *and* long-term interdependencies.

In Table 1, the coefficients on the lagged independent variables ($X_{i\ t-1}$) indicate the longer-term equilibrium relationship between those variables and the sovereign bond spreads. The magnitude of the relationship depends not only on those coefficients, however, but also on the coefficient on the lagged dependent variable ($Spread_{t-1}$), which captures the rate at which changes in Y return to equilibrium. Specifically, the parameter capturing the long-term multiplier is defined as $\Upsilon = \beta_i/-\phi$ (De Boef and Keele 2008, 191; Kaufman and Segura-Ubiergo 2001, 587). The first differences of the X variables, in turn, estimate whether short-term changes in X – here, measured annually – bring about changes in Y. The ECM permits us to estimate both the size of those changes, and the rate at which such departures from the equilibrium persist – i.e., the time it takes for the long-term relationship to be restored.

Insert Table 1 here

The first thing that we observe in Table 1 is that the absolute value of the coefficient on the lagged dependent variable (Spread $_{t-1}$) is larger than 1 in three of the four model specifications, meaning that in each instance the rate of correction is shorter than the time frame in which changes are measured here. Thus, when we measure diffusion among countries grouped by *Region,* risk rating (*Fitch)* or five-level development category *(*FTSE), the changes in sovereign spreads are correct in less than a year's time. This is not surprising given that the depth and liquidity of international markets permit investors the opportunity to evaluate and re-evaluate their investments on a daily, or even hourly, basis. Measuring both the level and change in sovereign spreads on an annual basis thus obscures a tremendous degree of intra-year variation in sovereign credit risk.

Examining the coefficients on *Region* peer spreads, we observe both long and short-term correlations. The coefficients indicate that the long-term relationship between a country's spreads and that of its regional peers, Υ, is positive and significant; the coefficient of .19 implies that, for every basis-point increase in the spread for other countries in the region, the baseline country will experience a .19 basis point rise in its bond spread. The coefficient on the first difference of the diffusion variable *(⊿ Peer Spread)* indicates that a one-year increase in the average spreads among a country's geographic peers will disrupt this equilibrium relationship, bringing an increase in the government's own spreads over the course of that year. However, as mentioned above, the coefficient on the lagged *Spread* level indicates that the error correction rate is less than the units of time (years) measured in this analysis. Thus, we do not observe persistent effects of such short-term contagion. Therefore, we find significant confirmation both that a government's sovereign risk spread is tied in the long term to those of its neighbors, all else being equal, and that short-term changes in the spreads within a region likewise can bring significant, if short-lived, changes to the price at which a government can access international bond markets. Note that these effects are over

and above global market conditions as well as country-specific outcomes, both of which are accounted for in our models.

Other variables in Table 1 likewise confirm our expectations and are consistent with existing research on the domestic and international forces that shape sovereign risk premia. For instance, we observe that the higher a country's level of sovereign debt as a share of gross national income, the greater its risk and, thus, the higher the price that investors demand in order to hold a country's debt. A short term rise in the government's sovereign debt ratio also brings a one-off increase in the sovereign risk spread. Again, however, such effects dissipate rapidly. In addition to a government's overall debt burden, investors are widely known to follow closely the trends in fiscal management in order to assess creditworthiness. This view is confirmed in the coefficient on the overall budget balance, which reveals that the more positive the fiscal balance, the more likely a government is to be able to meet its debt payments and thus the lower the spread on sovereign debt. This effect holds in most model specifications except the third, where only short-term changes in budget balance are significant. We also find some support for the expectation that more open countries are considered to be less risky, as capital account openness subjects governments to market discipline via capital flight (Bartolini and Drazen 1997). This effect is captured in the coefficient on *KA Open*, which indicates that in the long and short term, countries with fewer capital account restrictions have lower sovereign risk spreads. This effect is significant in the equilibrium, lagged variable, for three of the four specifications. We do not find that annual levels or changes in inflation correlate significantly with the sovereign spread.

Turning to the political variables, we see in Table 1 that, consistent with previous research, the timing of the electoral cycle has a significant impact on indicators of sovereign risk. In particular, the coefficient on *Years to Election* indicates that sovereign bond spreads are systematically lower the further away an election is. Indeed, elections have been shown to be significant moments of

uncertainty about future macroeconomic policy management (Bernhard and Leblang 2006, Jensen and Schmith 2005). However, year-to-year changes in the electoral cycle do not significantly alter sovereign bond spreads. Interestingly, there is not a significant difference between governments headed by Left-leaning executives and the reference category (Center), although in some specifications we see that Right executives do have a meaningfully lower spread than centrist-headed governments, all else being equal; this effect is significant at the 90% confidence level in all but the first specification. Finally, the coefficient on the *US Prime Rate* is supports the claim that, in times of low liquidity, when U.S. interest rates are high, investors become more discriminating with regard to risk and thus charge a higher price to hold emerging market debt. This equilibrium is disturbed by one-off changes in U.S. interest rates, which may perforce of that increase may temporarily contract spreads below their historic relationship, all else being equal. However, over the long term, the positive link between U.S. interest rates and sovereign risk spreads is restored.

The results in Table 1, while supportive of our expectations, indicate that market corrections in sovereign risk spreads usually occur at a time frame shorter than a year. Accordingly, we move to examine data measuring sovereign risk premia on a monthly basis. We consider both the price of insuring against sovereign default (*CDS spreads*) and the month-end Sovereign Stripped Spreads from the EMBI Global database. While still much more aggregated than daily or hourly data on fixed income market movements, the monthly data allow us to capture more closely the variations in sovereign risk premia within as well as across years. Table 2 examines month-end CDS spreads for 26 countries from October 2000 to January 2010. Once again, we examine these relationships using an error correction model. Because most political variables do not change on a monthly basis, we regress the CDS spreads on just the lagged levels for the political and other variables for which we do not have monthly data. Country fixed effects and a linear time trend are again included in the ECM specifications, but not shown below for ease of presentation.

Insert Tables 2 and 3 here

The analysis of the monthly CDS prices is reported in Table 2, and the monthly *Spreads* in Table 3. As discussed above, the CDS contract functions as insurance against sovereign default, so that the higher the price attached to this contract, the greater the perceived risk of default. The monthly prices on 5-year five-year sovereign credit default swaps, also referred to as a spread, are measured in basis points (Longstaff et al. 2011). The analysis of these data in Table 2 provides additional support for our hypothesis of interdependence among sovereign risk premia for countries in three of the four categories we examine. At the same time, these results allow us to refine our understanding of which peer groups serve as mechanisms of transmission for contagion in sovereign debt markets in both the short and long term.

The first thing we observe in Table 2 is that the error correction process in CDS markets operates on a different temporality than does that of the secondary market for sovereign debt. Looking at specification 2, where countries are categorized by *Fitch* rating, we find a long-term equilibrium correlation between the CDS yields of countries of a common risk rating, be it AAA, BB or C. Moreover, monthly changes in the risk premium of other similarly-rated countries bring short-term changes in the same direction for the reference country. Specifically, for every 1 basis point increase in the price of a CDS contract for countries of the same risk rating, the reference country's spread rises in turn by 0.31 basis points. Short-term shifts in the CDS spread for credit-rating peers bring an immediate 0.17 basis point increase in CDS spreads. The coefficient on the lagged dependent variable indicates, moreover, that the impact of short-term changes in CDS prices among peers is quite persistent: after one month, only 13 percent of that increase has been corrected, and five months later fully half of the increase remains. Indeed, it takes a full year for 96 percent of the error correction – the impact of the short-term change in the CDS prices of other countries in the same sovereign risk category – to occur. Peer effects thus are felt quite immediately in a country's

own risk spread, but they also persist for more than a year, suggesting that associations among countries and the blurring of national differences occur not only in times of crisis, but that these associations also shape ongoing evaluations of "sovereign" risk and investment choice over the long term.

The analysis in Table 2 also reveals that beyond the sovereign credit rating peers, other peer categories do not significant affect the equilibrium CDS price relationships. Rather, we see that CDS market prices for countries of the same region and MSCI category are subject to short-term contagion, but they do not move together in equilibrium the way that countries of the same sovereign risk category do. This result indicates that at least for the derivatives markets, the extent to which market actors' fear of default risk in one country is affected by corresponding fears of default in other peer countries is mostly confined to short-term episodes of contagion. An important exception, however, is the sovereign risk category, where we see that over the long term, one country's perceived riskiness is tied systematically to assessments of risk for other countries in its credit category. What remains to be seen is whether such co-movements are distributed equally across sovereign risk categories: for instance, are AAA countries subject to the same interdependence as BB or CCC countries might be? The disaggregation of such effects may provide a fruitful agenda for future research.

Of course, the CDS contract represents a unique species of sovereign risk indicator – albeit an important one. In order to check the robustness of these findings in an alternative indicator of sovereign risk, we move next to examine monthly sovereign debt spreads for emerging market debt. We examine average stripped bond spreads from the EMBI Global dataset for the same countries and months as the CDS analysis in Table 2. The results of the ECM analysis of monthly *Spreads* are reported in Table 3. Once again, we observe important long-term relationships as well as short-term contagion among the sovereign bond spreads of countries of a common credit rating.

In addition, we find long-term and short-term ties among the spreads for countries within the same geographic region. Among the FTSE and MSCI categories, there is evidence of short-term contagion; we do not find a long-term equilibrium relationship, however, in the spreads for countries within these different categorizations. The first specification in Table 3 examines geographic peer groupings *(Region)*. The analysis again supports our expectation of interdependence, finding that there is a significant long-term correlation among the sovereign risk spreads for countries of the same region. For every basis point increase in the average of regional peer spreads, a government's spread increases by .52 basis points ($\beta j/-\phi$). And where there is a one-off monthly rise in the average regional peer spread, an attendant increase of .51 basis points occurs. The impact of such short-run changes is again quite resilient: only 22 percent of that departure from the equilibrium , or "error," is corrected by the next month. After three months, 68 percent of that bump in the country's spread remains. After five months, more than half of that impact has dissipated and by 12 months, all but 22 percent of the long-term trend has been restored.

Turning to the second specification reported in Table 3, we again find a significant long and short-term effect of credit-rating peers *(Fitch)*. The coefficients on the lagged dependent variable and the level and first difference of the peer spreads are almost identical to the relationships estimated in the CDS market above. Again, there is a positive equilibrium relationship where each one point increase in the average risk peer spread is associated with a .46 basis point increase in the reference government's spread. As with geographic peer diffusion, short-term changes also bring significant and rather persistent bumps in the equilibrium relationship; a one point rise in the average spread of countries in the same risk category brings a .29 increase in the government spreads, 87 percent of which is still present in the country's own spread a month later, and 19 percent of which is felt after a year.

Although the duration of the error correction process in the monthly analysis differs from that of the annual analysis in Table 1, wherein the latter indicated that deviations from the long-term correlations in sovereign risk spreads among countries within the same regional and risk groupings are corrected in less than a year's time, this disparity is likely to be due to differences in the model specifications and data. The monthly analysis does not include short-term changes in many of the political and macroeconomic variables (available only in annual time series), and thus the analysis cannot control for short-term changes in political variables. The next step in this analysis therefore is to incorporate monthly changes in political variables to better isolate the impact of partisan shifts and variations in the electoral cycle. Where long-term trends are concerned, however, we do find that countries have a higher bond spread for every unit increase in their *Polity* score. In the first and fourth specifications, respectively, becoming more democratic is associated with a 4.7 and 5.9 basis point higher risk spread (also see Saiegh 2005). We only observe partisan effects in specification 2, where left governments are associated with a more than 100 basis point higher spread than center governments, all else being equal.

The analyses so far have tested in various ways our first hypothesis: there is long-term interdependence in the ways that markets assess the riskiness of sovereign borrowers and, hence, in the scope for autonomous domestic policymaking. We have found evidence of significant long-run ties among the risk spreads for sovereign borrowers in the same region and risk categories. And we have estimated the magnitude and persistence of short-term changes that alter these equilibrium relationships.

Insert Table 4 here

We turn next to consider whether such interdependence is not simply a function of the risk spread of a country's peers, but rather whether one country's perceived riskiness depends on the policy outcomes – specifically, the debt and deficit levels – of that country's peers. Table 4 reports

models which use the annual dataset employed in Table 1 to test Hypothesis 2. Rather than taking peer spreads as our channel through which peer assessments are transmitted, we calculate the average budget balance and debt-to-GNI ratios for nations of the same geographic *(Region)* and credit rating (*Fitch)*. We find that for these two types of peer categories, it is only the debt level of peers that significantly predicts a country's sovereign spread. The coefficient on the lagged level of peer debt indicates that as the average debt to income ratio for a country's regional neighbors increases, its own sovereign spread decreases. This result suggests that being compared to regional peers may not always be a bad thing: to the extent that other countries in the region are more heavily indebted, all else being equal, a government's own spread may be lower by comparison. Of course, in its direct effect, the reference country debt level is predictably associated with higher sovereign spreads in both the short and long term. However, the analysis suggests that being in the neighborhood of more heavily indebted countries may not necessarily imply a greater risk of contagion; rather, it can provide governments with a chance to outperform the benchmark countries to which it is compared. In effect, there may be an advantage to owning the nicest house on the block.

We provide an additional test of this hypothesis in Table 5, which regresses the country's sovereign risk rating (*Fitch*) on the same covariates, along with two diffusion variables that capture the average debt and deficit ratios of the country's peer nations in the same credit rating category. Here we find a different effect through the mechanism of budget deficits: when a country's rating category peers have more a positive budget balance, a country receives a better risk rating (as higher numbers represent higher risk and thus lower ratings). Here again the data indicate that the domestic policy choices of a government's peer nations – defined here as those countries sharing a sovereign credit rating – can affect that government's own credit rating in such a way that reinforces common

movements in risk ratings of countries within the same risk category. This effect appears over both the short and the long term.

Although the debt ratios of other countries in a peer group do not correlate in the long term, we do observe that short-term increases in peer debt levels bring a temporary erosion of a country's perceived creditworthiness. Predictably, a government's own debt and deficit levels strongly predict its sovereign credit rating: countries with more positive budget balances and lower public debt ratios experience better credit ratings, and hence may access global capital markets more easily and cheaply. Interesting, Left and Right governments both are associated with better credit ratings compared to those led by Centrist executives, and tightening liquidity (measured by a rise in the US Prime Rate) is associated on average with a worsening of sovereign risk ratings.

V. Conclusion

Scholarship examining the effect of financial globalization on domestic politics has typically examined the state and market relationship for any given country in relative isolation from corresponding relationships abroad. Where other nations are considered, it is in the context of common global shocks, such as when global liquidity declines, or when a financial crisis in one nation or region prompts capital flight in other nations or regions. Less often have scholars considered how global market pressures might be transmitted to national governments via the evaluation of other, comparable countries.

Our analysis suggests that extant work may overlook a theoretically and empirically significant element of interdependence among nations. Not only do market assessments of sovereign risk abroad alter the risk premium paid by a sovereign borrower in moments of crisis, but they also tie these outcomes together across countries over the long term, net of the array of exogenous shocks and domestic fundamentals that are known to shape sovereign risk premia.

Sovereign credit risk, and hence the price at which governments can borrow internationally, is therefore not entirely sovereign; instead, it depends on the credit risk of – and, ultimately, the policies of -- countries to which a borrower is compared.

Our analyses thus suggest that, in order to understand more completely the extent to which governments are pressured by international capital markets, we need to account for the fact that investors sort countries into categories. Beyond analyzing the ways in which these categories affect risk premiums, which this paper begins to do, we also need to consider the rubrics that investors use to categorize countries: do they rely more heavily on geography, on the level of development or on the degree of sovereign risk? To what extent do the categorizations employed vary across investors, so that some (e.g. those who allocate assets across a single region, such as Latin America) employ finer categories than others (e.g. those who manage portfolios with a global reach)? To what extent do investors rely on categorizations developed by other entities, such as MSCI, Morgan Stanley, or the World Bank, rather than on those developed internally by the fund manager or her investment institution?

Our focus on country categorizations also may put in context the continued capacity of the United States government to borrow at low rates of interest, despite increases in government debt and fiscal deficits. Despite much discussion of the need for rebalancing in the global economy, the United States continues to attract large capital inflows (including investment in government bonds) and to be able to borrow at low rates of interest. The desirability of the dollar and of Treasury securities as reserve assets (Cohen 1998, Eichengreen 2011, Helleiner 2009, 2011, Schwartz 2009) has facilitated continued U.S. access to debt markets, even while many European governments struggle to convince investors of their creditworthiness. In some ways, the United States represents a category of one country: the issuer of the key global currency, with the largest and most liquid sovereign debt market, and with a long history as the ultimate "safe" asset. As such, while US debt

and deficits are large relative to many other countries, the US is simply not compared to these countries – for the US, peer country effects may be absent, because investors view it as peerless. Were this to change, it – like any country categorization – would have noticeable implications for the United States' capacity to access capital markets.

DV: Annual Δ_Spread	Table 1. Explaining Annual Changes in Sovereign Debt Spreads											
Peer Category:	**Region**			**Risk Rating**			**MSCI**			**FTSE**		
	1			2			3			4		
	Coef.		**Std. Err.**	**Coef.**		**Std. Err.**	**Coef.**		**Std. Err.**	**Coef.**		**Std. Err.**
Spread $_{t-1}$	-1.08	***	0.07	-1.12	***	0.06	-0.94	***	0.07	-1.11	***	0.07
Peer Diffusion												
Peer Spread												
t-1	0.21	**	0.10	-0.20	*	0.11	0.22	*	0.13	-0.26	***	0.09
Δ	0.37	***	0.07	0.09		0.07	0.45	***	0.10	-0.13		0.09
Domestic Politics and Economy												
Gov Consumption												
t-1	1.02		24.23	4.59		27.13	3.72		24.43	19.76		25.89
Δ	-23.86		19.78	-4.07		21.34	-15.16		20.08	-36.84	*	22.33
Debt												
t-1	4.37	**	2.18	4.15	**	1.88	2.77		2.24	5.51	***	2.10
Δ	6.40	***	2.26	5.78	***	1.76	7.04	***	2.13	7.88	***	2.15
Maturity												
t-1	1.15		5.10	-3.85		5.46	-7.16		5.38	-2.40		4.82
Δ	-1.79		3.56	-6.35	*	3.62	-8.14	**	3.66	-2.77		3.51
Inflation												
t-1	0.33		0.46	0.07		0.48	0.68		0.46	0.63		0.52
Δ	0.02		0.33	-0.11		0.34	0.10		0.34	0.02		0.39
Budget Balance												
t-1	-20.89	**	10.57	-26.37	**	10.98	-16.42		11.20	-20.98	*	11.21
Δ	-31.89	***	8.30	-25.73	***	8.47	-25.46	***	8.64	-23.93	***	8.79
Democracy												
t-1	11.86		14.17	20.07		14.42	12.47		13.52	15.10		12.90
Δ	22.40		22.37	25.12		21.99	5.68		23.53	32.87		22.03
KA Open												
t-1	-80.68	**	33.55	-65.33	*	35.37	-54.40		33.85	-59.09	*	33.26
Δ	-59.39	*	36.41	-56.40		40.39	-58.81		40.33	-31.58		35.59
Years to Election												
t-1	-32.76	**	14.63	-29.64	*	15.49	-25.99	*	14.44	-25.52	**	13.04
Δ	-9.47		9.92	-12.17		9.98	-10.52		9.90	-7.66		8.88
Left												
t-1	128.18		267.97	26.77		385.25	-30.57		440.41	28.30		337.53
Right												
t-1	36.95		400.40	-673.79	*	399.72	-642.29	*	377.14	-650.50	*	346.34
Opposition Right												
t-1	85.90		61.58	40.49		61.68	56.35		57.26	50.99		45.05
Opposition Left												
t-1	116.75	*	70.25	104.07		68.31	93.53		67.58	54.50		55.99
System												
t-1	-52.33		39.09	-7.75		39.86	1.05		39.45	-29.78		39.05
Common Shocks												
US Prime Rate												
t-1	29.75	**	12.28	30.99	***	12.44	34.93	***	13.21	33.09	***	13.00
Δ	-25.89	*	14.80	-68.22	***	14.88	-10.85		17.29	-70.54	***	15.19
Time												
t-1	-12.85		8.95	-22.22	***	8.47	-9.43		9.64	-19.05	**	8.42
Const.	25956		17988	44910	***	16975	19192		19351	38372	**	16896
N. obs	171			171			171			171		
Wald chi^2	454.59			1353.14			479.67			444.68		
Prob > chi^2	0			0			0			0		

FGLS error correction model of annual change in Sovereign Stripped Spreads *** p<.01; ** p<.05; * p<.1

Table 2. Explaining Monthly Changes in Credit Default Swap Prices

DV: Monthly Δ_CDS	1			2			3			4		
Peer Category:	**Region**			**Risk Rating**			**FTSE**			**MSCI**		
	Coef.		Std. Err.	Coef.		Std. Err.	Coef.		Std. Err.	Coef.		Std. Err.
CDS												
t-1	-0.11	***	0.02	-0.13	***	0.02	-0.09	***	0.02	-0.09	***	0.02
Peer Diffusion												
Peer CDS												
t-1	0.01		0.02	0.04	**	0.02	-0.02		0.02	0.00		0.02
Δ	0.35	***	0.05	0.17	***	0.02	0.05		0.03	0.15	***	0.05
Domestic Politics and Economy												
Debt												
t-1	0.67	**	0.31	0.76	***	0.26	1.19	**	0.51	1.29	**	0.66
Budget Balance												
t-1	-0.36		1.30	-0.10		1.15	0.24		1.27	0.20		1.65
Inflation												
t-1	0.25		0.92	0.14		0.83	-0.04		1.03	0.49		1.26
GDP per cap												
t-1	0.01		0.02	0.02	*	0.01	0.01		0.01	0.00		0.02
KA Open												
t-1	-6.65		4.68	-6.71	*	3.89	-7.16		4.82	-9.95		7.29
FX Rate												
t-1	433	***	121	397	***	92	436	***	95	444	***	121
Δ	282	***	79	324	***	61	373	***	64	363	***	80
Democracy												
t-1	-0.42		1.00	-0.51		0.83	-0.05		0.69	0.49		1.25
System												
t-1	-7.08		20.55	-19.48		18.17	81.76	***	15.26	63.29		48.74
Right												
t-1	41.33		71.19	66.72		66.49	-193.06	***	39.27	162.77		101.24
Common Shocks												
US Prime Rate												
t-1	-1.08		1.60	-1.10		1.34	-1.01		1.57	-0.69		2.06
Δ	-16.23		11.05	-16.66	*	9.24	-23.56	**	9.68	-26.17	**	13.07
US Stock Market												
t-1	-2.89	***	0.83	-3.14	***	0.69	-3.41	***	0.73	-2.85	***	1.01
Δ	-2.78	***	0.48	-3.16	***	0.39	-3.39	***	0.40	-2.88	***	0.59
Invest.Grade Yield												
t-1	-5.94		6.37	-3.71		5.32	-3.83		5.36	-2.99		7.29
High Yield												
t-1	-10.35	**	4.87	-6.88	*	4.09	-11.77	***	4.21	-7.56		5.59
Treasury Yield												
t-1	-7.57		10.05	-6.90		8.33	-10.96		8.25	-9.63		11.15
Equity Premium												
t-1	390.49		695.81	542.11		578.83	912.63		594.56	388.26		752.01
Volatility Premium												
t-1	-0.02		0.39	0.26		0.32	0.65	**	0.32	0.60		0.43
Term Premium												
t-1	1.38		2.35	1.87		1.92	2.80		1.93	3.03		2.58
Stock Flows												
t-1	-37.47		33.83	-49.66	*	28.94	-77.57	***	31.33	-96.90	**	41.74
Δ	-45.32	**	21.52	-43.38	**	18.56	-67.72	***	19.88	-85.81	***	26.10
Bond Flows												
t-1	0.00		0.00	0.00		0.00	0.00		0.00	0.00		0.00
Δ	0.00		0.00	0.00		0.00	0.00		0.00	0.00		0.00
Time	-0.15		0.20	-0.19		0.17	0.10		0.23	0.18		0.31
Const.	-4.41		62.70	-28.44		53.87	-93.90	*	53.93	-236.29		157.31
N. obs	927			1009			825			885		
Wald chi^2	443.44			556.07			536.41			368.31		
Prob > chi^2	0			0			0			0		

FGLS error correction model of monthly change in CDS prices *** p<.01; ** p<.05; * p<.1

Table 3. Explaining Monthly Changes in Sovereign Debt Spreads

DV: Monthly Δ_Spreads	1			2			3			4		
Peer Category:	Region			Risk Rating			FTSE			MSCI		
	Coef.		Std. Err.	Coef.		Std. Err.	Coef.		Std. Err.	Coef.		Std. Err.
Spread												
t-1	-0.12	***	0.02	-0.13	***	0.02	-0.10	***	0.01	-0.10	***	0.02
Peer Diffusion												
Peer Spread												
t-1	0.06	***	0.02	0.06	***	0.02	0.00		0.02	0.02		0.02
Δ	0.51	***	0.04	0.29	***	0.03	0.34	***	0.07	0.30	***	0.04
Domestic Politics and Economy												
Democracy												
t-1	4.65	**	2.39	1.20		2.03	2.78		1.80	5.85	***	1.94
System												
t-1	-2.50		15.98	-25.84		19.65	-9.95		16.81	-28.00		19.21
Left												
t-1	-73.57		46.47	106.04	***	32.41	19.54		50.58			
Right												
t-1										-8.76		55.49
KA Open												
t-1	-4.69		3.58	-4.26		3.29	-9.23	**	4.17	-10.96	**	4.93
FX Rate												
t-1	414.73	***	92.13	432.40	***	77.88	394.42	***	74.78	402.16	***	84.45
Δ	1.56		62.82	58.09		54.88	46.95		53.33	40.06		58.30
Debt												
t-1	0.37		0.24	0.49	**	0.23	0.44		0.37	0.60		0.42
Inflation												
t-1	0.41		0.78	-0.18		0.74	-1.02		0.77	-0.66		0.86
Budget Balance												
t-1	-0.68		1.03	-0.19		0.94	-1.16		0.94	-1.42		1.03
GDP per cap												
t-1	0.02		0.01	0.03	**	0.01	0.02		0.01	0.01		0.01
Common Shocks												
US Prime Rate												
t-1	-0.61		1.26	-2.50	**	1.17	-2.66	**	1.21	-2.00		1.38
Δ	-7.41		9.22	-12.61		8.20	-17.93	**	9.11	-16.53	*	10.14
Stock Flows												
t-1	-60.41	**	30.56	-63.23	**	28.11	-81.70	***	30.04	-78.15	**	32.94
Δ	-3.83		20.65	8.29		19.22	14.57		20.58	12.43		21.86
US Market												
t-1	-1.41	**	0.68	-2.31	***	0.56	-2.00	***	0.74	-2.03	***	0.77
Δ	0.68	*	0.37	0.34		0.35	0.63	*	0.36	0.54		0.40
Invest.Grade Yield												
t-1	10.13	*	5.95	9.63	*	5.39	5.78		5.72	15.16	***	6.06
High Yield												
t-1	5.22		4.51	10.74	***	4.06	6.04		4.28	13.88	***	4.57
Treasury Yield												
t-1	-5.15		8.80	-4.12		7.98	-7.21		8.39	-8.38		9.15
Equity Premium												
t-1	-1584	**	666	-1968	***	562	-2031	***	579	-1893	***	645
Volatility Premium												
t-1	-0.03		0.35	-0.56	*	0.31	-0.09		0.35	-0.22		0.36
Term Premium												
t-1	0.06		1.92	-0.26		1.73	-0.96		1.90	-0.05		2.05
Bond Flows												
t-1	0.00		0.00	0.00	**	0.00	0.00		0.00	0.00	**	0.00
Δ	0.00		0.00	0.00		0.00	0.00		0.00	0.00		0.00
Time	-0.26	**	0.16	-0.21		0.15	-0.18		0.17	-0.05		0.19
Const.	7.08		34.50	-144.10	**	73.04	-30.31		62.94	-28.85		52.31
N. obs	940			1015			911			959		
Wald chi^2	756.12			830.14			846.89			743.5		
Prob > chi^2	0			0			0			0		

FGLS error correction model of monthly change in Sovereign Stripped Spreads *** p<.01; ** p<.05; * p<.1

Table 4. Do Peer Fundamentals Affect Sovereign Credit Risk?

DV: Annual Δ_Spread						
Peer Category:	**Region**			**Risk Rating**		
	Coef.		**Std. Err.**	**Coef.**		**Std. Err.**
Spread						
t-1	-1.14	***	0.07	-1.15	***	0.08
Peer Diffusion						
Peer Budget						
t-1	-0.71		20.54	-1.28		19.06
Δ	-14.62		15.34	-18.65		14.85
Peer Debt						
t-1	-4.42	***	1.80	-3.16		2.20
Δ	-1.01		3.41	2.71		2.12
Domestic Politics and Economy						
Gov Consumption						
t-1	12.83		27.72	-14.42		30.42
Δ	-44.16	**	22.77	-55.93	**	27.05
Debt						
t-1	5.70	***	2.21	5.17	**	2.22
Δ	8.96	***	2.44	4.43	**	2.19
Inflation						
t-1	0.39		0.54	7.50		5.37
Δ	-0.07		0.39	17.84	***	4.80
Budget Balance						
t-1	-11.54		12.81	-25.20	**	11.38
Δ	-18.60	*	9.70	-16.10	*	8.51
Democracy						
t-1	15.37		14.02	5.55		17.67
Δ	19.86		22.52	28.92		23.25
KA Open						
t-1	-66.50	*	40.71	-79.13	**	34.73
Δ	-39.76		40.66	-6.14		33.89
Left						
t-1	83.91		361.25	-250.78		437.17
Right						
t-1	288.86		519.99	-343.56		334.18
Opposition Right						
t-1	26.30		51.87	-24.18		50.79
Opposition Left						
t-1	75.50		62.02	12.95		51.60
System						
t-1	-29.00		40.26	44.59		48.34
Years to Election						
t-1	-27.64	*	15.17	-19.07	*	11.44
Δ	-9.37		10.24	-13.49	*	7.91
Maturity						
t-1	-2.85		5.31	-7.14		4.50
Δ	-2.69		3.69	-1.72		3.21
Common Shocks						
US Prime Rate						
t-1	34.42	**	15.11	33.55	***	12.35
Δ	-44.02	***	15.25	-49.94	***	11.58
Time						
t-1	-24.84	***	9.78	-0.63		7.53
Const.	49742.14	***	19619	2121.70		15106
N. obs	167			137		
Wald chi^2	428.59			653.59		
Prob > chi^2	0			0		

FGLS error correction model *** p<.01; ** p<.05; * p<.1

Table 5. Do Peer Fundamentals Affect Sovereign Risk?

DV: Δ Fitch Rating			
	Coef.		**Std. Err.**
Fitch Rating			
t-1	-0.40	***	0.048
Peer Diffusion			
Fitch Peer Budget			
t-1	-0.05	***	0.01
Δ	-0.05	***	0.01
Fitch Peer Debt			
t-1	0.00		0.00
Δ	0.01	***	0.00
Domestic Politics and Economy			
Gov Consumption			
t-1	0.01		0.02
Δ	-0.01		0.02
Debt			
t-1	0.01	***	0.00
Δ	0.01	***	0.00
Inflation			
t-1	0.00		0.00
Δ	0.01		0.00
Budget Balance			
t-1	-0.02	**	0.01
Δ	-0.02	***	0.01
Democracy			
t-1	0.00		0.01
Δ	-0.01		0.01
KA Open			
t-1	-0.05		0.03
Δ	0.02		0.03
Left			
t-1	-0.81	***	0.23
Right			
t-1	-0.40	**	0.20
Opposition Right			
t-1	-0.12	**	0.06
Opposition Left			
t-1	-0.07		0.07
System			
t-1	0.02		0.05
Years to Election			
t-1	-0.01		0.01
Δ	-0.01		0.01
Maturity			
t-1	0.00		0.00
Δ	0.00		0.00
Common Shocks			
US Prime Rate			
t-1	0.03	***	0.01
Δ	0.01		0.01
Time			
t-1	0.00		0.01
Const.	-6.87		12.23
N. obs	228		
Wald chi^2	413.78		
Prob > chi^2	0		

FGLS error correction model *** p<.01; ** p<.05; * p<.1

Appendix

Below are the summary statistics, definitions and sources for the data employed in our analyses.

Sovereign CDS Spreads. These CDS spreads are mid-market indicative prices for five-year CDS contracts. In all cases, the CDS contract references the sovereign (as opposed to a central bank or some other entity). The monthly data are generally for the last trading day of the month. When there is no quotation for the last trading day of the month, however, the last available quotation during the month is used. Source: Longstaff and colleagues (2011), who obtained the data from the Bloomberg system.

FTSE Category. Countries are coded according to the categorizations of the 5-tiered level of economic development in the following way: Emerging Markets = 1; Frontier = 2; Developed = 3; Advanced emerging =4; Secondary Emerging = 5.

MSCI Barra Category. This variable codes countries according to a 3-tiered categorization: Emerging Markets = 1; Frontier = 2; Developed = 3.

Fitch Sovereign Rating. This variable measures the long term, foreign currency rating for sovereign debt, from Fitch Ratings. We remove the +/- denominations and transform qualitative ratings into integers, weighted by the duration of the rating and averaged for the year: AAA 1, AA 2, A 3, BBB 4, BB 5, B 6, CCC 7, CC 8, C 9, RD 10, DDD 11, DD 12, D 13.

Left Executive. Coded 1 if the head of the executive branch is of the Left, 0 otherwise. Data from the Execrlc variable in the Database of Political Institutions (Beck et al. 2001, 2010 update).

Right Executive. Coded 1 if the head of the executive branch is of the Right, 0 otherwise. Data from the Execrlc variable in the Database of Political Institutions (Beck et al. 2001, 2010 update).

Left Opposition. Coded 1 if the largest opposition party is of the Left, 0 otherwise. Data from the Opp1rlc variable in the Database of Political Institutions (Beck et al. 2001, 2010 update).

Right Opposition. Coded 1 if the largest opposition party is of the Right, 0 otherwise. Data from the Opp1rlc variable in the Database of Political Institutions (Beck et al. 2001, 2010 update).

Democracy. Data on political regime from the Polity IV database, the "POLITY2" score. Higher scores represent more democratic political systems.

System. Countries are coded according to the form of political institutions: Parliamentary (2), Assembly-elected President (1), Presidential (0). Source: Database of Political Institutions (Beck et al. 2001, 2010 update).

Yrs Office. According to the DPI, this variable measures, "How many years has the chief executive been in office?" Source: Database of Political Institutions (Beck et al. 2001, 2010 update).

US Prime Rate. Average majority prime rate charged by banks on short-term loans to business, quoted on an investment basis. Source: U.S. Federal Reserve (http://www.federalreserve.gov/releases/h15/data.htm).

Budget Balance. Cash surplus/deficit (% of GDP) Cash surplus or deficit is revenue (including grants) minus expense, minus net acquisition of nonfinancial assets. In the 1986 GFS manual nonfinancial assets were included under revenue and expenditure in gross terms. This cash surplus or deficit is closest to the earlier overall budget balance (still missing is lending minus repayments, which are now a financing item under net acquisition of financial assets).

Debt. Central government debt, total (% of GDP) Debt is the entire stock of direct government fixed-term contractual obligations to others outstanding on a particular date. It includes domestic and foreign liabilities such as currency and money deposits, securities other than shares, and loans. It is the gross amount of government liabilities reduced by the amount of equity and financial derivatives held by the government. Because debt is a stock rather than a flow, it is measured as of a given date, usually the last day of the fiscal year.

Inflation. Consumer prices (annual %) Inflation as measured by the consumer price index reflects the annual percentage change in the cost to the average consumer of acquiring a basket of goods and services that may be fixed or changed at specified intervals, such as yearly. The Laspeyres formula is generally used. Source: World Development Indicators.

GDP per capita. GDP per capita is gross domestic product divided by midyear population. GDP is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products. It is calculated without making deductions for depreciation of fabricated assets or for depletion and degradation of natural resources. Data are in constant 2000 U.S. dollars. Source: World Development Indicators.

KA OPEN. Capital account openness score, from the Chinn & Ito index (their indicator is labeled kaopen in their excel file). Data (which go through 2010) are available here (in Excel format): http://web.pdx.edu/~ito/kaopen_2010.xls

Maturity. Maturity is the number of years to original maturity date, which is the sum of grace and repayment periods. Source: World Development Indicators.

Local Stock Market Returns. The local stock market returns for the countries in the sample are monthly total returns (including dividends). Source: Longstaff et al. (2011).

Exchange Rates. Exchange rates, expressed as units of the local currency per US dollar, are obtained from Datastream. Source: Longstaff et al. (2011).

Foreign Currency Reserves. The dollar values of sovereign foreign currency holdings are obtained from the Datastream system. The original source of the data is the International Monetary Fund. Source: Longstaff et al. (2011).

US Stock Market Returns. The US stock market excess return is the monthly value-weighted return on all NYSE, AMEX, and NASDAQ stocks (from CRSP) minus the one-month Treasury-bill return (from Ibbotson Associates). Source: Longstaff et al. (2011).

Treasury Yields. Monthly changes in the Treasury yields are based on the five-year constant maturity Treasury (CMT) rates reported as part of the H.15 Federal Reserve Statistical Release (Historical Data). Source: Longstaff et al. (2011).

Corporate Yield Spreads. Changes in investment-grade yield spreads are monthly changes in the basis-point yield spread between BBB and AAA industrial bond indexes. Changes in high-yield spreads are monthly changes in the basis-point yield spread between BB and BBB industrial bond indexes. Source: Longstaff et al. (2011).

Equity Premium. As a proxy for changes in the equity premium, we use monthly changes in the price-earnings ratio for the S&P 100 index. Source: Longstaff et al. (2011).

Volatility Risk Premium. The volatility risk premium is calculated as the difference between the VIX index (obtained from the Bloomberg system) and a measure of realized volatility for the S&P 100 index. Source: Longstaff et al. (2011).

Term Premium. The term premium is based on Cochrane-Piazzesi model in which expected excess returns on Treasury bonds are represented as a linear function of one- through five-year forward rates. Source: Longstaff et al. (2011).

Bond and Equity Flows. These values are obtained from the Investment Company Institute which reports them on its website. Source: Longstaff et al. (2011).

	Summary Statistics: Annual Data				
Variable	**Obs**	**Mean**	**Std. Dev**	**Min**	**Max**
Spread	493	573.76	754.82	0.00	6342.27
Debt	962	53.11	36.92	0.65	384.01
Maturity	970	17.21	7.89	0.00	48.38
Inflation	1821	28.07	247.55	-16.12	7481.66
Budget	1081	-1.51	8.11	-202.70	29.06
GDP/cap	1930	10315	11202	221	56389
Fitch	2046	1.91	2.12	0	12
KA Open	1783	0.85	1.56	-1.85564	2.45573
System	1888	1.65	0.63	1	3
Yrs Office	1887	6.42	7.48	1	46
Left	1885	0.13	0.34	0	1
Right	1885	0.77	0.42	0	1
Opp Right	1614	0.57	0.49	0	1
Opp Left	1614	0.36	0.48	0	1
US Prime	2046	6.64	2.07	3.25	10.01

Summary Statistics: Monthly Data					
Variable	**Obs**	**Mean**	**Std. Dev.**	**Min**	**Max**
CDS	2355	218.91	361.11	2.17	3857.61
US Market	2886	-0.07	4.91	-18.55	11.04
Treasury Yield	2886	-0.03	0.32	-0.87	0.92
Inv.Grade	2886	0.01	0.44	-3.09	2.89
High Yield	2886	0.00	0.61	-4.20	2.56
Equity Prem	2886	0.00	0.00	-0.01	0.02
Vol. Premium	2886	0.11	4.54	-16.62	13.70
Term Prem	2886	-0.02	1.18	-3.19	4.69
Stock Flows	2886	4634	18256	-72318	42965
Bond Flows	2886	6849	10137	-32782	40174
FX Rate	2707	0.00	0.04	-0.15	0.36
Spread	2119	336.67	341.90	9.37	3569.37
Debt	2016	39.45	18.93	8.34	114.07
Maturity	2016	14.38	5.32	2.83	28.95
Inflation	2801	6.61	7.57	-4.86	54.92
Budget	2232	-1.32	4.12	-8.59	16.45
GDP/cap	2912	7093.76	9091.55	511.11	40707.00
Democracy	2912	6.31	5.21	-10	10
KA Open	2912	0.51	1.39	-1.86	2.46
System	2912	1.55	0.65	1	3
Fitch	2685	4.15	1.03	2	7
US Prime Rate	2912	5.70	1.83	3.25	9.5
Left	2912	0.17	0.37	0	1
Right	2912	0.83	0.37	0	1

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