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ABSTRACT

We introduce a new, market-based and forward looking measure of political risk derived from the yield spread between a country's U.S. dollar debt and an equivalent U.S. Treasury bond. We explain the variation in these sovereign spreads with four factors: global economic conditions, country-specific economic factors, liquidity of the country's bond, and political risk. We then extract the part of the sovereign spread that is due to political risk, making use of political risk ratings. In addition, we provide new evidence that these political risk ratings are predictive, on average, of future risk realizations using data on political risk claims as well as a novel textual-based database of risk realizations. Our political risk spread measure does not make the mistake of double counting systematic risk in the evaluation of international investments as some conventional measures do. Furthermore, we show how to construct political risk spreads for countries that do not have sovereign bond data. Finally, we link our political risk spreads to foreign direct investment. We show that a one percent point reduction in the political risk spread is associated with a 12 percent increase in net-inflows of foreign direct investment.

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1. Introduction

Political risk refers to the risk that a government action will negatively affect the cash flows of a company conducting an international investment. Political risk assessment is one of the most important challenges underlying foreign direct investment (FDI) decisions. Between 1980 and 2010, FDI flows increased by a factor of about 25 (see UNCTAD, World Development Investment Report, 2010), making political risk assessment increasingly important.

Our paper addresses one of the most basic questions in international business: How do we account for political risk in foreign direct investment decisions? We introduce the new concept of a political risk spread. It uses political risk rating data from the International Country Risk Guide (ICRG) and other economic variables to extract the political risk component from sovereign spreads. The sovereign spread, also referred to as a country (credit) spread, is the difference between the yield on a bond issued by a developing country in U.S. dollars and a U.S. Treasury bond of similar maturity. It depends, among other factors, on the probability of sovereign default and, conditional on default, the expected recovery value of a country's sovereign bond.

We propose political risk spreads as a novel measure of political risk that incorporates forward looking market information. In contrast to available political risk ratings, which are mostly subjective assessments of experts, it is very easy to incorporate our political risk spreads in a quantitative valuation analysis, as they are in discount rate units. These spreads can be used as discount rate adjustments or transformed into an adjustment for expected cash flows. We illustrate how to use the political risk spreads in project evaluation and how to extract the probability of an adverse political event from them under certain assumptions. Given that there are a limited number of countries with sovereign spreads, we also show how to estimate political risk spreads for countries that do not issue U.S. dollar denominated sovereign bonds.

Other attempts to use market data to infer political risk include Click (2005) who introduces a new political risk index that is built on the amount of unexplained country-level variation in actual realized returns on foreign direct investments by U.S. firms. His approach has some similarities to ours, as his analysis requires him to remove the influence of other risks, such as financial risks, on FDI returns just as we isolate political risk from the sovereign spread. The Click index provides a characterization of political risk that FDI in certain countries has been exposed to in the past. Our political risk spread measure, on the other hand, builds on forward looking market data that can easily be updated on a daily basis.

Our method has a number of key requirements.

First, the variation in sovereign spreads must be linked to political risk ratings (events). Building on an extensive literature examining the determinants of sovereign spreads, we decompose their variation into four major factors: international economic and financial risk conditions, local macroeconomic conditions, bond market liquidity, and political risk. Our analysis shows that, on average, one third of the sovereign spread reflects political risk. Political risk is, however, the most important determinant of sovereign spreads.

Second, political risk ratings, and by implication our political risk spreads, should be predictive of risk realizations, and it is far from clear that they are. Our paper assesses the predictive ability of these ICRG ratings with two experiments.

In the first experiment, we revisit Howell and Chaddick's (1994) analysis of risk realizations from the insurance claims of the Overseas Private Investment Corporation (OPIC). While this early study used only five years of data, our research uses the complete history of claims from 1984 to present. We show that average ratings are deteriorating well before the risk event. This evidence is suggestive of a predictive relation.

Of course, insurance claims cover only a subset of risk realizations. Our second experiment covers all countries and is based on a textual search of various news sources. We create a dictionary of words that are associated with three different sources of foreign investment risk realizations: government actions (e.g. currency inconvertibility), company-specific risk (such as damage to operations due to political unrest) and country-specific risks (e.g. wars or other conflicts). We develop three risk realization indices for each country. We then show that the ICRG political risk ratings are predictive, on average, of risk realizations measured by our news-based measures.

The new evidence on political risk prediction validates the use of political risk spreads as a measure of political risk and in investment analysis. The economic implications are important.

First, it is common in the finance literature to use a country's sovereign spread as a market based, observable, and forward looking assessment of a country's overall political risk (see Choi, Gulati, and Posner (2011)). Political risk is then incorporated into the valuation of an investment project by augmenting the project's discount rate reflecting systematic risk exposure with the country's sovereign spread (see, for example, Mariscal and Lee (1993) and Damadoran (1999, 2003)). That is, the project's cash flows are forecasted in the absence of political risk events, which are then incorporated via an upward adjustment to the discount rate based on a country's sovereign spread. Given that sovereign spreads are impacted by many factors – not just political risk, this procedure is flawed. Using some recent data, we estimate that using the full sovereign spreads leads to discount rates being overstated by 2-5 percentage points, potentially leading to substantial misallocation of global investment.

Second, we study the link between our measure of political risk and foreign direct investment (FDI). There is an extensive literature documenting the mostly negative effects of political risk on FDI, which we survey in detail below. We show that a one percent point decrease in the political risk spread is associated with a 0.34% increase in FDI scaled by GDP, which for a typical country leads to a 12% increase in net FDI inflows. Given the increased importance of FDI in recent years, our measure may thus be of interest to policy makers as well as business leaders. The cost of particular future policy actions that are known to increase political risk spreads can be directly quantified using our results.

While we rely on the widely available ICRG data, we show the robustness of our results to using the Coplin-O'Leary (CO) risk ratings. These ratings are particularly interesting because they purport not to just measure political risk but to forecast it at particular horizons (18 months and 60 months).

Our new quantification of political risk provides one number per country, a useful benchmark for any international investor. Nevertheless, a substantive portion of the recent literature has focused on the ability of multi-national corporations (MNCs) to manage political risk in a variety of ways and this ability may affect the entry decision in the first place (see, e.g., Henisz (2003), Feinberg and Gupta (2009)). However, because the political risk index reflects 12 different sub-components, it is possible to individualize the political risk adjustment by using various subcategories of political risk. We also assess the importance of these individual components of the overall political risk rating in predicting political risk news, and driving variation in sovereign spreads.

The paper is organized as follows. Section 2 provides a general discussion of political risk and its role in the theory of international investment. It then motivates and discusses the concept of the political risk spread. Section 3 validates the use of the ICRG political risk ratings as predictive measures of political risk realizations. Section 4 surveys the data we use and summarizes the econometric regression results we need to derive the political risk spreads. Section 5 then extracts political risk spreads for 32 developing countries over the 1994-2009 sample. This section also discusses how to infer probabilities of political risk events from political risk spreads and how to tailor them to firm specific circumstances. Section 6 shows the relation between political risk spreads and foreign direct investment. Some concluding remarks are offered in the final section.

2. Political Risk Spreads in the Theory of Investment

2.1. Political Risk and Investment

We define political risk for a given country as the risk that the country's government actions or imperfections of the country's executive, legislative, or judicial institutions adversely affect the value of an investment in that country. The most direct form of political risk involves government initiated seizure of private assets or output, but it also extends to include creeping forms of expropriation such as unexpected taxes or royalties on profits (Knudsen (1974), Minor (1994)). Furthermore, political risk includes the instability of relevant government policies (see, for example, Brewer (1983, 1993)) as well as the strength of the legal system, especially with respect to the enforcement of property rights. Finally, we also consider internal and external conflicts, such as general strikes, terrorism, and (civil) war, part of political risk. Below, we try to qualitatively differentiate between these various components of political risk.

The theory of investment is based on a Net Present Value (NPV) rule. An international investment project is approved when the discounted value of the forecasted cash flows exceeds its investment cost today. The forecasted cash flows over the life of the project are supposed to include allowances for economic uncertainties (for example the probability of a recession in the local economy) as well as political actions (for example, the local government unexpectedly increasing taxes). The discount rate is supposed to reflect the 'systematic' risk of the project; the part of the risk that is not diversifiable and linked to global factors (e.g. the sensitivity of the project to a world-wide recession).

While there is widespread agreement on both the use of the net present value rule and the calculation of the discount rate,[1] there is a wide divergence in the application of the theory to political risk. It is common to view political risk as a diversifiable risk so that the adjustment naturally occurs in the cash flows.[2] To make the methodology concrete, consider an all-equity project, with one expected cash flow, *CF*, next year. This *CF* is adjusted for the economic and financial risks that the project faces in the particular country – but not the political risk. The present value of the project is:

$$PV = \frac{CF(1-p)}{1+r}, \tag{1}$$

where *p* is the probability of political risk event (assuming no recovery) and *r* is the discount rate, say from the Sharpe (1964) CAPM. For simplicity, we assume the project or firm is all equity. If leverage is introduced, the discount rate is a weighted average of both equity and bond expected returns. This methodology can be easily generalized to multiple periods and can accommodate changes in the probability of a political risk event. However, as is well known, it is very difficult to quantify political risk (see Bremmer, 2005; Henisz and Zelner, 2010). Even though there are many political risk ratings services, it is not obvious how to translate a ratings score into an adjustment for the cash flows of the project.

It is possible to express the cash flow adjustment in terms of a discount rate adjustment, by dividing both the numerator and denominator in Equation (1) by *(1 – p)*:

$$PV = \frac{CF(1-p)}{1+r} = \frac{CF}{(1+r)/(1-p)}. \tag{2}$$

Notice, that the *(1 - p)* < 1 term is inflating the effective discount rate. Finally, it is straightforward to express the event probability in terms of the yield spread. Let

$$PRS = \frac{1}{1-p} - 1 \text{ or } p = \frac{PRS}{1+PRS}, \tag{3}$$

where *PRS* is what we call the political risk spread. For example, if the probability of the political event is 0.10, this implies the political risk spread is 11.1%. So adjusting either the numerator (cash flow, downward) or the denominator (discount rate, upward) leads to an identical PV:

$$PV = \frac{CF(1-p)}{1+r} = \frac{CF}{(1+r)(1+PRS)}. \tag{4}$$

[1]Graham and Harvey (2001) show that for a large sample of U.S. firms the overwhelming majority use a net present value rule for evaluating investment and about 75% use the CAPM as an input for the discount rate. However, Holmen and Pramborg (2009), surveying the capital budgeting techniques for FDI among Swedish firms, show that firms are less likely to use theoretically correct NPV approaches for investments in host countries with elevated political risk.

[2]Lessard (1996) and Bekaert and Hodrick (2011, Chapter 14) argue that in theory political risk should be incorporated into cash flows. Butler and Joaquin (1998) also discuss the choice of incorporating political risk into project cash flows or the discount rate.

The equivalence between the use of political risk probabilities and political risk spreads augmenting the discount rate continues to hold in multi-period capital budgeting under certain assumptions.[3]

In reality, *p* nor *PRS* are observable. As a result, many businesses and organizations rely on a country's sovereign spread as an estimate of the project's *PRS*. The sovereign spread is then used to augment a project's discount rate.[4] However, we show that the sovereign spread measures not just political risk, but financial and economic risk as well. Because the expected cash flows should already account for the financial and economic risks, using the full sovereign spread as a country's *PRS* implies political risk event probabilities, *p*,* that are too high (*p* > p)* and present values that are too low (*PV* < PV).* This double counting may lead to international underinvestment.

Our proposed procedure avoids double counting by extracting PRS from the observed sovereign spreads. To do so, we assume that our investment project and the observed sovereign bond have the same maturity. Moreover, the political risk adjustment is assumed constant, and, more subtly, the time profile of cash flows in the bond and the equity project is assumed to be similar. If the cash flow pattern of the equity project is very uneven over time, and very different from the constant coupon implicit in bond pricing, it would certainly be better to infer *p* from the bond cash flows and apply it to the equity cash flows i.e. adjust cash flows and not the discount rate. If *p* is not constant over time, its evolution over time (e.g. decay after a crisis) world have to be modeled and then equation (5) can still be used to infer the current political risk probability.

2.2. Extracting Political Risk from Sovereign Spreads

Let $SS_{i,t}$ be the sovereign yield spread observed at date *t* for country *i.* The spread generally reflects the market's assessment of a country's ability and willingness to repay its debt (relative to the United States). However, sovereign spreads are 'contaminated' by other information. Consider the following decomposition:

$$SS_{i,t} = c_0 + c_1' Global_t + c_2' Local_{i,t} + c_3 Liq_{i,t} + c_4 PR_{i,t} + \epsilon_{i,t} \,. \qquad (6)$$

[3] Let CF_t be the expected cash flows at time *t* and R_t the Recovery value of the MNC's project in the face of a political risk event at time *t*. Then the present value of the project is

$$\sum_{t=1}^{T} \frac{CF_t\,(1-p)^t \; + R_t p(1-p)^{t-1}}{(1+r)^t}$$

That is, we assume political risk probabilities and discount rates to be constant over time (as in our simple example). As long as R_t is 0, the above relationship between *PRS* and *p* continues to hold. If R_t is non-zero, equation (5) can be used to infer the correct political risk probability.

[4] The use of sovereign spreads is widespread among consultants, see for example Price Waterhouse Coopers (see Ogier, Rugman, and Spicer (2004)), TAC - Applied Economic and Financial Research (see Apotheker (2006)), and Zanders (see Boere (2006)), as well as investment banks such as Goldman Sachs and JP Morgan (for an overview, see Harvey (2001)). Morningstar, a leading vendor of cost of capital estimates in the U.S., provides two estimates involving sovereign spreads. Finally, the major international financial management textbooks such as Shapiro (2009) and Bekaert and Hodrick (2011) also mention the practice.

We use three categories of control variables, apart from political risk. Spreads could be impacted by either global information (*Global)* or local macroeconomic information (*Local)*. This information should already be reflected in the forecasted cash flows. Spreads could also be affected by illiquidity (*Liq)* in the financial markets. This illiquidity essentially distorts the information in the spreads and should not be reflected in either the cash flows or the discount rate. Important for our analysis is the political risk (*PR).* The coefficients, *c*, represent the dependence of the sovereign spread on the respective factors. The goal of our empirical analysis is to extract $c_4 PR_{i,t}$ in a regression framework. To do this, we need to empirically specify variables for the right-hand side of (5) which will be expressed as deviations relative to the corresponding U.S. value (of course, with the exception of the global information variables).

Our approach makes several assumptions. First, the political risk proxy must be forward looking and should reflect political risk in a narrow sense, as opposed to a broad country risk. We devote an entire section to discussing the measurement of political risk and validating the predictive power of our proxy for future risk realizations. Second, sovereign spreads must reflect political risk relevant for an MNC's investment decisions. The government's willingness to pay external debt is naturally correlated with its attitude towards MNC's. The ability of a government to service its external debts also depends on the government's ability to extract resources from its citizens, and this is likely correlated with typical measures of political stability. This is apparent from an early international business literature linking political risk variables to creditworthiness. For example, Citron and Nickelsburg (1987) find a statistically significant link between political instability, which they proxy by the number of changes of government over a five-year period, and the default probability on external debt for a number of developing countries. Vaaler, Schrage, and Block (2005) show that spreads increase when the probability that a right-wing government is replaced by a left-wing government. As we discuss in more detail below, the link between sovereign spreads and political risk is also apparent from the empirical literature on the determinants of sovereign spreads.

Our approach faces several technical challenges that we discuss and resolve in Section 4. One advantage of our approach is that as long as we have information on the factors used in the regression model (in particular, a political risk rating), we can use the model to compute political risk spreads even for countries that do not issue sovereign bonds. While applying the model to countries not issuing bonds skirts some selection issues, it at least provides a reasonable starting point to quantify political risk.

Our method is no panacea: political risk is multi-faceted and it may be difficult to predict sudden changes in relatively stable regimes and both markets and ratings sometimes fail to predict calamitous events. For example, the Arab Spring seems to have come largely as a surprise. This need not undermine our proposed technique, as long as the world is largely probabilistic (such events were very small probability to begin with, and may have actually been anticipated by markets and analysts with the correct "small" probabilities). Our objective is to incorporate possible negative cash flow effects of foreign government actions into cross-border valuations. Our primary concern is thus the measurement of the probability and the magnitude of such negative effects. We also assume that a change in the

uncertainty about the government policy (holding the negative economic implications constant) does not have a first-order valuation effect.

We now asses the predictive content of political risk ratings for risk realizations directly.

3. Measuring Political Risk

3.1. International Country Risk Guide

We must find a political risk proxy that is forward looking and reflects political risk in a narrow sense, as opposed to broad country risk that also embeds macro-economic factors. For most of our analysis, we use the political risk rating from the International Country Risk Guide (ICRG) which is designed to only reflect political risk as the ICRG has separate ratings on economic and financial risk. While the rating is largely subjective based on the insights of various analysts, the types of quantitative measures of political risk (government turnover, democracy, and left or right leaning governments) mentioned above will surely be correlated with various sub-components of the ratings (see below). Moreover, if the ratings are not salient with respect to sovereign spreads and default, our empirical analysis will fail to find a significant link between the two.

The political risk rating should also correctly reflect the adverse effects of political risk on investment values across countries and time. While asset values are typically not observed, a recent article by Click and Weiner (2010) suggests that the ICRG rating has power to differentiate political risk effects. They investigate the effect of political risk, measured using the composite ICRG rating, on the value of petroleum reserves using actual transactions data over six years and a large set of countries. The fact that the location of the petroleum reserves is exogenous makes the analysis even more relevant. They find that the political risk discount on valuation is substantial and highly statistically significant.

We use the composite rating in our main empirical model, but also consider differentiating the effects of the 12 sub-components of the ICRG political risk measure. These subcomponents are described in detail in **Appendix A**. We organize the twelve political risk sub-components into four categories following Bekaert, Harvey, and Lundblad (2005), who allocate them based on their content, but also on an analysis of how correlated different components are across countries and time. The first three subcomponents concern the "*Quality of Institutions"* in a country including, *Law and Order*, *Bureaucratic Quality* and *Corruption.* The next group we label "Conflict" includes the four sub-components that measure the presence or risk of political unrest: *Internal Conflicts*, *External Conflict* (which includes economic disputes, such as trade embargoes), *Religious Tensions*, and *Ethnic Tensions*. The next grouping, *"Democratic Tendencies",* which measure the democratic proclivity of a country, includes two subcomponents: *Military in Politics* and *Democratic Accountability*. Our final grouping is called "*Government Actions*". This category includes the subcomponent *Government Stability* and *Socioeconomic Conditions,* where the latter subcomponent attempts to measure the general public's satisfaction, or dissatisfaction, with the government's economic policies. This grouping also includes the potentially very relevant subcomponent, *Investment Profile* category covers the risk of expropriation or

contract viability, taxation and repatriation; factors particularly relevant for an MNC. While the political risk indicator purports to measure political and not economic risk, it goes without saying that our political and economic risk indicators are correlated. High unemployment and poverty, for example, can contribute to internal conflicts.[5] The regression framework takes correlation into account by measuring partial correlations between the dependent variable and the independent variables.

We assess the robustness of our results using the Coplin-O'Leary (CO) risk ratings. These data have not been used on a widespread basis because there is no electronic database available. The CO ratings are 18-month and 60-month forecasts of risk in four different categories that likely affect direct investment: general turmoil, restrictions on transfers (e.g. exchange controls), direct investment risk (e.g. regulatory constraints) and export barriers (e.g. tariffs). We find that that the CO and ICRG measures are highly correlated.

3.2. Do Risk Ratings Predict Political Risk Events?

For our political risk spreads to be effective, political risk ratings such as ICRG's should predict political risk events, but there is much doubt about their predictive power (see Cosset and Roy, 1991; Oetzel, Bettis, and Zenner, 2001). To evaluate the predictive power of the ICRG ratings, we consider two alternative measures of political risk realizations, political risk insurance claims and political risk news, scraped from Internet sources.

We begin by collecting political risk insurance claims from the Overseas Private Investment Corporation (OPIC), the U.S. government's political risk insurance agency. These claims are filed as a result of realizations of political risk events for U.S. firms. While these claims only cover a fraction of political risk events (for example, many corporations do not even take out political risk insurance), the claims have the advantage of measuring not just the political risk event but also its actual dollar impact.

The OPIC claims from 1996 are available from the OPIC website. Claims before 1996 are found in the Kanto, Nolan and Sauvant (2011) volumes. Claims can be filed for events such as a loss of tangible property due to political violence, investment expropriation, and the inconvertibility of currency. For each claim, we read the decision letter and extract: the OPIC decision date, the claimant's notice date, the event date(s), the size of the award, the company's name and a brief description of the nature of the claim. We hand collect data from 1984 (the starting date of the ICRG data).[6] To our knowledge, Howell

[5]Yet Tomz and Wright (2007), using data for the period 1820-2004, find only weak correlation between economic output in the borrowing country and sovereign defaults. Nevertheless, In the Appendix, we report the pooled correlation of the political risk rating and its sub-components with our economic rating. The correlations are as low as 0.162 for *Religious Tensions* and as high as 0.752 for *Investment Profile*. As the overall political rating is almost 70% correlated with economic risk, it may not be surprising that authors such as Perotti and Van Oijen (2001) and Click and Weiner (2009) use the Institutional Investor country risk ratings as a proxy for political risk.

[6]OPIC data exist from 1970 and represent nearly 300 claims. There is some earlier data from 1966 when political risk insurance was administered by the Agency for International Development (USAID). Claims data are available from 1996 at http://www.opic.gov/what-we-offer/political-risk-insurance/claims-determinations.

and Chaddick (1994) is the only extant published paper that examines the ability of various political risk indicators to predict real (OPIC) losses. It does so for the 1987-1992 period.[7]

From all claims including those that were denied, we select the first for each country of the 20 countries with OPIC claims and ICRG coverage. While some of the claims are small, some are large such as a $217 million payout in 1999. Some countries with OPIC events are not included in the analysis because of lack of ICRG coverage. Our empirical analysis takes the form of an event study. Time zero is the event date of the political risk realization. For each country impacted by an event, we adjust its ICRG political risk measure by subtracting the average ICRG political risk for all emerging markets. We then average the adjusted ICRG political risk measure across all countries for each of the 48 months before the political risk event. **Figure 1** shows the evolution of the average (as well as median) of the adjusted ICRG political risk measure leading up to the event. The graph shows that the ICRG ratings of emerging market countries with eventual risk realizations are substantially lower than average before the event (i.e. negative values on the vertical axis). Furthermore, the ICRG ratings (adjusted for average risk) are deteriorating before the political risk event is realized. In addition, the decrease in ratings is robust to the look-back period. While Figure 1 shows a four year period, the deterioration in rating also occurs for one, two and three year periods. This evidence suggests that the ratings contain predictive information regarding political risk realizations, even in this limited sample. Time trends through either the mean or medians have coefficients significantly below zero.

Figure 1 shows that the ratings have some predictive power *on average*. This is not to say that we can use the ratings for a specific country to precisely predict particular events in that country. This is analogous to bond rating services, such as Moody's and Standard and Poor's who rate thousands of bonds. Their ratings are valuable to investors not because they are particularly precise in predicting the default of a specific bond but rather because they correctly predict that a portfolio of junk bonds has a much higher chance of experiencing defaults in the future than a portfolio of highly rated bonds.

Next, we develop new measures of political risk realizations based on a historical search of news about political risk events. Our first task was to develop a dictionary of political risk terms (reproduced as **Appendix B**). We form three broad risk categories each consisting of three subcategories. The first category is *Government Actions* which includes: balance of payments regulations that impact direct investments, governments changing the terms of a contract, and a government interfering with or seizing operations. The second category is *Company-Specific Risks* which includes: harm to foreign employees, damage to a company's operations, and corruption. The final category is *Country-Specific Risks* which includes: social unrest and conflict, conflict in the form of war, and insurgency. These different categories together provide a comprehensive set of political risk realizations that may adversely affect a foreign company's investment.

We conduct separate searches for each of the nine subcategories for the 43 countries for which we have sovereign spread data. In particular, we search all English language news sources around the world covered by the Access World News database. We count all news items in a given year that contain the name of a given country as well as at least one of the search terms (per subcategory) listed in Appendix

[7]Nel's dissertation (2007) follows a similar method to Howell and Chaddick (1994) and reports correlations between 14 countries' losses and various ratings (14 observations).

B.[8] We also count all news items that contain the name of the country. For each country, year, and subcategory, we then form a ratio of the number of news stories with the political risk event search terms over the number of news items referencing a given country. Finally, we add all ratios across the three subcategories for each country and year to obtain an aggregate measure of political risk realizations for each of the three categories. The advantage of the news based method is that it covers a large number of countries and does not rely on subjective assessments.

Table 1 examines whether there is information in the ICRG ratings that predicts political risk news events. Our news event is defined as the ratio of political risk event news scaled by the total news for that country less the comparable U.S. ratio in a particular year, which we regress on the ICRG rating one year prior. Specifically, the independent variable is the difference between the logarithm of the ICRG political risk indicator for the U.S. less the comparable value for a given country. The base regression uses OLS and adjusts standard errors for groupwise-heteroskedasticity, SUR effects,[9] and a Newey-West (1987) correction with four lags. Because the political news ratios are autocorrelated, we also employ a two-step Cochrane-Orcutt (1949) estimator. The results show that for each category the ICRG rating significantly predicts the news event ratios, with the strongest results for the *Country-Specific Risks,* where the coefficient is more than four standard errors from zero. An increase in political risk from the 25^{th} to the 75^{th} percentile of the ICRG political risk rating is associated with about half of the difference between the 75^{th} and the 25^{th} percentile of the political risk news measure, suggesting that differences in ICRG political risk ratings represent meaningful differences in the probability of future political risk realizations. In Panel B, we show results for regressions with 3 years and 5 years ahead news ratios as the dependent variables. While the predictive power of the ratings understandably decreases with horizon, they continue to significantly predict political risk realizations.

The overall ICRG political risk index houses information on different aspects of political risk and some components may be more predictive of future risk than others. However, when we consider a regression with the four sub-groups of the composite ICRG rating discussed above, (that is, Quality of Institutions, Conflict, Demographic Tendencies and Government Actions) the *adjusted* R^2 goes down for all three risk realization groups. This suggests that the overall index is a good summary index of political risk. This conclusion is further confirmed by an analysis where we run 12 different regressions, each time using an index of 11 components and the excluded component separately. The *adjusted* R^2's do not change very much. The coefficient on the ICRG index remains very robust across specifications and is always highly statistically significant. We therefore focus our main analysis on the overall political risk index.

In summary, we find evidence that deterioration of ICRG political risk ratings has some predictive power for both political risk insurance claims as well as political risk events measured by news coverage. Given

[8] For a similar approach see Baker, Bloom, and Davis (2012), as well as Brogaard and Detzel (2012).

[9] Groupwise heteroskedasticity means that each diagonal element of the variance-covariance matrix is unique -- each country error has its own variance level. SUR accommodates contemporaneously correlated errors across countries.

our empirical measure of political risk, we are now able to use a regression framework to extract the part of the sovereign spread that is due to political risk.

4. Data and Sovereign Spread Model

4.1. Sovereign Spreads

To measure sovereign spreads, we collect monthly bond yields for 44 sovereign issuers from January 1994 to December 2009 from JP Morgan's Emerging Market Bond Indices (EMBI) (43 emerging market as well as the U.S. sovereign yields). In particular, we employ their EMBI+ series, which cover relatively liquid U.S. dollar denominated sovereign and quasi-sovereign bonds. If EMBI+ series are not available, we employ JP Morgan's EMBI series, which incorporate less liquid instruments. Further, we obtain "Stripped Spreads" (EMBI code: SSPRD) over Treasuries of similar maturity. These indices include both collateralized restructured (Brady) debt and conventional non-collateralized bonds. A bond's stripped spread is net of the value of any (Brady) guarantees. The indices incorporate emerging market issuers from Latin America, Eastern Europe, Asia, Africa, and the Middle East.

Table 2 presents some summary statistics on the sovereign spreads. We have at least 10 years of data for 20 countries and our total sample includes 43 countries. The mean spreads range from as little as 108 basis points for China to as large as 1,735 basis points for Argentina. In several cases, the average spreads substantially exceed the median spreads, suggesting the importance of several significant market crises that are present in our data. These periods pose a challenge for our empirical model.

The analysis of average spreads mask significant time-series variation in spreads, as suggested by the large standard deviations reported**. Figure 2** shows the time-series for the so-called EMBI+ Emerging Market Composite index. Emerging market spreads mostly stay below 400 bps, but were very elevated during the crises periods in the late 1990's, early 2000's, and 2008-2009.

Figure 2 also includes the U.S. high yield bond spread as well as the option-implied annual volatility on the S&P 500 (VIX).[10] Note that in the early part of the sample emerging markets bond spreads are higher than U.S. corporate high yield spreads. In the post 2000 period, this reverses. Also, the graph reveals a significant correlation between U.S. bond yields and emerging market sovereign spreads. In the post 2000 period, the correlation is 0.57. This high correlation is evidence that the sovereign spreads contain more information than local political risk and this further motivates our decomposition in (5).

Our empirical analysis eliminates a small number of sovereign spreads observed during periods of default. It is generally known that sovereign spreads may behave quite differentially when a country has defaulted on its debt. In default, the market attempts to assess the recovery values of the existing

[10]The Chicago Board Options Exchange Volatility Index (VIX) measures the implied volatility of S&P 500 index options. This index is often viewed as an indicator of global risk aversion, but also reflects U.S. stock market volatility.

bonds, rather than the future political risk situation. Moreover, when a bond goes into default, the market environment is typically plagued by heightened illiquidity, making it difficult to extract political risk information from the spreads. We therefore collect data on default from Fitch, Moody's, and Standard & Poor's. Default starts in the month in which at least one rating agency downgrades at least one sovereign bond of a country to “default" and lasts until the first non-default rating of a sovereign bond is issued. In total, we eliminate 280 of 2,843 observations.

4.2. Control variables

To explain the time-series and cross-sectional variation in sovereign spreads, we use three categories of control variables, in addition to a political risk factor discussed before. The variables are selected building on the growing empirical literature on the determinants of sovereign spreads. The early literature (see e.g. Edwards (1984)) focused on local macro-economic and fiscal conditions as determinants of sovereign risk spreads. Hilscher and Nosbusch (2010) still find local macroeconomic fundamentals to be the dominant factors, but Baldacci, Gupta, and Mati (2011) stress the importance of political risk factors. An important new fact uncovered by a number of recent articles is the importance of global and/or U.S. financial conditions in driving variation in sovereign spreads (see Özatay, Özmen, and Sahinbeyogu (2009), and Gonzalez-Rozada and Levy-Yeyati (2008)). Martell (2008) emphasizes the role of market liquidity for spread determination, but still finds evidence in favor of a significant common component among international bond spreads. Mauro, Sussman, and Yafeh (2002) show that emerging market sovereign spreads currently comove much more than they did in a historical 1870-1913 sample, and that major fluctuations are tied to global events to a greater degree in more recent years. Finally, Borri and Verdelhan (2010) develop and test a model in which sovereign spreads are determined, in part, by the degree to which emerging economies are exposed to U.S. business cycle risk. Using Credit Default Swaps (CDS) for sovereign borrowers, Remolana, Scatigna, and Wu (2008), and Longstaff, Pan, Pedersen, and Singleton (2011) also find common components linked to global financial conditions. Pan and Singleton (2008), focusing on Mexico, Turkey, and Korea, show that CDS risk premia covary significantly with measures of global event risk, financial market volatility, and macroeconomic policy.

Given that the recent literature has stressed the importance of global determinants, our first category comprises global factors that may influence emerging market bond prices. We collect the Barclays (formerly Lehman Brothers) U.S. Corporate High Yield Spread over Treasuries to explore the extent to which developed market credit risk pricing impacts emerging market bonds.

Our second category of control variables represents various aspects of local risk conditions. We use the ICRG ratings to measure political risk as well as economic and financial risk. The economic risk indicator is designed to capture a country's current economic strengths and weaknesses. It combines information on five economic statistics: GDP levels, GDP growth, inflation, government budgets, and the current account – all measured relative to the U.S. The ICRG financial risk indicator is designed to assess a country's ability to finance its official, commercial, and trade debt obligations. It combines data from five

statistics: foreign debt as a percentage of either GDP or exports, the current account as a percentage of exports, official reserves, and exchange rate stability. We combine both the economic and financial risk indicators into one composite "economic" rating.[11] The ratings are scaled between 0 and 100, with 100 representing the least risk. We transform the original ratings, taking logs of their inverse to have larger values represent more risk and to dampen the effect of outliers.

Our third category of control variables concerns (local) liquidity factors. Hund and Lesmond (2008) show that a significant part of observed yield spreads may be attributable to illiquidity compensation rather than simply default risk for emerging market sovereign and corporate issues. Following the work of Lesmond, Ogden, and Trzcinka (1999), Lesmond (2005), and Bekaert, Harvey, and Lundblad (2007), we construct a bond market illiquidity measure based on the incidence of observed zero daily bond returns. Illiquidity, denoted by *Liq*, is the equally-weighted monthly average of zero daily returns across all sovereign bonds provided by Datastream. The Datastream data do not represent the exact same constituent set of bonds that enter into the EMBI indices, but the correlations between the average yield on these bonds and the EMBI+ yield are, on average, above 0.9, suggesting significant overlap. To smooth the effect of outliers, we use a 12-month moving average of the monthly illiquidity measure. As with the other control variables, we measure liquidity relative to the U.S. Additional details on the sources and construction of all variables are provided in Appendix A.

4.3. Empirical Decomposition of Sovereign Spreads

We explore several different versions of the panel regression (6) to demonstrate the importance of the various factors discussed above (global, local macroeconomic, liquidity, and political risk). In our main regressions, we focus on an unbalanced baseline sample of 20 emerging market countries spanning January 1994 through December 2009 (however, we lose the first 11 observations of 1994 due to our 12-month moving average of several variables).[12] Panel A of **Table 3** presents estimation results for several alternative regressions based on different choices for the global and local factors. All estimated coefficients are based on pooled OLS; however, the standard errors are adjusted for groupwise heteroskedasticity, SUR effects, and a Newey-West (1987) correction with four lags.

To begin, we demonstrate the importance of global factors in the determination of sovereign spreads, formalizing the relationship shown in Figure 2. We estimate a simplified regression, reported in column (I) of Panel A of **Table 3** including only the U.S. high yield spread. While the variable is highly significant, the *adjusted* R^2 of this pooled regression is only 8.8%, suggesting much of the variation in sovereign spreads is left unexplained. The U.S. high yield spread is co-linear with a measure of stock market volatility, the VIX index (see Figure 2, the correlation in the post-2000 sample is 0.93), which, in isolation, also yields a highly significant coefficient (not reported).

[11] In our empirical work, we found that using the two ratings separately did not improve the empirical fit, and that both ratings received statistically similar coefficients.

[12] For a subset of countries, we also collect data on five-year sovereign debt CDS contracts from Markit and run a similar panel model. The results are qualitatively analogous to the results for our main model.

In column (II), we augment the explanatory variables with two characteristics of the sovereign bonds that constitute the EMBI indices. First, these bonds differ in terms of maturity, hence we include the average life of the bonds in each country index (as reported by J.P. Morgan) to control for potential maturity effects. Second, given the potential importance of liquidity premia, we also include the zero return illiquidity measure. As can be seen in **Table 3**, the U.S. high yield spread remains highly significant. Further, we document a positive and highly significant effect for the log of the average life of the bond, suggesting that countries with longer lived bonds, on average, face an elevated sovereign spread. The coefficient for bond market illiquidity is positive and highly significant, consistent with the notion that relatively illiquid bond markets face higher spreads. Taken together, the evidence suggests that bond level factors also play an important role in the determination of sovereign spreads. Indeed, the *adjusted* R^2 of this regression is now 31.2%.

With both global and bond specific factors in place, column (III) presents estimates adding country-level measures of economic and political risks obtained from ICRG. First, the *adjusted* R^2 increases substantially to 50.5%; local economic/financial and political risks are indeed important. The coefficients associated with both factors are highly significant suggesting that improved economic/financial and political environments are correlated with lower sovereign spreads. While the broad concept of "country risk" is related to both economic and political concerns, our regression results suggest that bond prices reflect economic and financial risks separately from political risk. The other factors retain the signs and significance levels as presented above, but the coefficient on bond illiquidity is cut in half.

Apart from the *adjusted* R^2, we also report weighted sums of absolute deviations between actual and predicted spreads. When equally weighted, the average error goes down from almost 315 basis points for the simple model with only global factors, to about 210 basis points for model (III). When we use GDP weights, the errors are considerably lower, falling to 130 basis points for model (III).[13]

Figure 2 shows that the spreads increase quite dramatically during crises. A number of these periods coincide with actual defaults and do not contaminate our regressions. However, several of these episodes do not coincide with default periods, and it is quite unlikely that our linear factor regression captures the behavior of spreads during such episodes. In crisis times, bond market volatility is likely to increase. Therefore, we consider an additional measure that captures *realized* bond market volatility (see Andersen, Bollerslev, Diebold, and Labys (2003) as an example). For each market, we construct a monthly scaled measure of realized bond market volatility by cumulating daily squared EMBI bond index returns and dividing the sum by the average life of the bonds in each country index. We then take a 12-month moving average of the monthly bond volatility measures. An analogous U.S. bond market volatility measure is subtracted. Bond volatility indeed increases during crises. The volatility measure has a **74%** correlation with a simple crisis indicator defined to be one if the sovereign spread at time *t* is larger than 1,000 basis points and zero otherwise.

Column (IV) of Panel A **Table 3** presents estimates for a specification using the volatility measure as an additional independent variable. First, the adjusted R^2 of this specification increases significantly from

[13] We also estimated a version of Table 3 using the logarithm of the sovereign spread as the dependent variable. The results are similar and are available on request.

what we observe in the other columns (to 71%), highlighting the importance of accounting for the crisis through the volatility term. Indeed, the volatility term itself is highly significant. The coefficients on the other explanatory variables generally decrease in absolute magnitude relative to specification (III), but remain qualitatively similar. Moreover, the pricing errors drop to 134 basis points equally weighted and 100 basis points GDP weighted. Given its good fit with the data, this model should be informative about the determinants of sovereign spreads.

4.4. Robustness of Results to Alternative Measures of Political Risk

As an alternative to the ICRG data, we examine the Coplin-O'Leary (CO) risk ratings. We hand collected these data and returned our electronic version to Political Risk Services for other researchers to use. The CO data cover both 18-month and 60-month risk forecasts and are, therefore, explicitly forward-looking. Analysts initially establish the three most likely political regimes over the two horizons and assign probabilities to each regime. To do so, 17 risk factors are specified (12 for the 18-month horizon and 5 for the 60-month horizon); and are numerically scored on a scale of 0 to 3. CO then aggregates these scores into four categories: political turmoil, restrictions on cross-border transfers, investments, and exports. **Appendix C** lists the 17 factors and provides more details on the methodology. After summing the numerical scores, letter grades are assigned from A+ (least risky) to F (most risky). We then reconvert the letters back to a numerical score for our analysis (A^{+}=1, A=2, …, D-=12 and F=13).

We also construct a CO Total Political Risk measure which is the sum of categories one through four. We have ratings for most of the countries in our analysis for both 18- and 60-month forecasts. While these data are monthly, we use only the December data. As in case of the ICRG ratings above, we transform the original ratings, by taking logs of their inverse and by subtracting the corresponding U.S. value.

First, we compare the explanatory power of these new data with our baseline estimates using the ICRG political risk measure. The results are presented in **Panel B of Table 3**. We find that these new measures of country risk are highly correlated with the ICRG index (-0.76 for the 18-month forecast and -0.74 for the 60-month forecast) and they also explain variation in sovereign spreads. In column (III) below, we repeat our **Panel A** regression using the identical sample as the first two columns. There are three differences between Panel A and B. First, we are only using annual data in Panel B. Second, there is one less country (because the CO does not cover one of the ICRG countries). Third, the sample is slightly shorter.

Figures **3a,b** compare the fitted values for Mexico and South Africa and contrast the fitted values from the ICRG and the CO measures. The fitted values are quite similar suggesting that both ICRG and CO are useful determinants of sovereign spreads.

4.5. Effects of Subcomponents

It is possible that different components of political risk ratings may be more or less important for sovereign spreads. The regression could identify how these different sub-components are priced on average in sovereign spreads. When we put the four separate groups of the ICRG rating in the sovereign yield spread regression (5), rather than one composite rating as in **Table 3**, we find that only the ICRG *Quality of Institutions* and *Government Actions* produce significant coefficients. In **Panel A of Table 4**, we first show regression results replacing the composite rating by these two sub-groups. Both are highly significant, but the *Quality of Institutions* variable is twice as important as the *Government Actions* variable.

Next, we drill down into the subcomponents of the two groups, *Quality of Institutions* and *Government Actions*. In an initial exercise, we examine 12 regressions that include an individual subcomponent and an overall index that excludes the particular subcomponent. We find five sub-components that have positive and significant coefficients. These subcomponents include all three members of the *Quality of Institutions* group and two of the three members of the *Government* Actions group (*socio-economic conditions* is excluded). The second part of **Panel A of Table 4** reports the results using these five sub-components. Despite having five different variables to measure political risk, the regression's *adjusted* R^2 is only 2% higher than the regression with the composite political risk rating provided in **Table 3**.

In **Panel B of Table 4**, we examine the role of the subcomponents of the CO measure. Using the same method as the previous panel, we focus on three of the four subcomponents: *Direct Investment Risk*, *Turmoil Risk* and *Export Risk*. All three of these sub-components have significant coefficients for both the 18-month and 60-month forecast horizon measures. The fourth sub-component, Restrictions on Transfers, did not have a significant effect on spreads and was excluded from the regression. However, the *adjusted* R^2 is only marginally higher (1%) for the 18-month forecast horizon measure than in the regression with the composite index in Table 3. We therefore compute our political risk adjustments using the regression framework with the overall indices.

5. Political Risk Spreads

5.1. Extracting Political Risk Spreads

We use specification IV in Panel A of **Table 3** to obtain a measure of the political risk spread. Differently from the political risk spread introduced above, the measure we obtain here is defined as an absolute, as opposed to multiplicative, political risk spread (*APRS*). We explain the exact relationship between *PRS* and *APRS* below. A natural candidate for *APRS* is $\hat{c}_4 PR_{i,t}$, the part of the sovereign spread accounted for by political risk. The panel regression model, however, generates errors for specific countries and/or time periods, over-estimating actual spreads in some instances and under-estimating them in other instances, which is unavoidable in such a parsimonious model. It is critical that the actual computation embeds information in the currently observed sovereign spread of a given country. To do so, we use a

ratio approach. We compute the percentage of the predicted spread, $\widehat{SS}_{i,t}$, accounted for by political risk and apply that ratio to the actual observed spread, $SS_{i,t}$:

$$APRS_{i,t} = \frac{\hat{c}_4 PR_{i,t}}{\widehat{SS}_{i,t}} \, SS_{i,t} \, . \qquad (7)$$

This computation can fail in three instances. First, political risk in the country examined may be smaller than in the U.S., making $PR_{i,t}$ negative. In that case, we simply set the narrow political risk spread equal to zero. This situation happens in about 1% of all cases. Second, the political risk variable may account for more than 100% of the spread, for example, in instances, where the macroeconomic outlook of a country is better than that of the U.S. In that case, we set the ratio in (7) equal to 1.00. Third, the predicted spread may be negative, even when there is positive political risk in a country, because of negative contributions of the other independent variables. In that case, we use an average of the positive ratios over the last 12 months as the ratio. If there are no such positive ratios, we set the ratio to 1.0. For our sample of countries, the ratio is 0.12 at the 10th percentile of the overall distribution and 0.97 at the 90th percentile, while the median ratio is 0.32.

We have also computed an alternative estimate, accounting for the fact that political and other risks may be correlated; an increase in macroeconomic and/or liquidity risk may be partially induced by political risk events. To account for this correlation, in the alternative measure we regress each of the country-specific variables in (6) on the political risk measure and capture the residuals. This strips out variation in the local variables that is due to political risk in the country. We then re-run the sovereign spread regression (6) with these orthogonalized variables and repeat the procedure above, thereby assigning common correlation to political risk. Details on this wider concept of political risk spread can be obtained from the authors.

5.2. Political Risk Spreads in Practice

To highlight the practical application of our approach, **Table 5** reports political risk spreads (*APRS*) for the 32 out of the 43 countries used in this study for which we have data in December 2009 (the end of our sample). In December 2009, the EMBI spreads vary from a low of 42 basis points for Egypt to 1,041 basis points for Venezuela. The highest political risk spread we observe is for Venezuela at 322 basis points, followed by Iraq at 171 basis points. For the majority of the countries, political spreads are below 100 basis points. That the political risk spread is high relative to the full sovereign spread in countries such as Iraq and Venezuela seems eminently reasonable.

While **Table 5** reports political risk spreads for December 2009, they can, of course, be calculated at any point**. Figure 4**, for example, shows the time series of the political risk spread for Mexico. The figure demonstrates that the political risk spread is typically smaller than the sovereign spread, but follows a similar pattern through time.

Our methodology allows us to calculate political risk spreads for all countries covered by the ICRG, even if other important data items are absent (including, in particular, traded sovereign bonds or CDS

contracts). When we do not have EMBI spreads, we cannot apply the ratio methodology directly. Moreover, for such countries, we also do not have observations on bond liquidity, maturity, volatility, and other key independent variables. In general, the political risk spread will be closely linked to the political risk rating, although the relationship may be non- linear, given that we use a ratio approach and may reach boundaries of zero or one. We therefore estimate quadratic cross-sectional regressions: $PRS_{i,t} = a + b\ PR_{i,t} + c\ PR^2_{i,t} + e_{it}$. Plugging in political risk ratings (*PR*) from countries without spreads but which do have a political risk rating then yields a predicted political spread (*PRS*) for these countries.

In **Table 6**, we report December 2009 political risk spreads (APRS) for all countries covered by the ICRG for which sovereign spread data are not available. We incorporate information from observed sovereign spreads, using data from Table 3 as indicated above using a linear-quadratic cross-sectional regression of political risk spreads onto $PR_{i,2009}$ and its square. The *adjusted* $R^2$of this regression exceeds 0.60. For all other countries for which the political risk rating is available, we employ the regressions' fitted values to determine what the political risk spread would be given each country's $PR_{i,2009}$. The results in **Table 6** suggest that our approach can be meaningfully extended to a large set of countries for which sovereign spread data are not available. The spreads range from 24.1 basis points for Taiwan and Namibia to 511.1 basis points for Somalia. When we average the spreads across regions, we find them to be 46.2 for Eastern Europe, 63.7 for the Middle East (which includes a number of oil-rich countries), 88.0 for Latin America, 85.2 for Asia, and 129.4 for African countries. These numbers seem plausible and transform political risk ratings into meaningful economic units.

5.3. Measuring Political Event Risk

As Section 2 indicated, the political risk spread is directly related to the probability of a risk event, if we assume that there is a constant probability of a risk event with 100% expropriation. However, the political risk spread we derived in the Sections 5.1-5.2 is an absolute spread, whereas we need a multiplicative spread for the computation we described in Section 2. That is, we want to split up the actual bond yield as:

$$(1 + BY) = (1 + BY^*)(1 + PRS),$$

where *BY* is the full bond yield and BY* the bond yield purged of the political risk. In our computations so far, we computed an absolute political risk spread, APRS, such that:

$$BY = BY^* + APRS.$$

Hence,

$$PRS = APRS/(1 + BY^*).$$

Note that *BY** includes the U.S. Treasury yield and compensation for risks other than political risk.

Table 7 presents the computation of political risk event probabilities for a sub-sample of 15 countries. Let's illustrate the computation using Indonesia as an example. Assuming the U.S. Treasury yield is 5.12% (512 basis points), the average 10-year yield over our sample period, the total bond yield in Indonesia was 742.35 basis points. The absolute political risk spread (*APRS*) was 49.12 basis points, implying a multiplicative spread (*PRS*) of

$$0.004912/(1 + 0.074235 – 0.004912) = 45.94 \text{ basis points.}$$

This yields a political risk probability of 0.46% using (3). If we had used the full sovereign yield spread (*SS*), the political risk event probability would have been 2.14%. The table also computes the cumulative probability of a political risk event over a 10-year horizon.[14] For Indonesia, the political risk spread computation yields a cumulative risk probability of 4.48%, but using the full sovereign spread the probability would be 19.49%, almost 5 times higher.

Under the same assumptions (constant probability of a risk event, zero recovery value), it is straightforward to compute a discount rate that properly accounts for political risk and also assess how much adding the sovereign spread over-adjusts for political risk. The last column(s) of **Table 7** report the absolute difference between the political risk adjusted cost of capital using the full sovereign spread and our proposed numbers. For these computations, we simply assumed a "normal" discount rate, meaning one that only accounts for systematic risk, of 10%. So, the discount rate proposed is simply 1.10(1 + PRS). For Indonesia, using the political risk spread results in a discount rate of 10.51% but using the full sovereign spread leads to a discount rate of 12.47%, almost 2% higher. The results are even more striking for some other countries, such as Venezuela and Argentina. On average, for December 2009, using the full sovereign spread over-estimates the cost of capital by 3.1 percentage points relative to using the political risk spread.

5.4. Individualizing Political Event Risk

So far we have assumed that sovereign bonds correctly identify political risk relevant for the MNC considering an investment project in the country. This need not be the case, as a MNC may mitigate and manage political risk through a variety of actions. The international business literature has focused much attention on political strategies, including lobbying and investing in goodwill and connections with the political elite (see Henisz (2003) and Henisz and Zelner (2010) for more details). The MNC may also look for local partners and limit research and development in countries with poor intellectual property protection (Bremmer, 2005). According to Feinberg and Gupta (2009) operational integration (e.g., intra-firm trade) may mitigate political risk. Anshuman, Martin and Titman (2011) discuss various contract structures that may mitigate political risk, such as agreeing to transfer the investment to the host government at a later point under a "build-own-operate-transfer" agreement.

[14] This probability is 1- $(1-p)^{10}$.

Clearly, the ability to manage and mitigate these risks is specific to the particular company involved. However, a quantification of "average" political risk for a particular country should remain a useful starting point for any investment analysis. Moreover, a company could "customize" ICRG's political risk rating of a country, using its 12 components. It may be that because of its connections, it feels that certain risk factors do not apply to them, e.g. they may be less susceptible to corruption. They could zero out that sub-component by putting its value equal to the value prevalent in the U.S. and redo the calculation in equation (7) for this adjusted political risk value.

6. Political Risk Spreads and Foreign Direct Investment

There is a voluminous literature examining the effect of political risk on FDI. While there is a perception that political risk negatively affects FDI, the results in the literature are not always easy to interpret and somewhat mixed. Early work, such as Kobrin (1976), actually found mixed results, but used only cross-sectional data. Similarly, Loree and Guisinger (1995) and Sethi, Gusinger, Phelan and Berg (2003) find only weak effects of political – economic stability measures on FDI. However, these articles use measures of both political and economic/financial risk, perhaps weakening the power of their tests to detect a significant effect. Henisz and Delios (2001) document that institutional hazards reduce the likelihood that Japanese multinationals enter foreign countries through equity investments, whereas Demirbag, Glaister, and Tatoglu (2007), focusing on entry in Turkey, document that political risk is an important determinant of the equity ownership of foreign affiliates. Actions by developing countries, such as the adoption of bilateral investment treaties, suggest that political actors in developing countries are aware of the negative effects of political risk on FDI and are willing to accept restrictions on their sovereignty to mitigate them (see Neumayer and Spess, (2005)). Various studies also separate political stability (e.g. caused by ethnic unrest or war) from actual government policies that may attract FDI, which represent two different dimensions of political risk. Whereas Nigh (1985) finds a negative effect of political stability on FDI, more recent studies like Li and Resnick (2003) and Globerman and Shapiro (2003) find insignificant effects. However, both of these studies also examine the effect of government policies on FDI, referred to as, respectively, "property rights" in Li and Resnick and "government infrastructure" in Globerman and Shapiro. Examining the construction of these variables, it is clear that these variables are highly correlated with some of the sub-components in the ICRG political risk rating, and they do show a statistically significant relation with FDI flows. In fact, the Li and Resnick paper uses sub-components of the ICRG political risk ratings to measure "property rights." Finally, the literature that has focused more specifically on corruption as a deterrent of FDI has mostly found significant negative effects (see Habib and Zurawick (2002); Wei (2000); Uhlenbruck, Rodriguez, Doh, and Eden (2006)). We should note that many of the panel regression studies investigate FDI flows in absolute terms, which may lead to econometric problems; as such flows are non-stationary over time.

Because FDI is so important to economic growth (see Borenzstein, De Gregorio and Lee (1998), for example), policy makers may want to quantify the effect of political risk on FDI. However, the results from extant studies are somewhat difficult to interpret and compare across studies. Previous studies have used a variety of political risk ratings with different units, and with most ratings entirely based on

subjective assessments of political risk experts. Moreover, the empirical results so far are rather diverse, as discussed above. Our political risk spread instead is directly related to an interest rate spread. For a policy maker, it is not difficult to assess the impact of certain political decisions on market yields, as high frequency data can be used to examine how sovereign yield spreads react to political decisions. The units of our political risk spreads are also easy to interpret.

We therefore re-examine the relationship between FDI and political risk using our political risk spread as the measure of political risk and contrast its effect on FDI with the effect of the total sovereign spread. **Table 8** presents the results. We limit our sample to the 30+ countries for which we have EMBI data. The sample is from 1994-2009 using annual observations. The dependent variable is net FDI inflows scaled by GDP and the data are from UNCTAD. The regression is contemporaneous so that the timing of the spreads is matched to the timing of the net FDI inflows. We use similar control variables to those used in Alfaro, Kalemli-Ozcan, Volosovych (2008). These include: the log of GDP per capita, the distance from the U.S., the secondary school ratio (total enrollment divided by total age group population), a measure of capital account openness from Quinn and Toyoda (2008) and the country's (EMBI) sovereign spread. The panel is not balanced.

In the first specification, the overall EMBI spread is significant and negative (a higher spread means lower direct investment). In specification II, we replace the overall spread with our political risk spread (*APRS*) and the residual spread, that is, the overall spread minus the political risk spread. Interestingly, the residual variable is not significant, but the political risk spread has a significantly negative coefficient. Hence, the variation in FDI appears to be driven by the part of the spread that is due to political risk. The regression coefficient has a straightforward economic interpretation. It tells us that a one percentage point increase in the political risk spread leads to a 34 basis points drop in the ratio of FDI to GDP.[15] The median ratio of FDI to GDP is 2.95% and the median GDP is $82.5 billion. Hence, the one percentage point rise in the spread leads to decrease in FDI of 11.5%, or $305 million. Specification III adds year fixed effects. Consistent with the estimate that does not include these effects, the political risk spread is still significant, but more marginally so. The residual spread is not. Hence, FDI is much more sensitive to political risks, than to the economic outlook and other risks which are also embedded in the sovereign yield spread, and this result is robust to whether we measure the political risk spread in a narrow or wide sense.

The last part of the table measures the economic effect in a different fashion. We shift the political risk spread from the 25th to 75th percentile of its overall distribution. We also conduct this exercise for the

[15]The Table 8 regressions have a generated regressor when we use the political risk spread. To address this potential problem, we conducted the following simulation experiment. We draw 1,000 alternative first stage parameters from their asymptotic normal distribution (that is, using the existing point estimates as the mean and the estimated variance-covariance matrix as the variance). We then use these to create annual PRS data for all the countries we use in the second stage. Finally, we rerun our FDI regressions in Table 8 1,000 times and store the coefficient values and *t*-statistics on the EPRS and the residual. These estimates, under the alternative, taking our setup as a starting point, should be centered around our existing point estimates of the coefficients and t-statistics and they are. For example, the *t*-statistic on the political risk spread is -2.46 in Table 8. The 10^{th} and 90^{th} percentiles of the distribution are -2.52 and -2.27. Hence, we conclude that the generated regressor problem is not interfering with our inference.

overall sovereign spread. For the overall sovereign spread, this shift generates a change of -0.15% for the FDI/GDP ratio. However, for the political risk spread, the change is -0.37%. Thus, a 25%-75% shift in the political risk spread decreases FDI by 12.5%. The results in the other specifications are just slightly weaker.

Panel B repeats this analysis using the alternative CO ratings. The results are consistent with the results in Panel A, with political risk spreads exerting a significant effect on FDI, but residual spreads having no significant impact. Only the spread in the fixed effects regression is not statistically significant. Except for that case, the economic effects are stronger or of the same order of magnitude than in Panel A.

7. Conclusion

Our paper introduces a new measure of political risk which we call the political risk spread. We base our measure on market-based, forward-looking information from sovereign yield spreads. However, the sovereign spreads reflect much more than political risk. These spreads are contaminated with information about the health of the global economy, local macroeconomic conditions, the liquidity of the individual bonds, and the maturity structure of the bonds. Our innovation is to propose a method to extract the part of the sovereign spread that is due to political risk.

We show that it is a mistake to use overall sovereign spreads to adjust discount rates for political risk in international investment. Indeed, the traditional way of using sovereign spreads is likely to lead to foreign direct underinvestment.

We offer two additional insights. First, we show how to use our calculated political risk spreads to derive a probability of an adverse political event in a particular country. Second, we show how a business can tailor its particular exposure to different types of political risk in calculating the appropriate discount rate for international valuation.

Finally, our new measure of political risk is useful both for businesses and policy makers. Governments are often considering policies that might heighten political risk. The political risk spread is both economically and statistically significant in explaining patterns of foreign direct investment across countries and through time. Hence, using our measure, it is possible to obtain an ex ante estimate of the cost of heightened political risk in terms of lost future foreign direct investment.

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Appendix B: Dictionary for Political Risk Events

We search all English language news sources around the world covered by the Access World News database. We count, separately for each country in our data set and each of the nine categories outlined below, the news items in a given year that contain the name of the country as well as at least one of the search terms (per subcategory) listed below. Each line represents a search term which consists of one or multiple words. If multiple words are required to appear in a specific order they appear in quotation marks, otherwise they are combined by the plus sign (+).

In all cases, we allow "multinational" and "transnational" as alternatives to "foreign".

1. GOVERNMENT ACTIONS
a) BoP regulation affecting investment (allow "FX" an "exchange rate" as alternative to "currency")

"Currency conversion"
"Currency inconvertibility"
"Currency regulation"

"Exchange inconvertibility"

Government + Foreign + "inconvertibility"
Government + Foreign + "export tax"

b) Government changing terms of contract
Government + Foreign + "Discriminatory regulation"
Government + Foreign + "Breach of contract"
Government + Foreign + Reneging+contract
Government + Foreign + Reneging+agreement
Government + Foreign + Renege+contract
Government + Foreign + Renege+agreement
Government + Foreign + abrogate+contract
Government + Foreign + abrogate+agreement
Government + Foreign + abrogating+contract
Government + Foreign + abrogating+agreement
Government + Foreign + "Renegotiating terms"
Government + Foreign + "tax payments"+dispute
Government + Foreign + "coersion" + contract
Government + Foreign + "coersion" + agreement
Government + Foreign + "License or permit" + "cancellation or revocation"

Government + Foreign +impairment
Government + Foreign + BIT
Government + Foreign + Bilateral Investment Treat*
Government + Foreign + arbitration

c) Government interfering or seizing operations
Government + Foreign + Nationalization
Government + Foreign + Nationalisation
Government + Foreign + Expropriation
Government + Foreign + "expropriate"
Government + Foreign + restriction + repatriation
Government + Foreign + "limits on remittances"
Government + Foreign + "discriminatory taxation"
Government + Foreign + Violence
Government + Foreign + "interference with operations"
Government + Foreign + Confiscation
Government + Foreign + Confiscate
Government + Foreign + Confiscating
Government + Foreign + Diversion
Government + Foreign + "active blockage"
Government + Foreign + "commandeer"
Government + Foreign + "seizure"
Government + Foreign + "passive blockage"

2. COMPANY-SPECIFIC RISKS
a) Harm to foreign employees
Foreign + kidnapping
Foreign + Hijack
Foreign + kidnap
Foreign + arrest + executive
Foreign + arrested + executive
Foreign + arresting + executive
Foreign + “imprisoned executive”

b) Damage to company’s operations
Foreign + boycott
Foreign + boycotting
Foreign + sabotage
"damage to property" + foreign
"damage to operations" + foreign
"property destruction" + foreign
"loss of property" + foreign
"property loss" + foreign
"bomb" + foreign
"attack" + foreign

c) Corruption
Foreign + corruption

3. COUNTRY-SPECIFIC RISKS
a) Social unrest and conflict
“mass labor strikes”

“mass labour strikes”
“general strike”
“social unrest”
“ethnic conflict”
“ethnic violence”
"civil strife"
“ethnic strife”
“ethnic cleansing”
“ethnic eradication”
genocide
riot
"tear gas"
"water canon"
"mass protest"

b) Conflict, war, military

War+civil
War+military
“military conflict”
“coup d’etat”
“palace revolution”
“military conflict”
“military coup”
“military overthrow”
“military plot”
“military combat”
“military barrage”
“military takeover”
“military raid”
Bombard+civilians
IED
Improvised explosive device
Bloodshed+civilians
Massacre +civilians
Slaughter+civilians
Junta
Dictator
Dictatorship
putsch
“military coup”
“military overthrow”
“military plot”
“regime change”
overthrow + government
"weapons of mass destruction"
WMD

c) Insurgency
terrorism
terrorist
Rebellion
Revolution
Revolt
“Occupation forces”
Hijack
Guerrilla
Jihadist
"suicide bomber"
"suicide vest"
"roadside bomb"
"roadside explosive"
"Molotov cocktail"

Appendix C: Coplin-O'Leary Risk Rating Method

The Coplin-O'Leary (CO) data cover both 18-month and 60-month risk forecasts. Analysts first establish the three most likely political regimes over the two horizons and assign probabilities to each regime. 17 risk factors are specified (12 for the 18 month horizon and 5 for the 60-month horizon).

The 18-Month factors are: 1) Turmoil; 2) Equity Restrictions; 3) Operations Restrictions; 4) Taxation Discrimination; 5) Repatriation Restrictions; 6) Exchange Controls; 7) Tariff Barriers; 8) Other Import Barriers; 9) Payment Delays; 10) Fiscal and Monetary Expansion; 11) Labor Policies; and 12) Foreign Debt. The five-year risk factors are: 13) Turmoil (used in both 18-month and 60-month forecasts); 14) Investment Restrictions; 15) Trade Restrictions; 16) Domestic Economic Problems; and 17) International Economic Problems.

These factors are numerically scored on a scale of 0 to 3. CO then aggregates them into four categories:

i. Turmoil (actions that can result in threats or harm to people or property by political group, which include riots and demonstrations, politically motivated strikes, disputes with other countries that impact business, terrorism and guerrilla activities, civil or international war, street crime that affects international business personnel, and organized crime having an impact on political stability or foreign business); Both the 18-month and 60-month forecast are category 1;
ii. Transfer. (includes exchange controls on international business, inconvertibility of currency, and restrictions on the transfer profits, dividends, and investment capital out of the country); 18-month includes categories 6, 9, 10 and 12 while the five-year also includes categories 13 and 17.
iii. Investment (includes turmoil, equity restrictions, and restrictions on local operations, i.e. labor, management, and procurement, taxation discrimination, repatriation restrictions); 18-month includes categories 1-6, and 11 while the five-year also includes categories 13, 14, and 16.
iv. Export (focuses on risks facing exporters to the country, including turmoil, exchange controls, tariffs, other trade barriers, payment delays and foreign debt); 18-month includes 1, 6-9, and 12 while the five-year also includes 13, and 15-17.

After summing the numerical scores, letter grades are then assigned from A+ (least risky) to D- and F (most risky). We then convert the letters back to a numerical score (A^{+}=1, A=2, … D^{-}=12, F=13).[16]

As mentioned, we have both 18-month and 60-month forecasts. We have ratings for most of the countries in our analysis. While these data are monthly, we only chose to load the December data.

[16] For additional detail, see http://www.prsgroup.com/PRS_Methodology.aspx

Table 1

Do political risk ratings predict news-based realizations of political risk events?

Panel A: 1-year forecasts of political risk events

	Government Actions		Company-Specific Risks		Country-Specific Risks	
Ln(ICRG Political Risk)	2.760	1.027	10.063	3.301	46.211	20.966
	0.164	*0.329*	*0.670*	*1.097*	*2.491*	*4.169*
Adj. R-squared	0.21	0.01	0.30	0.02	0.34	0.05
Cochrane-Orcutt Two-Step Procedure	NO	YES	NO	YES	NO	YES

Panel B: Multi-year forecasts of political risk events

	Government Actions		Company-Specific Risks		Country-Specific Risks	
	3-year	5-year	3-year	5-year	3-year	5-year
Ln(ICRG Political Risk)	2.359	1.881	8.536	7.186	41.736	36.300
	0.191	*0.207*	*0.686*	*0.728*	*2.691*	*3.172*
Adj. R-squared	0.16	0.12	0.25	0.20	0.30	0.24

The sample includes the 43 countries for which we have sovereign spread data. For an unbalanced panel of annual observations from 1987 to 2011, we regress three different realizations of news events, defined as the ratio of political risk event news scaled by the total news for that country less the comparable U.S. ratio in a particular year, on a constant and the difference between the logarithm of the ICRG political risk indicator for the U.S. less the comparable value for each country. For the left-hand side variables on political risk news, we form three broad risk categories each consisting of three subcategories. The first category is *Government Actions* which includes: balance of payments regulations that impact direct investments, governments changing the terms of a contract, and a government interfering with or seizing operations. The second category is *Company-Specific Risks* which includes: harm to foreign employees, damage to a company's operations, and corruption. The final category is *Country-Specific Risks* which includes: social unrest and conflict, conflict in the form of war, and insurgency. Panel A reports results when the left-hand side variable is measured over one year ahead, while Panel B reports results when left-hand side variable is measured over three or five years ahead. We report coefficient estimates from pooled OLS regressions; however, standard errors, reported in italics, account for group-wise heteroskedasticity, SUR effects, and a Newey-West correction with two lags. Because the political news ratios are autocorrelated, Panel A also employs a two-step Cochrane-Orcutt (1947) estimator.

Table 2

Sovereign yield spreads: Summary statistics

	Mean	Median	Std. Dev.	Min	Max	Start Date
Algeria	803.1	722.0	404.8	298.5	2,306.0	03/99
Argentina	698.8	650.0	368.5	192.8	1,893.8	01/94
Brazil	688.5	662.9	397.9	141.8	2,395.5	01/94
Bulgaria	569.4	467.0	485.7	55.8	2,154.0	01/95
Chile	147.0	144.6	69.7	55.0	392.0	05/99
China	108.0	104.4	50.1	43.6	357.0	03/94
Colombia	424.0	408.3	211.3	117.0	1,084.5	02/97
Cote d'Ivoire	1,073.7	1,031.0	364.0	586.0	2,373.0	04/98
Croatia	295.2	214.0	192.6	106.5	924.0	08/96
Dominican Rep.	625.0	488.3	419.0	135.5	1,730.1	11/01
Ecuador	1,055.6	845.3	602.9	460.5	3,841.6	01/01
Egypt	188.5	141.1	137.6	-3.5	560.6	07/01
El Salvador	307.1	274.4	147.6	120.4	860.9	04/02
Gabon	625.1	481.4	306.9	311.4	1,203.2	12/07
Ghana	712.5	556.9	373.3	359.5	1,484.5	10/07
Hungary	108.6	75.2	105.7	7.0	540.1	01/99
Indonesia	323.9	285.7	168.9	149.6	929.6	04/04
Iraq	625.3	544.8	216.0	422.8	1,282.5	03/06
Jamaica	664.4	684.2	268.4	347.7	1,184.6	10/07
Kazakhstan	626.7	484.6	348.7	184.3	1,370.6	06/07
Lebanon	427.1	379.0	209.9	129.0	1,052.4	04/98
Malaysia	190.3	159.0	146.7	40.0	1,055.0	10/96
Mexico	395.1	355.5	263.7	74.7	1,578.0	01/94
Morocco	474.4	439.0	281.2	53.6	1,519.0	01/94
Nigeria	1,329.8	1,319.0	714.7	16.4	3,162.0	01/94
Pakistan	625.8	438.3	548.8	141.9	2,131.7	06/01
Panama	345.4	353.2	117.4	119.4	679.0	07/96
Peru	407.3	409.0	206.9	100.4	941.0	03/97
Philippines	425.6	423.3	161.7	138.0	937.0	01/94
Poland	202.3	181.0	154.3	34.6	871.0	10/94
Russia	365.2	277.1	266.4	87.0	1,088.0	08/97
Serbia	365.9	292.0	242.7	152.0	1,224.4	04/05
South Africa	231.0	210.4	136.6	60.5	655.0	12/94
South Korea	170.7	113.4	141.2	37.0	940.0	01/94
Sri Lanka	1,007.1	764.1	551.0	382.2	2,309.1	11/07
Thailand	156.7	128.1	127.6	41.2	951.0	05/97
Trinidad & Tobago	211.3	183.5	74.4	134.0	334.0	05/07
Tunisia	174.6	147.0	106.9	48.7	534.7	05/02
Turkey	451.8	381.0	238.6	139.0	1,073.0	06/96
Ukraine	723.2	351.3	727.6	99.9	3,491.3	07/00
Uruguay	479.0	352.2	317.2	141.0	1,643.0	05/01
Venezuela	910.8	894.5	441.9	166.6	2,575.0	01/94
Vietnam	287.5	197.6	194.3	95.1	880.3	11/05

For each country, we report the time-series average, median, standard deviation, minimum, maximum, and start date of/for the monthly EMBI country spread (relative to maturity-matched U.S. Treasuries) from J.P Morgan (in basis points, where 100bp = 1%). The sample covers non-default periods from 1994 to 2009 (data are available as countries are added to the sample).

Table 3

Explaining sovereign spreads

Panel A: ICRG political risk index	(I)	(II)	(III)	(IV)
Constant	236.43	-547.82	-653.72	-504.45
	26.79	*31.52*	*39.32*	*30.95*
Ln(Avg. Life)		241.53	250.07	193.43
		11.82	*11.04*	*8.66*
U.S. High Yield Spread	0.40	0.37	0.35	0.38
	0.05	*0.04*	*0.03*	*0.02*
Bond Illiquidity		640.31	294.54	148.04
		30.76	*29.80*	*23.31*
Ln(ICRG Econ+Fin Risk)			724.43	401.72
			61.37	*50.63*
Ln(ICRG Political Risk)			844.80	578.88
			62.29	*45.31*
Bond Volatility				77.74
				4.89
Adj. R^2	0.09	0.31	0.51	0.71
Equal weights ($\Sigma\, w_{j,t}\ |SS_{j,t}$ - Predicted $SS_{j,t}|$)	313.93	252.34	211.58	134.09
GDP weights ($\Sigma\, w_{j,t}\ |SS_{j,t}$ - Predicted $SS_{j,t}|$)	276.02	171.32	131.64	100.38

Panel B: Estimation with alternative political risk measures	(V)	(VI)	(VII)
Constant	-549.66	-535.91	-525.38
	39.09	*36.17*	*34.47*
Ln(Avg. Life)	185.36	196.53	205.7
	10.13	*10.07*	*10.68*
U.S. High Yield Spread	0.47	0.46	0.38
	0.03	*0.03*	*0.02*
Bond Illiquidity	182.16	165.48	90.61
	29.03	*26.76*	*23.75*
Ln(Econ+Fin Risk)	407.05	374.00	345.94
	53.92	*53.39*	*58.07*
Ln(CO Total Political Risk - 18-month forecast)	215.97		
	18.94		
Ln(CO Total Political Risk - 60-month forecast)		203.95	
		18.13	
Ln(ICRG Political Risk)			585.80
			48.88
Bond Volatility	80.65	84.02	81.31
	5.25	*5.21*	*5.38*
Control Variables	Yes	Yes	Yes
Adj. R^2	0.71	0.71	0.71

The sample includes 20 emerging-market countries. For an unbalanced panel of 2563 non-default observations from 1994 to 2009, we regress the monthly EMBI country spread (over U.S. Treasuries) onto the following variables: 1) a constant, 2) the natural logarithm of average life of the bonds used in the index, 3) Barclays (formerly Lehman Brothers) U.S. High Yield (non-investment grade) bond spread, 4) the proportion of zero daily bond returns for each country, 5) the difference between the logarithm of the summed ICRG economic and financial risk indicators for the U.S. less the comparable value for each country, 6) the difference between the logarithm of the ICRG political risk indicator for the U.S. less the comparable value for each country (in Panel A, I-IV)) or the difference between the logarithm of the CO political risk forecast, over either an 18 or 60 month horizon, for the U.S. less the comparable value for each country (in Panel B, V-VI), and 7) the difference between the (maturity-adjusted) cumulated daily squared bond returns for the country and for U.S. 10-year Treasuries. In Panel B, the two versions of the CO political risk forecasts are measured annually, so we also reproduce column (IV) from Panel A, with the ICRG political risk variable also measured annually for comparison (VII). We report coefficient estimates from pooled OLS regressions; however, standard errors, reported in italics, account for group-wise heteroskedasticity, SUR effects, and a Newey-West correction with four lags. For each specification in Panle A, we provide averages, equal and GDP-weighted, of the differences between the observed and predicted spreads.

Table 4

Sovereign spreads and the subcomponents of political risk

Panel A: ICRG subcomponents

	(I)	(II)
Constant	-509.99	-568.53
	29.90	*31.55*
Ln(Avg. Life)	157.93	179.47
	8.83	*9.45*
U.S. High Yield Spread	0.38	0.36
	0.02	*0.02*
Bond Illiquidity	146.18	144.76
	23.86	*22.60*
Ln(Econ+Fin Risk)	473.12	471.96
	49.23	*47.13*
Ln(Quality of Institutions)	310.66	
	23.54	
Ln(Corruption)		89.96
		12.78
Ln(Law and Order)		59.60
		10.62
Ln(Bureaucratic Quality)		188.58
		18.64
Ln(Government Actions)	125.48	
	31.82	
Ln(Investment Profile)		26.37
		17.67
Ln(Government Stability)		144.70
		17.21
Bond Volatility	83.79	83.36
	4.95	*5.13*
Adj. R^2	0.71	0.73

Panel B: CO subcomponents

	(III)	(IV)
Constant	-560.18	-554.72
	38.85	*35.66*
Ln(Avg. Life)	192.35	201.97
	10.23	*10.25*
U.S. High Yield Spread	0.44	0.43
	0.03	*0.03*
Bond Illiquidity	205.73	173.27
	30.24	*27.5*
Ln(Econ+Fin Risk)	485.26	473.89
	50.88	*53.40*
Ln(CO Direct Investment Risk - 18-month forecast)	140.67	
	11.80	
Ln(CO Turmoil Risk - 18-month forecast)	37.81	
	11.59	
Ln(CO Export Risk - 18-month forecast)	18.18	
	15.25	
Ln(CO Direct Investment Risk - 60-month forecast)		128.06
		20.52
Ln(CO Turmoil Risk - 60-month forecast)		23.11
		10.96
Ln(CO Export Risk - 60-month forecast)		46.29
		24.24
Bond Volatility	81.90	83.37
	5.21	*5.30*
Control Variables	Yes	Yes
Adj. R^2	0.72	0.71

The sample includes 20 emerging-market countries detailed in Table 3. For an unbalanced panel of 2563 non-default observations from 1994 to 2009, we regress the monthly EMBI country spread (over U.S. Treasuries) onto the following variables: 1) a constant, 2) the natural logarithm of average life of the bonds used in the index, 3) Barclays (formerly Lehman Brothers) U.S. High Yield (non-investment grade) bond spread, 4) the proportion of zero daily bond returns for each country, 5) the difference between the logarithm of the summed ICRG economic and financial risk indicators for the U.S. less the comparable value for each country, and 6) the difference between the (maturity-adjusted) cumulated daily squared bond returns for the country and for U.S. 10-year Treasuries. For our political risk measure, we consider several cases. In specification (I) in Panel A, we employ the difference (for the U.S. less each country) between the logarithm of the ICRG 'Quality of Institutions' and 'Government Actions' measures. In specification (II) in Panel A, we do the same, but employ directly the five ICRG subcomponents that individually provide the highest explanatory R-square (corruption, law and order, and bureaucratic quality, investment profile, and government stability). In Panel B, we employ two versions of the CO political risk forecasts subcomponents (direct investment risk, turmoil, and export restrictions). We take the difference between the logarithm of the CO political risk forecast subcomponents, over either an 18 (specification III) or 60 (specification IV) month horizon, for the U.S. less the comparable value for each country. We report coefficient estimates from pooled OLS regressions; however, standard errors, reported in italics, account for group-wise heteroskedasticity, SUR effects, and a Newey-West correction with four lags.

Table 5

Extracting political risk spreads: December 2009

Country	EMBI Spread	Ratio	$APRS_{i,t}$	Country	EMBI Spread	Ratio	$APRS_{i,t}$
Argentina	659.71	0.11	75.40	Lebanon	286.93	0.44	126.28
Brazil	188.53	0.27	50.43	Mexico	192.06	0.25	47.97
Bulgaria	178.54	0.36	64.20	Pakistan	687.74	0.23	156.12
Chile	95.37	0.40	38.49	Panama	166.38	0.20	32.83
China	64.16	0.52	33.61	Peru	164.53	0.42	68.93
Colombia	198.21	0.41	80.46	Philippines	205.57	0.36	73.69
Dominican Rep.	405.34	0.19	76.65	Poland	124.23	0.08	9.98
Ecuador	769.49	0.20	155.19	Russia	203.37	0.28	57.16
Egypt	41.95	1.00	41.95	Serbia	333.40	0.22	74.66
El Salvador	326.07	0.25	80.75	South Africa	149.47	0.40	59.93
Gabon	389.68	0.23	90.37	Sri Lanka	382.17	0.15	59.05
Ghana	462.34	0.16	74.96	Turkey	196.50	0.32	63.64
Hungary	185.57	0.18	33.46	Ukraine	989.14	0.15	146.95
Indonesia	230.35	0.21	49.12	Uruguay	238.44	0.22	52.34
Iraq	446.78	0.38	171.32	Venezuela	1,040.55	0.31	322.28
Jamaica	719.10	0.10	73.19	Vietnam	313.76	0.17	53.23

For the thirty-two of our forty-three countries that have observed EMBI spreads (in basis points) in December of 2009, we report the EMBI spread, the ratio defined as $c_4 PR_{i,t}$/(Predicted $SS_{i,t}$) (exponentially smoothed over twelve months), and the absolute political risk spreads ($APRS_{i,t}$). Absolute spreads are computed by multiplying the ratios by the observed EMBI spread for each country. If the ratio is negative or greater than one, we set it to zero or one, respectively.

Table 6
Extracted Political risk spreads: December 2009

Country	$APRS_{i,t}$	Country	$APRS_{i,t}$	Country	$APRS_{i,t}$
Albania	58.3	Guinea-Bissau	108.7	Nicaragua	80.8
Algeria	85.5	Guyana	92.8	Niger	129.8
Angola	95.3	Haiti	205.2	Nigeria	182.3
Armenia	83.1	Honduras	95.3	Oman	37.2
Azerbaijan	68.0	India	74.2	Papua New Guinea	92.8
Bahamas	13.4	Iran	123.5	Paraguay	111.5
Bahrain	43.1	Israel	72.1	Qatar	40.1
Bangladesh	117.4	Jordan	49.6	Romania	49.6
Belarus	74.2	Kazakhstan	43.1	Saudi Arabia	51.2
Bolivia	87.8	Kenya	120.4	Senegal	114.4
Botswana	31.6	Korea, D.P.R.	165.7	Sierra Leone	85.5
Brunei	16.4	Korea	25.3	Slovak Rep.	29.0
Burkina Faso	90.3	Kuwait	41.6	Slovenia	25.3
Cameroon	72.1	Latvia	51.2	Somalia	511.1
Congo, Dem. Rep.	114.4	Liberia	103.2	Sudan	230.8
Congo, Rep.	230.8	Libya	60.2	Suriname	76.4
Costa Rica	41.6	Lithuania	37.2	Syria	103.2
Cote d'Ivoire	210.1	Madagascar	103.2	Taiwan	24.1
Croatia	40.1	Malawi	97.9	Tanzania	74.2
Cuba	105.9	Malaysia	40.1	Thailand	105.9
Cyprus	18.5	Mali	95.3	Togo	129.8
Czech Rep.	27.8	Moldova	103.2	Trinidad & Tobago	43.1
Estonia	40.1	Mongolia	53.0	Tunisia	43.1
Ethiopia	154.2	Morocco	51.2	Uganda	123.5
Gambia	68.0	Mozambique	47.9	Yemen	108.7
Guatemala	90.3	Myanmar	178.0	Zambia	76.4
Guinea	210.1	Namibia	24.1	Zimbabwe	215.1

In Table 6, we report predicted December 2009 absolute political risk spreads *(APRS*, in basis points) for all countries covered by the ICRG for which sovereign spread data are not available. Using data from Table 3, we separately fit a linear-quadratic regression through the political risk spreads onto $PR_{i,2009}$ and its square. Then, for all other countries for which the political risk rating is available, we employ the fitted coefficients to determine what the aboslute political risk spreads would be given each country's $PR_{i,2009}$.

Table 7

Applying political risk spreads: political risk probabilities and discount rate adjustments: December 2009

Country	EMBI Spread (SS)	*PRS*	Political Risk Spread (PRS)		Political Risk Probability (*p*)		Cumulative Probability (at maturity)		Adjusted Discount Rate (base = 10%)	
			SS	***APRS***	***SS***	***APRS***	***SS***	***APRS***	***SS***	***APRS***
Argentina	6.60%	0.75%	6.28%	0.68%	5.91%	0.67%	45.59%	6.55%	16.90%	10.75%
Brazil	1.89%	0.50%	1.79%	0.47%	1.76%	0.47%	16.29%	4.61%	11.97%	10.52%
China	0.64%	0.34%	0.61%	0.32%	0.61%	0.32%	5.90%	3.13%	10.67%	10.35%
Colombia	1.98%	0.80%	1.89%	0.76%	1.85%	0.75%	17.04%	7.26%	12.07%	10.83%
Dominican Rep.	4.05%	0.77%	3.86%	0.71%	3.71%	0.70%	31.50%	6.80%	14.24%	10.78%
Ecuador	7.69%	1.55%	7.32%	1.39%	6.82%	1.38%	50.66%	12.94%	18.05%	11.53%
Gabon	3.90%	0.90%	3.71%	0.84%	3.57%	0.83%	30.51%	7.99%	14.08%	10.92%
Hungary	1.86%	0.33%	1.77%	0.31%	1.73%	0.31%	16.05%	3.08%	11.94%	10.35%
Indonesia	2.30%	0.49%	2.19%	0.46%	2.14%	0.46%	19.49%	4.48%	12.41%	10.51%
Mexico	1.92%	0.48%	1.83%	0.45%	1.79%	0.45%	16.56%	4.39%	12.01%	10.50%
Pakistan	6.88%	1.56%	6.54%	1.41%	6.14%	1.39%	46.94%	13.10%	17.20%	11.56%
Russia	2.03%	0.57%	1.93%	0.54%	1.90%	0.53%	17.44%	5.21%	12.13%	10.59%
Turkey	1.97%	0.64%	1.87%	0.60%	1.84%	0.59%	16.91%	5.79%	12.06%	10.66%
Venezuela	10.41%	3.22%	9.90%	2.87%	9.01%	2.79%	61.09%	24.64%	20.89%	13.16%
Vietnam	3.14%	0.53%	2.98%	0.49%	2.90%	0.49%	25.48%	4.81%	13.28%	10.54%

For a sample of fifteen countries that have observed EMBI spreads in December of 2009, we report the EMBI spread, the ratios $c_4PR_{i,t}$/(Predicted $SS_{i,t}$) (exponentially smoothed over twelve months), and the absolute political risk spread ($APRS_{i,t}$) (in percentages). Absolute spreads are computed by multiplying the ratio *c4PRi,t/(Predicted SSi,t)* with the observed EMBI spread for each country. If the ratio is negative or greater than one, we set it to zero or one, respectively. *APRS* = *BY-BY**, where *BY* is the full bond yield and *BY** the bond yield purged of political risk. The multiplicative *PRS* measure is *APRS/(1 + BY*)*. We provide calculations for implied political risk probabilities (*p*), multiplicative political risk spreads (PRS) as well as adjusted discount rates implied by using either the sovereign spread (SS) or the absolute political risk spreads (*APRS*), as adjustment factors. For each case, we find the implied political risk probability (*p*) assuming a 10-year maturity and a 5.12% yield on the 10-year U.S. Treasury bond. Cumulative probabilities measure the probability that a political risk event will take place over the full 10-year investment horizon based on *p*. Finally, we also use the multiplicative political risk spreads (PRS) to adjust a hypothetical discount rate of 10% to account for political risk.

Table 8

Political risk spreads and foreign direct investment

Panel A: Estimation with the ICRG index

	(I)	(II)	III
Constant	1398.72	1544.40	1448.00
	283.01	*287.15*	*298.32*
Ln (GDP per capita)	-101.22	-106.84	-92.62
	23.17	*23.55*	*24.77*
Ln (Distance from U.S.)	-76.07	-82.64	-81.84
	21.66	*21.22*	*22.87*
Secondary School Enrollment	3.14	2.98	2.72
	0.96	*0.95*	*0.99*
Capital Account Openness	280.24	265.31	253.18
	67.56	*71.18*	*69.98*
EMBI Spread	-0.03		
	0.01		
Absolute Political Risk Spread		-0.34	-0.23
		0.14	*0.14*
Residual Political Risk Spread		0.03	0.00
		0.03	*0.03*
Adj. R^2	0.11	0.12	0.12
Year FE	NO	NO	YES

	EMBI+ Spread	Absolute Political Risk Spread	Absolute Political Risk Spread
25% Spread Percentile (in bp)	178.40	71.47	71.47
75% Spread Percentile (in bp)	654.50	178.65	178.65
25% -> 75% Economic Effect (in bp)	-14.85	-36.86	-24.39

Table 8

Political risk spreads and foreign direct investment

Panel B: Estimation with alternative political risk measures

	(I)	(II)	(III)	(IV)
Constant	1457.77	1534.47	1396.88	1463.04
	290.54	*289.58*	*297.12*	*297.40*
Ln (GDP per capita)	-99.93	-102.19	-89.18	-90.38
	23.63	*23.45*	*24.41*	*24.50*
Ln (Distance from U.S.)	-82.09	-88.07	-81.39	-86.80
	22.21	*22.22*	*23.44*	*23.40*
Secondary School Enrollment	3.20	3.17	2.87	2.84
	0.97	*0.97*	*1.02*	*1.01*
Capital Account Openness	270.20	272.41	258.13	257.54
	70.66	*71.07*	*69.31*	*70.36*
Political Risk Spread (CO Total Political Risk - 18-month forecast)	-0.28		-0.15	
	0.12		*0.13*	
Residual (CO Total Political Risk - 18-month forecast)	0.01		0.02	
	0.02		*0.02*	
Political Risk Spread (CO Total Political Risk - 60-month forecast)		-0.45		-0.34
		0.15		*0.17*
Residual (CO Total Political Risk - 60-month forecast)		0.00		0.01
		0.02		*0.02*
Adj. R^2	0.12	0.10	0.11	0.12
Year FE	NO	NO	YES	YES

	Absolute Political Risk Spread	Absolute Political Risk Spread	Absolute Political Risk Spread	Absolute Political Risk Spread
25% Spread Percentile (in bp)	24.00	7.07	24.00	7.07
75% Spread Percentile (in bp)	149.18	112.35	149.18	112.35
25% -> 75% Economic Effect (in bp)	-35.07	-47.27	-19.32	-35.39

For an unbalanced panel of 34 emerging market countries from 1994 to 2009, we regress annual (FDI inflow)/GDP ratios onto the following variables: 1) a constant, 2) the natural logarithm of GDP per capita in US$, 3) the log distance (in kilometers) between the country's capital from New York City, 4) secondary school enrollment, 5) an updated version of Quinn and Toyoda's (2008) capital account openness measure, 6) and the EMBI sovereign spread. In Panel A, we consider alternative specifications where we replace the sovereign spread with the absolute political risk spread (*APRS*) extracted using the methodology outlined in Section 5.1 and the residual spread which measures the difference between the sovereign spread and the absolute political risk spread. Specification III includes year fixed effects. In Panel B, political risk spreads are based off of the spread regressions provided in Table 3b where we employ the total political risk forecasts from Coplin O'Leary for the 18-month horizon (specification VI) or the 60-month horizon (VII). Specifications III and IV include year fixed effects. We report coefficient estimates from pooled OLS regressions; however, standard errors, reported in italics, account for group-wise heteroskedasticity, SUR effects, and a Newey-West correction with 2 lags. To evaluate the economic significance of political risk for FDI inflows, we show the change in FDI implied by a shift either the sovereign spread (specification (I)) or the political risk spread (specifications (II)-(V)) from the 25th to the 75th percentile of their overall distributions.

Appendix A

ICRG subcategories and correlations

Political Indicators	Description	Pooled Correlation with ICRG (Political Risk)	Pooled Correlation with ICRG (Econ+Fin Risk)
Quality of Institutions			
Law and Order	Law and Order are assessed separately. The Law sub-component is an assessment of the strength and impartiality of the legal system, while the Order sub-component is an assessment of popular observance of the law.	0.816	0.518
Bureaucratic Quality	The institutional strength and quality of the bureaucracy is another shock absorber that tends to minimize revisions of policy when governments change. Therefore, high points are given to countries where the bureaucracy has the strength and expertise to govern without drastic changes in policy or interruptions in government services. In these low-risk countries, the bureaucracy tends to be somewhat autonomous from political pressure and to have an established mechanism for recruitment and training. Countries that lack the cushioning effect of a strong bureaucracy receive low points because a change in government tends to be traumatic in terms of policy formulation and day-to-day administrative functions.	0.761	0.523
Corruption	An assessment of corruption within the political system. Such corruption is a threat to foreign investment for several reasons: it distorts the economic and financial environment; it reduces the efficiency of government and business by enabling people to assume positions of power through patronage rather than ability; and, last but not least, introduces an inherent instability into the political process. The most common form of corruption met directly by business is financial corruption in the form of demands for special payments and bribes connected with import and export licenses, exchange controls, tax assessments, police protection, or loans. Such corruption can make it difficult to conduct business effectively, and in some cases may force the withdrawal or withholding of an investment. Although the measure takes such corruption into account, it is more concerned with actual or potential corruption in the form of excessive patronage, nepotism, job reservations, 'favor-for-favors', secret party funding, and suspiciously close ties between politics and business. In our view these insidious sorts of corruption are potentially of much greater risk to foreign business in that they can lead to popular discontent, unrealistic and inefficient controls on the state economy, and encourage the development of the black market. The greatest risk in such corruption is that at some time it will become so overweening, or some major scandal will be suddenly revealed, as to provoke a popular backlash, resulting in a fall or overthrow of the government, a major reorganizing or restructuring of the country's political institutions, or, at worst, a breakdown in law and order, rendering the country ungovernable.	0.628	0.203
Conflict			
Internal Conflict	An assessment of political violence in the country and its actual or potential impact on governance. The highest rating is given to those countries where there is no armed or civil opposition to the government and the government does not indulge in arbitrary violence, direct or indirect, against its own people. The lowest rating is given to a country embroiled in an on-going civil war. The risk rating assigned is the sum of three subcomponents: Civil War/Coup Threat, Terrorism/Political Violence, Civil Disorder.	0.843	0.517
External Conflict	An assessment both of the risk to the incumbent government from foreign action, ranging from non-violent external pressure (diplomatic pressures, withholding of aid, trade restrictions, territorial disputes, sanctions, etc) to violent external pressure (cross-border conflicts to all-out war). External conflicts can adversely affect foreign business in many ways, ranging from restrictions on operations, to trade and investment sanctions, to distortions in the allocation of economic resources, to violent change in the structure of society. The risk rating assigned is the sum of three subcomponents: War, Cross-Border Conflict, Foreign Pressures.	0.671	0.423
Religious Tensions	Religious tensions may stem from the domination of society and/or governance by a single religious group that seeks to replace civil law by religious law and to exclude other religions from the political and/or social process; the desire of a single religious group to dominate governance; the suppression of religious freedom; the desire of a religious group to express its own identity, separate from the country as a whole.	0.504	0.162
Ethnic Tensions	An assessment of the degree of tension within a country attributable to racial, nationality, or language divisions. Lower ratings are given to countries where racial and nationality tensions are high because opposing groups are intolerant and unwilling to compromise.	0.634	0.340

Political Indicators (cont.)	Description	Pooled Correlation with ICRG (Political Risk)	Pooled Correlation with ICRG (Econ+Fin Risk)
Democratic Tendencies			
Military in Politics	The military is not elected by anyone. Therefore, its involvement in politics, even at a peripheral level, is a diminution of democratic accountability. However, it also has other significant implications. The military might, for example, become involved in government because of an actual or created internal or external threat. Such a situation would imply the distortion of government policy in order to meet this threat, for example by increasing the defense budget at the expense of other budget allocations. In some countries, the threat of military take-over can force an elected government to change policy or cause its replacement by another government more amenable to the military's wishes. A military takeover or threat of a takeover may also represent a high risk if it is an indication that the government is unable to function effectively and that the country therefore has an uneasy environment for foreign businesses. A full-scale military regime poses the greatest risk. In the short term a military regime may provide a new stability and thus reduce business risks. However, in the longer term the risk will almost certainly rise, partly because the system of governance will be become corrupt and partly because the continuation of such a government is likely to create an armed opposition. In some cases, military participation in government may be a symptom rather than a cause of underlying difficulties. Overall, lower risk ratings indicate a greater degree of military participation in politics and a higher level of political risk.	0.790	0.479
Democratic Accountability	A measure of how responsive government is to its people, on the basis that the less responsive it is, the more likely it is that the government will fall, peacefully in a democratic society, but possibly violently in a non-democratic one.	0.664	0.391
Government Actions			
Government Stability	An assessment both of the government's ability to carry out its declared program(s), and its ability to stay in office. The risk rating assigned is the sum of three subcomponents: Government Unity, Legislative Strength, and Popular Support.	0.562	0.619
Socioeconomic Conditions	An assessment of the socioeconomic pressures at work in society that could constrain government action or fuel social dissatisfaction. The risk rating assigned is the sum of three subcomponents: Unemployment, Consumer Confidence, and Poverty.	0.707	0.540
Investment Profile	An assessment of factors affecting the risk to investment that are not covered by other political, economic and financial risk components. The risk rating assigned is the sum of three subcomponents: Contract Viability/Expropriation, Profits Repatriation, Payment Delays.	0.722	0.752

Economic Indicators	Description	Pooled Correlation with ICRG (Econ+Fin Risk)	Pooled Correlation with ICRG (Political Risk)
GDP per capita	The estimated GDP per head for a given year, converted into US dollars at the average exchange rate for that year, is expressed as a percentage of the average of the estimated total GDP of all the countries covered by ICRG	0.406	0.578
Real GDP growth	The annual change in the estimated GDP, at constant 1990 prices, of a given country is expressed as a percentage increase or decrease.	0.724	0.454
Annual Inflation Rate	The estimated annual inflation rate (the unweighted average of the Consumer Price Index) is calculated as a percentage change.	0.709	0.537
Budget Balance / GDP	The estimated general government budget balance (excluding grants) for a given year in the national currency is expressed as a percentage of the estimated GDP for that year in the national currency.	0.770	0.584
Current Account / GDP	The estimated balance on the current account of the balance of payments for a given year, converted into US dollars at the average exchange rate for that year, is expressed as a percentage of the estimated GDP of the country concerned, converted into US dollars at the average rate of exchange for the period covered.	0.836	0.551

Financial Indicators	Description	Pooled Correlation with ICRG (Econ+Fin Risk)	Pooled Correlation with ICRG (Political Risk)
Foreign Debt / GDP	The estimated gross foreign debt in a given year, converted into US dollars at the average exchange rate for that year, is expressed as a percentage of the gross domestic product converted into US dollars at the average exchange rate for that year.	0.635	0.615
Exchange Rate Stability	The appreciation or depreciation of a currency against the US dollar (against the euro in the case of the USA) over a calendar year or the most recent 12-month period is calculated as a percentage change.	0.755	0.573
Foreign Debt Service	The estimated foreign debt service, for a given year, converted into US dollars at the average exchange rate for that year, is expressed as a percentage of the sum of the estimated total exports of goods and services for that year, converted into US dollars at the average exchange rate for that year.	0.499	0.271
Current Account / Exports	The balance of the current account of the balance of payments for a given year, converted into US dollars at the average exchange rate for that year, is expressed as a percentage of the sum of the estimated total exports of goods and services for that year, converted into US dollars at the average exchange rate for that year.	0.607	0.383
International Liquidity	The balance of the current account of the balance of payments for a given year, converted into US dollars at the average exchange rate for that year, is expressed as a percentage of the sum of the estimated total exports of goods and services for that year, converted into US dollars at the average exchange rate for that year.	0.473	0.294

The summary statistics provided are for the entire ICRG sample of countries from 1984 - 2009.

Figure 1

Mean-adjusted political risk ratings before political risk events as measured by insurance claims

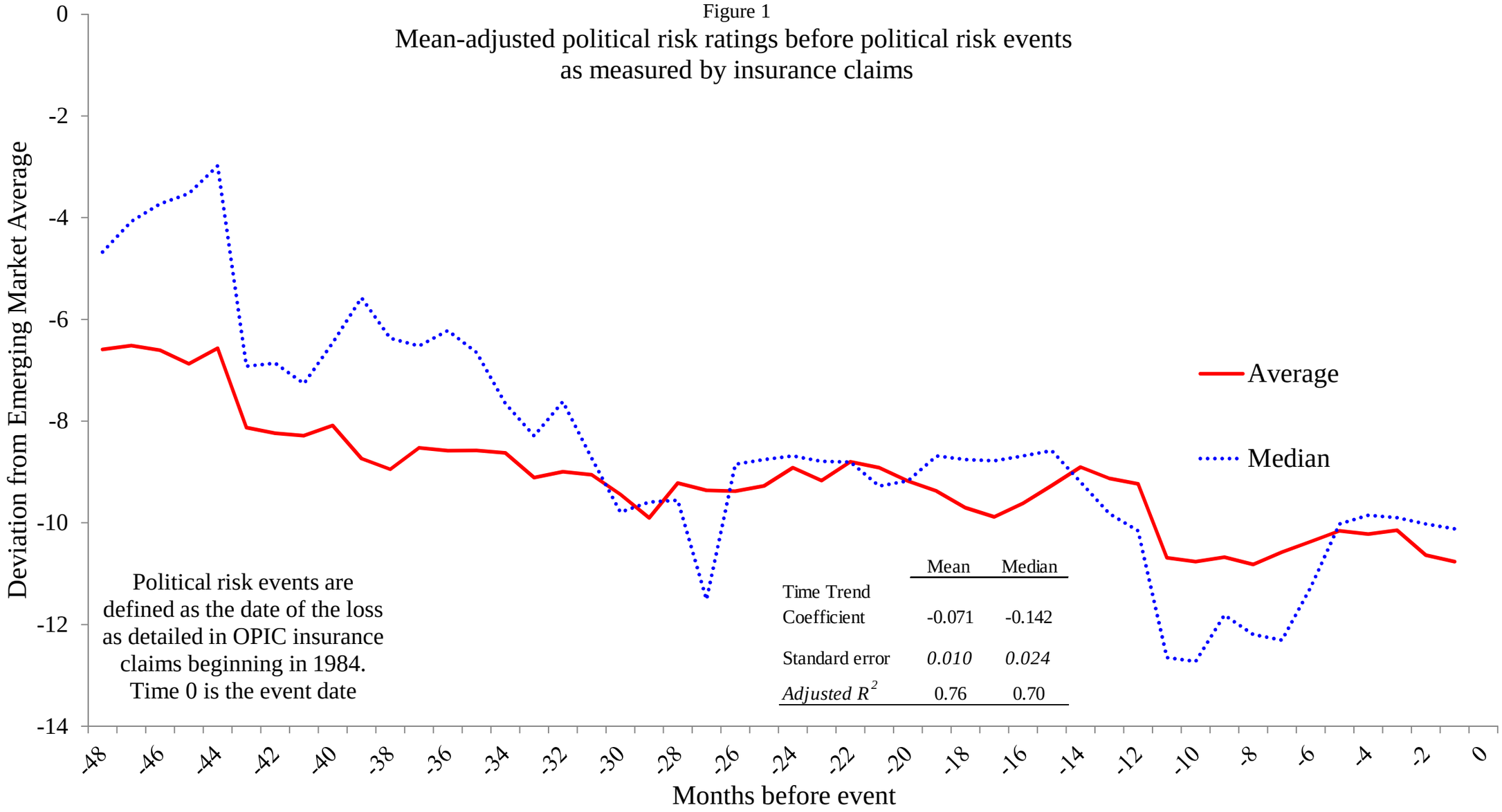
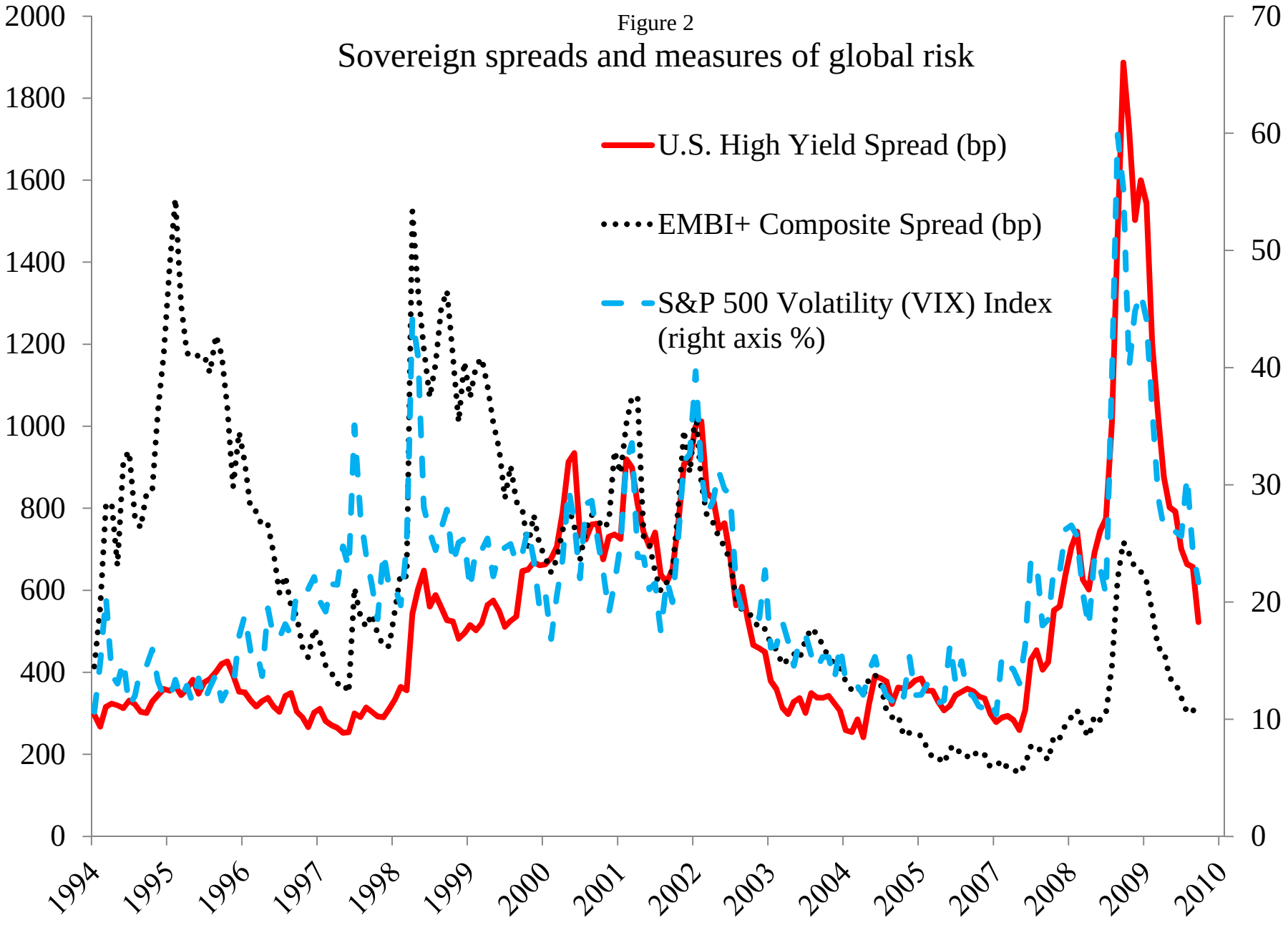


Figure 2

Sovereign spreads and measures of global risk



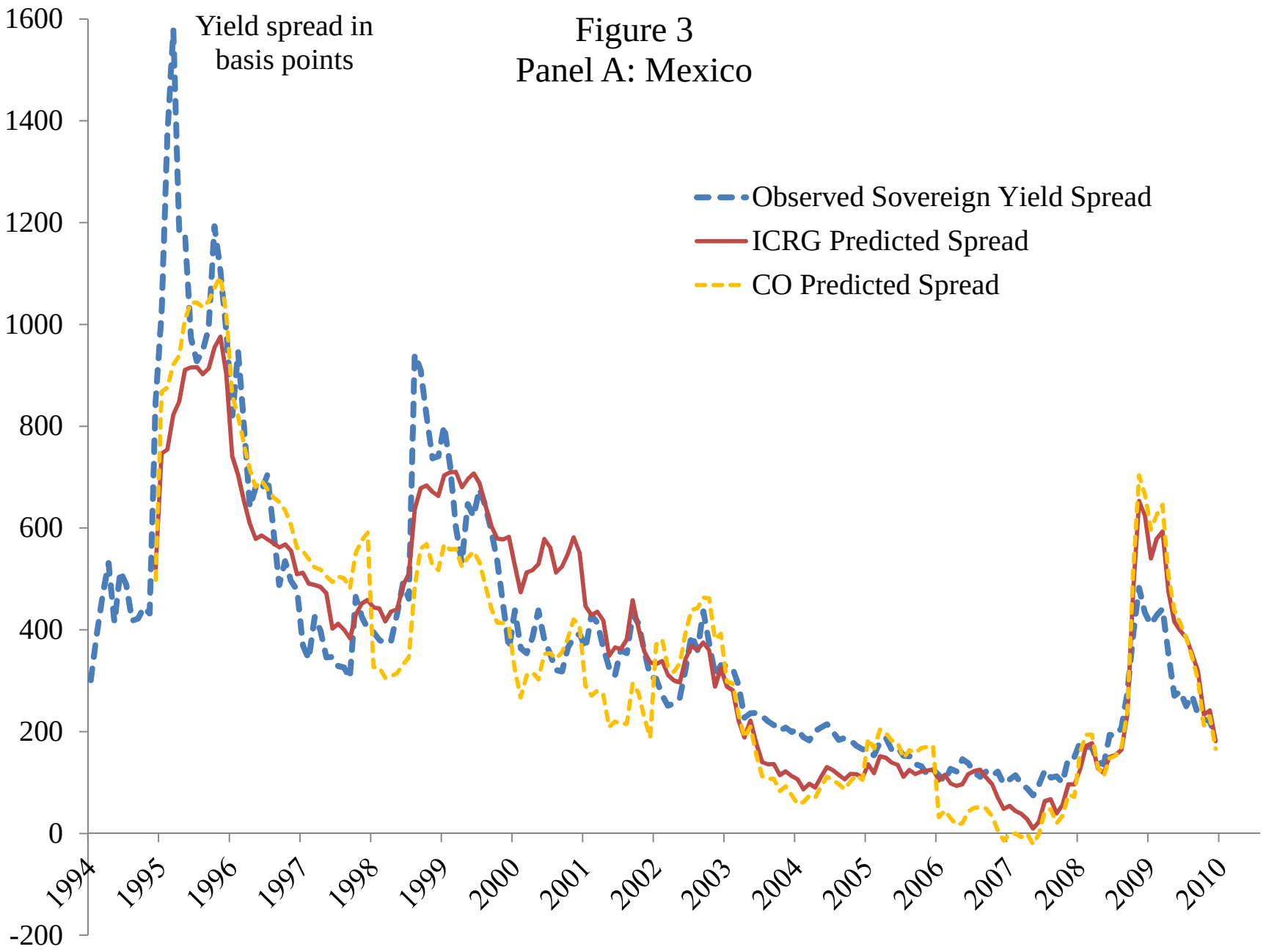
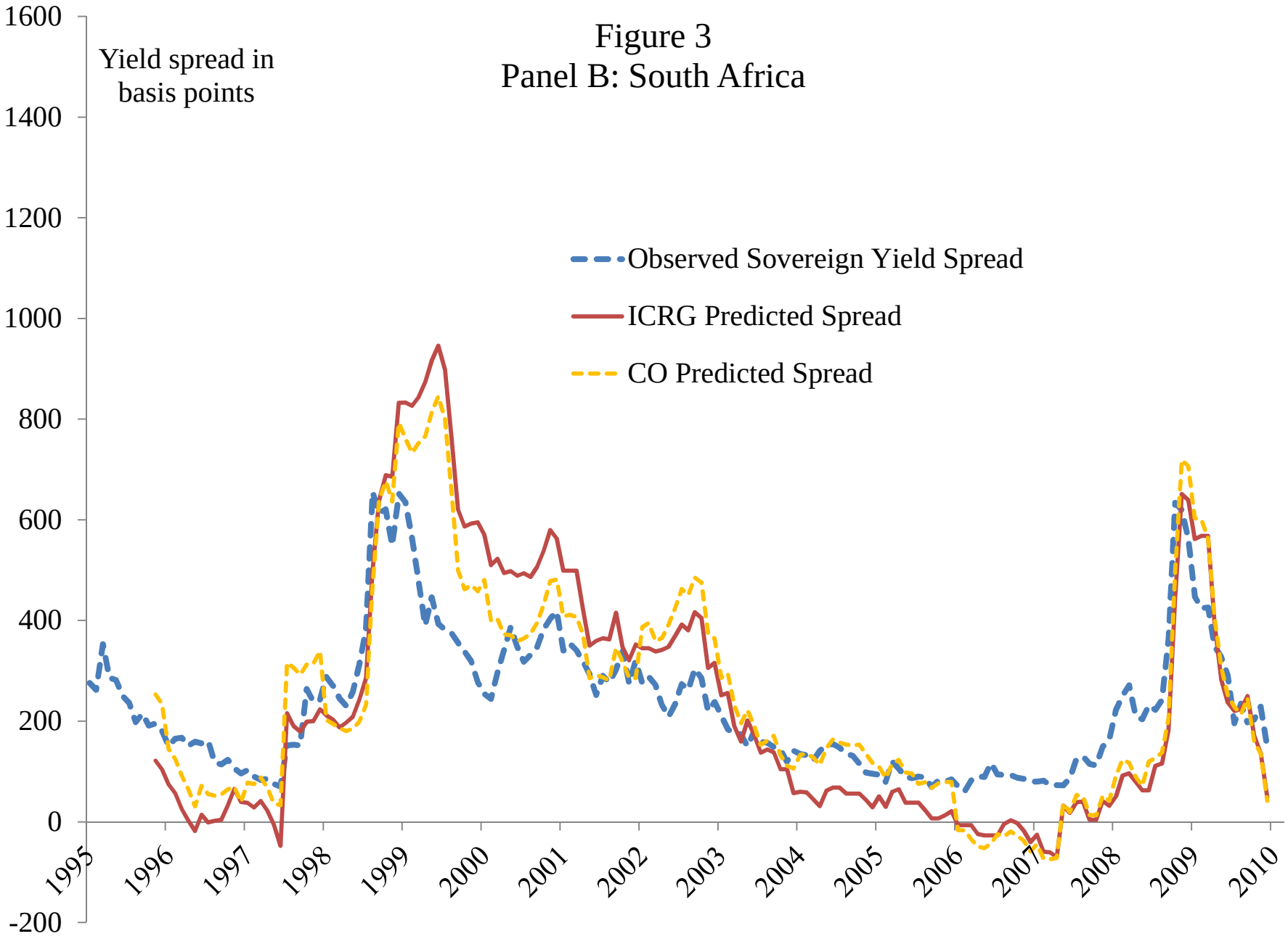


Figure 3
Panel A: Mexico
Yield spread in basis points
Observed Sovereign Yield Spread
ICRG Predicted Spread
CO Predicted Spread
1600
1400
1200
1000
800
600
400
200
0
-200
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010

Figure 3
Panel B: South Africa



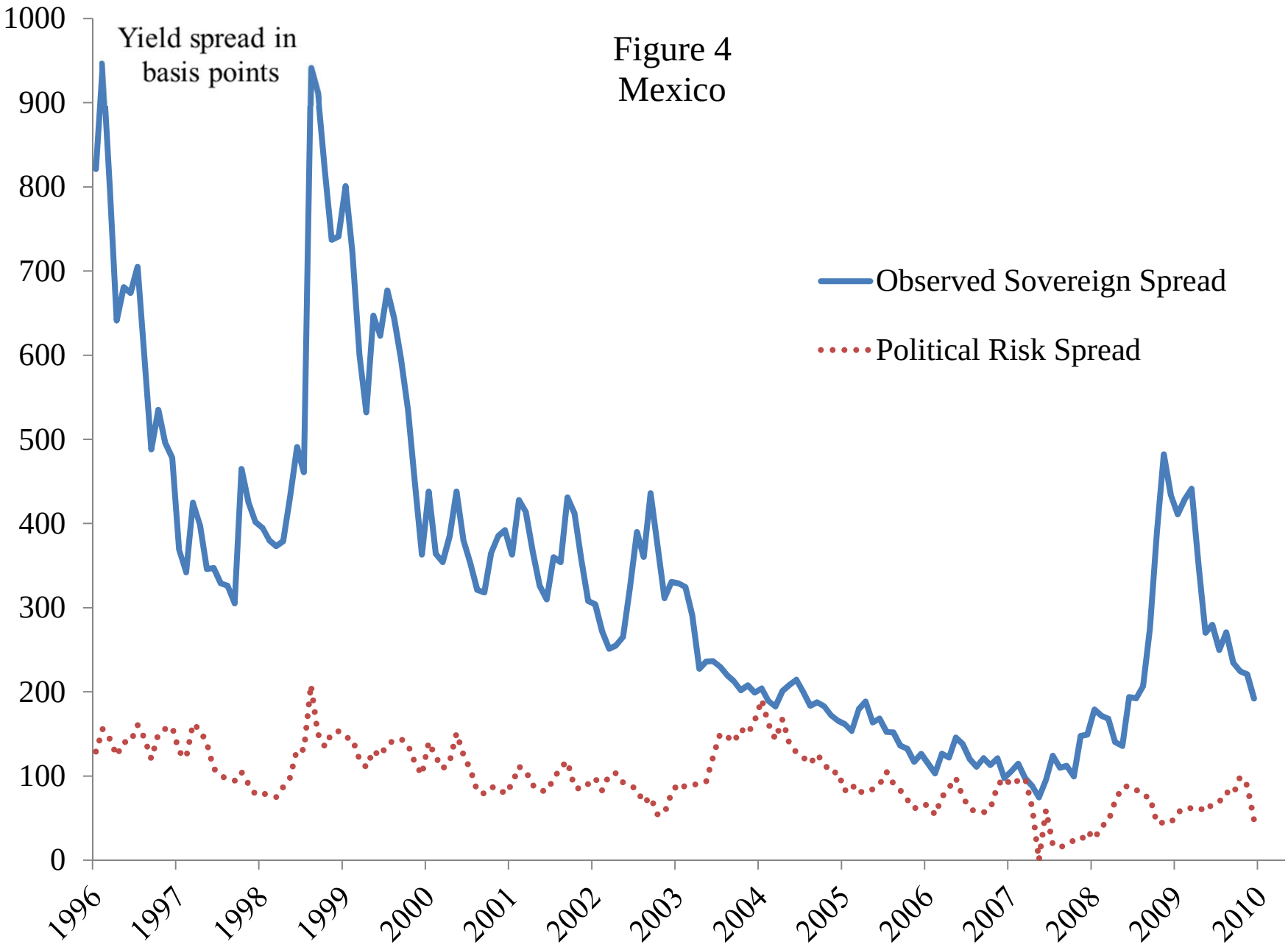


Figure 4
Mexico
Yield spread in basis points
1000
900
800
700
600
500
400
300
200
100
0
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
Observed Sovereign Spread
Political Risk Spread