Sovereign default risk and politics

Abstract:

This paper analyzes the political determinants of sovereign default risk using data for 27 emerging markets in the period 1996 to 2009. I find that countries with parliamentary systems (as opposed to presidential regimes) face higher sovereign yield spreads, while the degree of democracy, elections, the party alignment of the government, and political stability play no significant role. Moreover, countries where the government has the political power to implement austerity measures (i.e. it controls all houses of the parliament, consists of few parties and is not polarized) and where the quality of governance is high have low sovereign yield spreads.

Keywords: Sovereign default risk; Political institutions; Emerging markets

JEL classification: G18; G12; G15; G01

1. Introduction

Governments can choose to default on their debt. Political institutions, the behavior of policymakers, and the quality of governance therefore seem to be natural determinants of the risk of sovereign default. Since sovereign debt defaults are associated with losses for investors, it is crucial for them to estimate sovereign default risk and to include this risk into the prices of sovereign bonds. This paper studies how various aspects of politics determine sovereign bond yield spreads.

Several interesting papers have studied the determinants of sovereign default risk, focusing either on actual sovereign default episodes (Manasse and Roubini, 2009; Saiegh, 2009; Van Rijckeghem and Weder, 2009; Kohlscheen, 2010; Reinhart and Rogoff, 2011a, 2011b), or on sovereign bond yield spreads for emerging markets (Edwards, 1986; Cantor and Packer, 1996; Mauro et al., 2002; Block and Vaaler, 2004; Baldacci et al., 2008; Dailami et al., 2008; Hilscher and Nosbusch, 2010; Faria et al., 2011; Laurin, 2012) or eurozone countries (Codogno, Favero, and Missale, 2003; Gómez-Puig, 2008, 2009; Beber, Brandt, and Kavajecz, 2009; Schuknecht, von Hagen, and Wolswijk, 2009; von Hagen, Schuknecht, and Wolswijk, 2011; Bernoth, von Hagen, and Schuknecht, 2012; Bernoth and Erdogan, 2012; Eichler and Maltritz, 2012; Maltritz, 2012; Georgoutsos and Migiakis, 2012; Gómez-Puig and Sosvilla-Rivero, 2012). The list of variables which these studies identify as important drivers of sovereign default risk includes, for example, high levels of public debt, poor macroeconomic fundamentals (such as slow economic growth), shortages of foreign exchange reserves, and global risk factors.

Given the relevance of this topic, few papers have focused on the impact of politics on sovereign default risk.[1] Manasse and Roubini (2009), Van Rijckeghem and Weder (2009), Saiegh

[1] The relevance of politics has been shown for other types of financial crises such as bank defaults (Brown and Dinc, 2005; Micco et al., 2007) and currency crises and exchange rate realignments (Eichengreen et al., 1995; Sosvilla-Rivero and Pérez-Bermejo, 2008).

(2009), and Kohlscheen (2010) use actual sovereign default episodes in order to study the impact the political system has on the occurrence of a sovereign debt crisis. Van Rijckeghem and Weder (2009) find that, in democracies, the presence of sufficient checks and balances and a parliamentary system reduce the risk of external debt defaults if the economic fundamentals are sufficiently strong. In non-democratic systems, the risk of defaults on domestic debt is low if the political regime is characterized by a high degree of stability, low polarization, or long tenure. Kohlscheen (2010) finds that in parliamentary democracies, where the government needs the support of the legislature to stay in office, the government is less likely to default on external debt than in presidential democracies. What is more, he finds that sovereign debt defaults are less probable for multi-party governments, lower turnover of the executive, effective checks and balances, and at the end of presidential office terms. Saiegh (2009) obtains the result that multi-party governments are less likely to default on their debt than single-party governments. Manasse and Roubini (2009) provide evidence of a political business cycle, finding that the risk of debt defaults rises prior to presidential elections, particularly if elections coincide with large amounts of short-term debt and relatively rigid exchange rate regimes.

The impact of politics on sovereign bond yield spreads – as a financial market based indicator of sovereign default risk – has been studied by Block and Vaaler (2004). They study the impact of the political business cycle on sovereign yield spreads and ratings. The political business cycle theory predicts that governments will implement expansionary fiscal policies prior to elections (in order to win elections) and to implement contractionary policies afterwards. According to this theory, Block and Vaaler (2004) find that sovereign credit ratings are downgraded in election years and that sovereign bond spreads are higher before elections than after elections.

In this paper, I consider a broad set of political aspects that may influence sovereign default risk. While several aspects of the political system have been analyzed for the case of actual sovereign debt default episodes, evidence for financial market-based sovereign bond yield spreads is scarce (with the exception of Block and Vaaler (2004) who focus on the role of elections). Sovereign bond yield spreads offer several advantages compared to the use of sovereign debt default dummies which are used in other studies. The sovereign bond yield spread represents the market's assessment of the expected loss associated with a possible sovereign default and therefore enables one to study the impact politics has on the continuous level of sovereign default risk, as expected by financial market participants. The meaning of sovereign bond yield spreads is the same for all countries while the classification of actual sovereign debt defaults requires finding suitable criteria for such a debt crisis. Furthermore, sovereign bond yield spreads are forward-looking financial market data and therefore enable one to study investors' assessment of the impact of different aspects of politics on the risk of possible sovereign defaults in the future.

I use annual panel data for 27 emerging markets in the period 1996 to 2009 to study the impact of politics on sovereign default risk. In order to quantify sovereign default risk, I use sovereign bond yield spreads taken from JP Morgan's Emerging Markets Bond Index. The results suggest that countries with parliamentary systems face higher sovereign yield spreads than countries with presidential regimes. By making the government more autonomous from the support of the parliament, unpopular budget consolidation measures may be more likely implemented, which may lead to lower sovereign bond yield spreads. The level of democracy (as opposed to autocracy), elections and the party orientation of the government are not significant, suggesting that public control over the chief executive, political business cycles, and ideology, respectively, do not play an important role for the determination of sovereign bond yield spreads

in emerging markets. Moreover, the results suggest that political stability is not a significant determinant of sovereign yield spreads from the viewpoint of bond investors. I find that a better feasibility of policy change reduces sovereign bond yield spreads. Governments which have control of all houses of the parliament, consist of few parties, and have a low degree of polarization among government parties face significantly lower levels of sovereign default risk. This suggests that governments which are successful in winning the different houses of the parliament and consist of efficient coalitions are able to implement austerity measures if necessary and are thus attached lower sovereign bond yield spreads by financial markets. I find robust evidence that a higher quality of governance reduces sovereign default risk. By increasing the efficiency of the legal system, the administration, and regulatory principles and by increasing the civil rights and political participation of their citizens, the government may improve the effectiveness of budget consolidation measures and, in turn, convince financial markets that a sovereign default will not happen.

2. Hypotheses and data

I use unbalanced panel data on 27 emerging markets in the period of 1996-2009.[2] The definitions and data sources of the variables are reported in Table A1 in the Appendix. In order to measure sovereign default risk in a country, I use the yield spread between domestic and United States sovereign bonds. Assuming that United States sovereign bonds are risk-free[3], this sovereign bond yield spread measures the expected loss for the investor associated with a potential sovereign default of the considered emerging market government, as explained in the following. The risk-

[2] The following countries are included in the panel: Argentina, Brazil, Bulgaria, Chile, China, Colombia, Cote d'Ivoire, Dominican Republic, Ecuador, Egypt, El Salvador, Indonesia, Kazakhstan, Lebanon, Malaysia, Mexico, Pakistan, Panama, Peru, Philippines, Russia, South Africa, Turkey, Ukraine, Uruguay, Venezuela, and Vietnam. The observation period is restricted by the availability of data. The Worldwide Governance Indicators are only available since 1996. The latest version of the Database of Political Institutions provides data thru 2009.

[3] This assumption follows the literature on sovereign default risk in emerging markets.

less United States sovereign bond yields a return of r_f. The risky sovereign bond of emerging market country *i* yields a return of r_i. With probability θ the government of country *i* will default on its sovereign debt. The government will only pay back the fraction $1-\tau$ of the principal value in the case of default. Under the assumption of risk-neutrality, the risk-less and the risky sovereign bonds must yield equal expected returns, i.e.:

$$1 + r_f = \theta(1-\tau)(1+r_i) + (1-\theta)(1+r_i). \quad (1)$$

Using the approximation $(r_i - r_f)/(1+r_i) \approx r_i - r_f$ yields:

$$r_i - r_f = \theta\tau. \quad (2)$$

Equation (2) shows that a higher sovereign default risk, i.e. a higher expected loss associated with a potential sovereign default, is reflected by higher sovereign yield spreads at the bond market.

Data on sovereign yield spreads is drawn from the Emerging Market Bond Index (EMBI) provided by JP Morgan. EMBI spreads measure the difference between the returns on domestic sovereign bonds and U.S. Treasuries. Only U.S. dollar denominated sovereign bonds are included in the EMBI index, which rules out exchange rate risk. The EMBI index includes Brady bonds, loans, and Eurobonds issued by the federal government with an average maturity of 12 years. The EMBI index averages yield data from the most liquid bonds.[4]

[4] The minimum size of a debt instrument to be included in the EMBI is $500 million, which guarantees that relatively liquid instruments with reasonable prices are considered. The EMBI measures so-called stripped spreads, which are derived by subtracting collaterals from the observed market prices.

I consider six sets of political variables, which may influence the level of sovereign default risk: The nature of the political system, elections, ideology, political stability, feasibility of policy change, and the quality of governance. In order to describe the ***political system*** of a country I use the *policy2 score*, where higher values indicate more democratic regimes and lower values more autocratic regimes. Democratic regimes delegate the choice of the government to the public, while in pure autocracies there is no popular control over the chief executive. On the one hand, more democratic regimes may be associated with lower sovereign default risk as the elected government is more reliable on the public (and financial markets), incompetent leaders may be voted out of office, and checks and balances may prevent the government increasing public debt levels by increasing unproductive expenditures (such as military expenditures). On the other hand, autocratic regimes may be more stable, political business cycles may play a less important role, and unpopular austerity programs may be implemented more easily as the chief executive cannot easily be voted out of office. I also test whether the level of sovereign default risk in *parliamentary regimes* or regimes with an *assembly elected president* is higher than in *presidential regimes*, where it is harder to unseat the chief executive. Presidential regimes may exhibit lower sovereign default risk, as it is easier for the chief executive to implement necessary but unpopular budget consolidation measures, which – if successful – may increase the probability of re-election. In parliamentary systems, the government of the chief executive may more easily break down after the implementation of unpopular budget cuts, which may be an a priori deterrent to implement such measures.

As a second variable category I test the impact of ***elections***. Political business cycle theories have been frequently used to explain the cyclical behavior of public revenues and expenditures around elections. One may expect that in *pre-election* or *election* years the incumbent government may increase public expenditures and reduce taxes in order to increase the

chance to get re-elected. Pre-election or election years may therefore be associated with a deterioration of the sustainability of public finances and therefore higher sovereign default risk.

Ideology may also play a role for the level of sovereign default risk. Financial markets may expect that left-party governments may be more likely to implement unsustainable public finances and to default on sovereign debt than right-party or center-party governments (or vice versa).

Higher levels of ***political stability*** should be associated with lower sovereign default risk. Governments in relatively stable political regimes may optimize over a longer period and should therefore be better able to implement fiscal policies which are sustainable in the long run. Moreover, less frequent regime changes should reduce the uncertainty of financial markets towards the goals of the government and its expertise in safeguarding the sustainability of public finances. I use several empirical variables measuring different aspects of political stability. First, I use three variables measuring the degree of political instability originating from outside the political system. The *political stability index* taken from the Worldwide Governance Indicators measures the risk that the government is destabilized or overthrown by violent or unconstitutional means. In a similar vein, the *internal conflict* dummy indicates the presence of revolutionary, ethnic, or political war or adverse regime change. I also use a dummy indicating as to whether the chief executive is a *military* officer in order to test whether a close connection between the government and the military stabilizes or destabilizes the government. Second, I use three variables that measure the political instability produced inside the political system. The continuity of governance is measured by the *tenure of the government party,* indicating the number of years the government party has been in office. A higher degree of *checks and balances* and a *drop of veto players* from the government may destabilize government policies since more veto player may impede policy change meant towards managing budget deficits, such as implementing

spending cuts or tax increases. In summary, a lower *political stability index*, the presence of *internal conflict*, a shorter *tenure of the government party*, a higher degree of *checks and balances* and a *drop of veto players* from the government indicate a higher level of political instability and may lead to higher sovereign default risk. The impact of *military* connections of the chief executive on political stability and, in turn, on sovereign default risk is not clear a priori.

Sovereign default risk may also depend on the ***feasibility of policy change***. In order to convince financial investors that a sovereign default will not happen, the government needs the power to implement necessary policy changes meant to safeguard fiscal sustainability. If the government does not have sufficient power to implement austerity budgets in order to consolidate public finances, it may find it easier to default on public debt as a last resort. First, a higher government majority reduces the ability of the opposition to impede policy changes meant towards managing budget deficits. The government therefore needs a high *government majority* in the parliament and should have *control of all houses* of the parliament to get budget consolidation bills passed through the parliament. Second, there should be consensus within the government that budget consolidation (including politically unpopular tax increases and spending cuts) is inevitable to avert a sovereign debt crisis. Such a consensus will be easier to find if the degree of *government fractionalization* is low (i.e. the government consists of few parties) and if the degree of *polarization* is low (i.e. there are small differences in the party orientation within the government coalition). Third, I use an index of *executive constraints* measuring the extent of institutionalized constraints on the decision-making powers of the chief executive. A higher degree of executive constraints limits the ability of the government to implement consolidation measures and may therefore increase sovereign default risk.

As a last variable set, I consider several aspects of the ***quality of governance***, namely the *rule of law, regulatory quality, government effectiveness, freedom from corruption,* and *voice and*

accountability. Good governance may increase the sustainability of public finances for a number of reasons. A better functioning of the legal system (as indicated by higher values of *rule of law*) and a higher *regulatory quality* should improve the growth aspects of the economy and therefore may reduce the public debt to GDP ratio in the long run which reduces sovereign default risk. A better *regulatory quality* may be associated with higher tax compliance as the government is better able to detect and prosecute tax evasion. Thus, countries with better *regulatory quality* may be better able to generate higher fiscal revenues from tax increases. A *more efficient* and *less corrupt* administration may help the government to reduce public expenditures during a sovereign debt crisis. Moreover, in countries with a higher level of liberty rights and political participation (as indicated by higher values of *voice and accountability*) citizens may be more willing to back the practical implementation of austerity budgets, which may lead to less tax evasion and faster success in spending cuts.

I include several control variables frequently used in the literature on sovereign default risk. Higher levels of *external sovereign debt to GDP* and *arrears to GDP* should increase sovereign default risk as a higher level of indebtedness reduces the ability of the government to repay its debt. In order to capture the state of the economy I control for *GDP growth* and the *investment to GDP* ratio. Economies that grow fast today or in the future (as indicated by the investment to GDP ratio) are better able to make required debt service payments due to higher public revenues. I also consider *openness* defined as the sum of exports and imports to GDP. More open countries may suffer more from losing access to international capital markets after a possible sovereign default are should thus have lower sovereign default risk. A shortage of foreign exchange reserves may increase the risk of default on external sovereign debt. I therefore assume that higher foreign exchange *reserves to imports* and a higher *current account balance* reduce sovereign default risk. I also account for the *exchange rate change*. A depreciation of the

domestic currency against the U.S. dollar may decrease sovereign default risk as the domestic export industry becomes more competitive or may increase sovereign default risk as it deteriorates the government's ability to repay U.S. dollar denominated debt using domestic funds. Moreover, I use three indicators that account for global risk factors. The *TED spread* (defined as the yield differential between the LIBOR interest rate and U.S. Treasuries) measures global liquidity conditions. The *high yield spread* (defined as the difference between the rate of return of the Merrill Lynch High Yield Bond Index and the yield of U.S. Treasuries) and the *U.S. interest rate* (defined as the 10-year Treasury rate) are measures for investors' risk aversion.

3. Empirical analysis

In order to analyze the impact of political variables on sovereign default risk, I use fixed effects panel regressions,

$$r_{it} - r_{ft} = \alpha Politics_{it} + \sum_j \beta_j Controls_{jit} + \sum_k \mu_k Controls_{kt} + \gamma_i + \varepsilon_{it}, \quad (3)$$

where the sovereign bond yield spread of country *i* in year *t* , $r_{it} - r_{ft}$, is regressed on the political variable, $Politics_{it}$, a set of eight country-specific control variables, $Controls_{jit}$, and a set of three global control variables, $Controls_{kt}$. γ_i presents the country fixed effect; α, β_j, and μ_k are the coefficients to be estimated, and ε_{it} is the error term.

The fixed effects estimator is used in order to account for an unobserved time invariant country-specific impact on sovereign default risk, such as country-specific investor preferences for sovereign bonds. The fixed effects estimator accounts for such country-specific effects and guarantees consistent coefficient estimates. I have also performed robustness checks using the

random effects estimator. However, the Hausman (1978) specification test indicates that the random effects estimator would not be consistent, and thus I use the fixed effects estimator. The t-values are calculated based on heteroskedasticity- and autocorrelation-robust standard errors clustered on the country level in order to guarantee a reliable assessment of the significance of the results (Stock and Watson, 2008).

<Insert Table 1 around here>

Table 1 presents the estimation results for the political variable sets political system, elections, and ideology. The degree of democracy (vs. autocracy) of the ***political system*** as indicated by the *polity2 score* does not have a significant impact on sovereign default risk, which suggests that the benefits (public control over the political leader may circumvent public debt increases to finance unproductive projects; incompetent leaders can be voted out of office) and costs (political business cycles with inefficient spending; austerity programs are harder to implement) of democracies (as compared to autocracies) balance each other out from the viewpoint of investors. I find that *parliamentary systems* and regimes with *assembly-elected presidents* are attached significantly higher sovereign yield spreads than presidential regimes (the reference category). This confirms the hypothesis that presidential regimes have lower sovereign default risk as the chief executive has more incentives to implement unpopular austerity programs than in parliamentary systems, where it is easier to unseat the chief executive.

The results suggest that ***elections*** play no significant role for the determination of sovereign yield spreads. Investors seem to disbelieve that the political business cycle around elections deteriorates the long term solvency of the government as the fiscal deficits in pre-election or election years produced by the incumbent government in order to increase its re-

election probability may be reversed after elections using spending cuts and/or tax increases. The results testing for ***ideology*** indicate that financial investors do not attach significantly different sovereign yield spreads to countries with right party, left party, or center party (the reference category) governments. Seemingly, financial markets expect that political leaders are pragmatic rather than being driven by the alignment of their party once being in governmental responsibility.

<Insert Table 2 around here>

Table 2 presents the estimation results for the different aspects of ***political stability***. Although there are strong theoretical arguments as to why a higher degree of political stability should be associated with lower sovereign default risk (such as a longer optimization period of the government and less uncertainty over policy goals and expertise of the government), I find largely insignificant results. Only the coefficient of the *overall index of political stability* is significantly different from zero and has the expected negative sign. However, the presence of *internal conflict*, *military* affiliation of the chief executive, the *tenure of the government party*, *checks and balances* and a *drop of veto players* from the government do not have a significant influence on sovereign default risk. Thus, political stability does not seem to be important for the determination of sovereign default risk from the viewpoint of investors.

<Insert Table 3 around here>

Table 3 presents the estimation results for the variables testing the ***feasibility of policy change***. The *control of all houses* of the parliament, a low level of *government fractionalization*[5], and a low level of *polarization* lead to significantly lower levels of sovereign default risk. That is, financial markets expect that sovereign default risk is lower in countries where the government controls all houses in the parliament and can therefore get austerity bills passed through the parliament. Moreover, sovereign default risk is lower in countries where the government consists of few parties and is relatively homogeneous with respect to party orientation, and can therefore more easily find a consensus on possible budget cuts than in countries where the government is highly fractionalized and polarized. The coefficient of the degree of *government majority* in the parliament is not significantly different from zero, indicating that a high government majority is not necessary to implement budget consolidation measures – what counts is that the government controls the houses of the parliament at all, as indicated by the control of all houses dummy. Moreover, institutionalized constraints on the decision-making powers of the chief executive, as indicated by the *executive constraints* index, do not seem to play an important role.

<Insert Table 4 around here>

Table 4 presents the estimation results for the ***quality of governance*** indicators. The results present robust evidence that a higher quality of governance, as measured by higher values of *rule of law*, *regulatory quality*, *government effectiveness*, and *voice and accountability*, is associated with lower sovereign default risk. By improving the quality of governance the government may increase the growth prospects of the economy, reduce tax evasion, and increase the effectiveness of spending cuts and tax increases. Thus, by increasing the efficiency of the legal system, the

[5] The government fractionalization variable is a Herfindahl index, i.e. higher index values indicate less fractionalization.

administration, and regulatory principles and by increasing the civil rights and political participation of their citizens in the long run, the government may improve the effectiveness of budget consolidation measures and, in turn, convince financial markets that a sovereign default will not happen.

In order to test whether the political variables have a different impact on sovereign default risk in high-risk countries than in low-risk countries, I re-estimate each regression model separately for each country set. In order to split the dataset into high- and low-risk countries, I calculate the median of the sovereign yield spread for each country during the observation period, and classify a country to be a high-risk country if the median of its sovereign yield spread is above the median of the medians of all countries. Table A2 in the Appendix presents the results of the country classification.

<Insert Table 5 around here>

Table 5 presents the estimation results for the high-risk and low-risk country samples. The Table reports the coefficient, t-value and significance level of the political variables. The estimation results for the control variables and the regression diagnostics are not reported in order to save space. Each model is estimated using the same specification as used in Tables 1 to 4.

The results suggest that the nature of the ***political system*** plays a significant role for low risk countries only.[6] Low risk countries with relatively democratic regimes (as indicated by a higher *polity2 score*) and a *parliamentary system* face significantly higher sovereign default risk than countries with relatively autocratic regimes and presidential systems. No significant effect is found for high risk countries. Bondholders seem to believe that the costs associated with

[6] Note that no coefficient is reported for parliamentary regimes for high risk countries since no country in the high risk sample had a parliamentary regime in the considered observation period.

democratic regimes (such as political business cycles; slow democratic procedures needed to implement budget consolidation measures) seem to outweigh the benefits of democracy (public control over the political leader in order to avoid inefficient spending; incompetent leaders can be voted out of office more easily) in low risk countries. In high risk countries, the benefits and costs may balance each other out so that democratic and autocratic regimes may produce similar levels of sovereign default risk. Similarly, the drawback of the parliamentary system – the chief executive may be less willing to implement unpopular budget consolidation measures – is more pronounced in low risk than in high risk countries. ***Elections*** play a significant role only in low risk countries, while no significant effect is found for high risk countries. In low risk countries, sovereign yield spreads increase in pre-election years – reflecting higher uncertainty about the goals and efficiency of the next government – and decrease significantly in presidential election years. On the contrary, such a political business cycle plays no significant role for high risk countries. In high risk countries, where the government does a bad job in containing sovereign default risk on average, bondholders may regard any potential new government as an improvement compared to the incumbent government. In low risk countries – where the government is on average better in holding sovereign yield spreads at low levels – an election may bring a government into office which is better or worse in reducing sovereign default risk. Similar to the case of the baseline regressions, there is no significant impact of the government's ***party affiliation*** on sovereign default risk for high or low risk countries.[7] This suggests that in both country sets financial markets expect a pragmatic rather than ideology-driven policymaking of the government once in office.

For the case of ***political stability***, mixed results are obtained. While for high risk countries the *overall index of political stability* and the *tenure of the government party* play a significant

[7] Note that no coefficient is reported for right government for the low risk country set since no country in the low risk sample had a right government in the considered observation period.

role, the presence of *internal conflict*, *military affiliation of the chief executive*, and *checks and balances* significantly drive the sovereign yield spread for low risk countries. That is, different aspects of political stability play a significant role in determining sovereign default risk, while this effect depends on the empirical measure and country set considered.

For the ***feasibility of policy change*** the estimations reveal some interesting results. For high risk countries, the *control of all houses* significantly reduces sovereign default risk, while no significant effect is found for low risk countries. In high risk countries with the relatively low fiscal sustainability, budget consolidation measures naturally need to be more radical than in low risk countries. The power to implement such measures (the control of all houses) therefore seems to be more important in high risk countries than in low risk countries. A high level of political *polarization* and *executive constraints* significantly increases sovereign default risk only in low risk countries, while no significant effect is found for high risk countries. To some extent, this finding resembles the results for the degree of democracy, which showed that the degree of democracy plays a significant role for low risk countries. Conducting more difficult democratic procedures in order to get austerity budgets passed (as measured by more party polarization and more executive constraints) may delay budget consolidations and therefore drive sovereign default risk in low risk countries. In high risk countries, the need to implement such measures may be clearer and different parties (with different party orientations) in a government may more likely agree on these, which yield the result that polarization plays no significant role.

The ***quality of governance*** plays a significant role for the high risk sample only. A higher quality of governance, as measured by higher indices of *rule of law*, *regulatory quality*, *government effectiveness*, and *voice and accountability*, reduces sovereign default risk in high risk countries while no significant effect is found for low risk countries. Improving the quality of governance may therefore be an efficient way to reduce sovereign default risk for high risk

countries. Seemingly, high risk countries come from a relatively low level of governance, and improvements of the quality of governance may therefore be associated with decreasing sovereign yield spreads. This finding is reasonable as improvements in the efficiency of the legal system, administration, regulation, and political participation have a rather long term default risk reducing impact and can hardly be reversed in the short term. A trend towards better governance may therefore be a suitable way to reduce sovereign bond yield spreads in the long run.

The results for the control variables obtained in Tables 1 to 4, largely confirm the findings of previous studies. Higher levels of *external sovereign debt to GDP* and *arrears to GDP* significantly increase sovereign default risk in each specification, indicating that higher levels of indebtedness reduces the ability of the government to honor its obligations in the future. Higher *GDP growth* significantly reduces sovereign default risk in most specifications, while no significant effects is found for the *investment to GDP* ratio. This suggests that financial markets focus on the current economic growth in order to estimate the government's ability to accrue taxes from higher value added in the economy, while they do not account for potential future growth as indicated by investments. I find no significant impact for *openness,* indicating that the incentive to default is equal for relatively open and closed societies. For the variables measuring the availability of foreign exchange reserves, I find that a higher stock of foreign exchange *reserves to imports* significantly reduces sovereign yield spreads in most specifications while the coefficient for the *current account balance* is mostly insignificant. This suggests that financial markets focus on current shortages of foreign exchange reserves rather than on potential shortages as measured by the current account balances. The coefficient for the *exchange rate change* is negative and significant in some of the specifications, lending weak evidence for the hypothesis that a depreciation of the domestic currency improves the competitiveness of the domestic export industry and thus reduces sovereign default risk. For the global risk variables, I

find that robust evidence that a higher *TED spread* significantly increases sovereign default risk, while the *high yield spread* and the *U.S. interest rate* are largely insignificant. This suggests that better liquidity conditions in global financial markets (as measured by a lower *TED spread*) leads to significant reductions in sovereign bond yield spreads in emerging markets, while the degree of risk aversion (as measured by *high yield spread* and the *U.S. interest rate*) does not seem to play a significant role.

4. Conclusions

This paper studied the political drivers of sovereign default risk for 27 emerging markets in the period 1996 to 2009. Some conclusions may be derived from this analysis. First, presidential regimes face lower sovereign yield spreads than parliamentary regimes. By making it harder to unseat the chief executive in a presidential system, the government may be more willing to make unpopular decisions, such as implementing austerity budgets. Presidential systems may therefore be a better choice for emerging markets, particularly in times of sovereign debt crisis. Second, the feasibility of policy change is crucial to reduce sovereign default risk. The government needs to control all houses of the parliament in order to get austerity bills passed quickly. The government coalition should consist of only few parties and should not be polarized in order to find a consensus on budget consolidation easily. A government of technocrats which is backed by the major parties of the parliament may therefore be a viable option to implement austerity measures in times of crisis. Third, improving the quality of governance is an efficient political instrument to reduce sovereign yield spreads. The efficiency of the legal system, the administration, and regulation should be increased. Such improvements in the quality of governance will stimulate economic growth and increase the efficiency of spending cuts and tax increases and may, in turn, convince investors that a sovereign default is unlikely.

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Table 1: Political system, elections, and ideology

Polity2 score	-6.174											
	(-0.27)											
Parliamentary system			1141.650	**								
			(2.46)									
Assembly elected president			360.597	**								
			(2.17)									
Pre-election dummy					10.903							
					(0.18)							
Legislative election year							-15.685					
							(-0.41)					
Executive election year									-56.187			
									(-0.94)			
Left party government											2.120	
											(0.01)	
Right party government											470.945	
											(1.39)	
External debt to GDP	23.956	***	26.367	***	20.968	**	21.210	**	21.495	***	28.025	**
	(2.88)		(2.82)		(2.72)		(2.76)		(2.77)		(2.67)	
Arrears to GDP	92.176	***	90.591	***	96.672	***	95.855	***	95.782	***	81.745	***
	(13.33)		(15.13)		(10.20)		(10.19)		(10.38)		(3.51)	
Economic growth	-29.224	**	-27.955	**	-29.261	**	-29.161	**	-29.385	**	-23.204	
	(-2.36)		(-2.32)		(-2.31)		(-2.33)		(-2.34)		(-1.47)	
Investment to GDP ratio	-13.569		-17.048		-23.442		-23.043		-22.180		-46.196	
	(-0.79)		(-1.02)		(-1.54)		(-1.49)		(-1.47)		(-1.03)	
Openness	5.459		5.209		3.166		3.171		3.084		14.622	*
	(1.59)		(1.40)		(0.94)		(0.97)		(0.94)		(1.85)	
Reserves to imports	-70.176	**	-64.953	**	-99.996	***	-99.787	***	-100.437	***	-47.541	
	(-2.63)		(-2.30)		(-3.56)		(-3.55)		(-3.54)		(-1.35)	
Current account balance	-18.115		-16.247		-20.573		-20.652		-19.996		2.175	
	(-1.25)		(-1.34)		(-1.64)		(-1.62)		(-1.60)		(0.14)	
Exchange rate change	-0.662		-0.305		-0.676		-0.677		-0.708		-1.198	**
	(-1.40)		(-0.51)		(-1.41)		(-1.43)		(-1.47)		(-2.15)	
TED spread	451.066	***	491.945	***	445.699	***	444.945	***	447.026	***	518.181	***
	(3.43)		(4.19)		(3.29)		(3.34)		(3.37)		(3.04)	

High yield spread	8.258		3.147		12.580		12.659		11.976		35.780	
	(0.30)		(0.12)		(0.43)		(0.43)		(0.41)		(1.47)	
U.S. interest rate	-68.341		-58.036		-57.514		-59.064		-59.473		-32.409	
	(-1.48)		(-1.30)		(-1.29)		(-1.32)		(-1.31)		(-0.54)	
Constant	356.729		49.356		779.949		776.777		772.270		-203.035	
	(0.56)		(0.09)		(1.68)		(1.67)		(1.66)		(-0.31)	
R2 within	0.436		0.445		0.453		0.453		0.453		0.462	
R2 between	0.326		0.170		0.384		0.378		0.380		0.251	
R2 overall	0.336		0.219		0.370		0.376		0.377		0.326	
F-test	67.81	***	40.02	***	43.11	***	51.55	***	46.33	***	18.57	***
No. of observations	300		303		288		289		289		187	
No. of countries	27		27		26		26		26		23	

Note: The table reports country fixed effects estimations. t-values (in parentheses) are based on robust standard errors clustered on the country level.

Table 2: Political stability

Overall political stability index	-395.546	*										
	(-1.72)											
Internal conflict			-167.103									
			(-0.84)									
Military affiliation of chief executive					-18.135							
					(-0.07)							
Tenure of government party							-1.791					
							(-0.42)					
Checks and balances									8.329			
									(0.17)			
Drop of veto players											-20.580	
											(-0.15)	
External debt to GDP	25.483	**	22.740	**	23.604	***	22.798	**	24.935	***	23.674	***
	(2.70)		(2.72)		(2.80)		(2.47)		(3.03)		(2.92)	
Arrears to GDP	82.124	***	96.932	***	92.548	***	87.904	***	89.230	***	92.557	***
	(6.66)		(11.61)		(12.29)		(8.63)		(10.37)		(13.00)	
Economic growth	-25.152	**	-29.812	**	-29.319	**	-24.240	*	-29.905	**	-29.398	**
	(-2.58)		(-2.37)		(-2.33)		(-1.95)		(-2.17)		(-2.36)	
Investment to GDP ratio	-16.287		-14.369		-13.683		-6.364		-10.813		-13.402	
	(-1.14)		(-0.97)		(-0.91)		(-0.34)		(-0.75)		(-0.83)	
Openness	5.459		5.085		5.409		6.195		5.297		5.371	
	(1.61)		(1.44)		(1.60)		(1.70)		(1.54)		(1.56)	
Reserves to imports	-59.304	**	-71.136	**	-69.392	**	-76.817	*	-66.835	**	-69.423	**
	(-2.45)		(-2.67)		(-2.59)		(-1.83)		(-2.41)		(-2.59)	
Current account balance	-27.557	*	-17.766		-17.878		-4.053		-19.382		-17.828	
	(-1.80)		(-1.51)		(-1.42)		(-0.28)		(-1.51)		(-1.39)	
Exchange rate change	-0.683		-0.659		-0.665		-0.829	**	-0.641		-0.646	
	(-1.42)		(-1.30)		(-1.35)		(-2.25)		(-1.28)		(-1.20)	
TED spread	450.859	***	458.423	***	449.400	***	386.349	***	424.804	***	450.173	***
	(3.62)		(3.48)		(3.48)		(3.03)		(3.36)		(3.61)	
High yield spread	16.248		7.127		10.113		32.684	*	10.507		10.123	
	(0.59)		(0.25)		(0.37)		(1.88)		(0.37)		(0.37)	
U.S. interest rate	-52.562		-61.161		-62.593		-46.536		-63.952		-63.284	
	(-1.33)		(-1.36)		(-1.41)		(-0.97)		(-1.51)		(-1.46)	

Constant	-70.009		398.586		290.642		-18.581		167.755		288.901	
	(-0.14)		(0.67)		(0.55)		(-0.03)		(0.29)		(0.53)	
R2 within	0.455		0.437		0.434		0.400		0.429		0.434	
R2 between	0.333		0.332		0.327		0.358		0.339		0.328	
R2 overall	0.339		0.335		0.329		0.323		0.330		0.329	
F-test	26.23	***	85.58	***	61.38	***	40.02	***	64.03	***	100.28	***
No. of observations	303		303		303		264		297		303	
No. of countries	27		27		27		27		27		27	

Note: The table reports country fixed effects estimations. t-values (in parentheses) are based on robust standard errors clustered on the country level.

Table 3: Feasibility of policy change

Control of all houses	-387.129	*								
	(-1.79)									
Government majority			85.461							
			(0.31)							
Government fractionalization					-384.384	*				
					(-1.83)					
Polarization							92.984	**		
							(2.20)			
Executive constraints									-95.105	
									(-1.16)	
External debt to GDP	24.855	**	24.455	***	26.114	***	24.443	**	23.370	**
	(2.58)		(2.78)		(3.19)		(2.48)		(2.36)	
Arrears to GDP	81.435	***	89.054	***	84.770	***	91.481	***	102.497	***
	(8.41)		(9.83)		(7.64)		(9.25)		(6.55)	
Economic growth	-13.523	*	-28.894	**	-26.532	**	-23.199		-26.659	**
	(-1.94)		(-2.31)		(-2.10)		(-1.63)		(-2.29)	
Investment to GDP ratio	-11.488		-12.308		-19.540		-31.904		-19.744	
	(-0.81)		(-0.82)		(-1.36)		(-1.07)		(-1.18)	
Openness	5.158		5.299		6.566		11.056	**	4.076	
	(1.52)		(1.61)		(1.67)		(2.12)		(1.28)	
Reserves to imports	-73.868	*	-70.299	**	-59.053	**	-50.733		-68.660	**
	(-1.92)		(-2.61)		(-2.33)		(-1.54)		(-2.55)	
Current account balance	-9.416		-17.598		-18.723		-6.072		-22.694	*
	(-0.90)		(-1.47)		(-1.57)		(-0.59)		(-1.72)	
Exchange rate change	-0.672		-0.648		-0.666		-0.838		-0.590	
	(-1.61)		(-1.27)		(-1.42)		(-1.68)		(-1.11)	
TED spread	470.991	***	451.571	***	486.986	***	480.852	***	506.070	***
	(3.72)		(3.69)		(3.87)		(3.47)		(4.29)	
High yield spread	28.129	*	8.930		0.663		37.992	*	2.332	
	(1.80)		(0.33)		(0.02)		(1.80)		(0.10)	
U.S. interest rate	-49.484		-67.539		-78.953		-1.264		-70.584	
	(-1.17)		(-1.47)		(-1.63)		(-0.03)		(-1.45)	
Constant	162.645		230.031		598.079		-331.308		1078.789	
	(0.31)		(0.42)		(1.19)		(-0.59)		(1.33)	

R2 within	0.431		0.430		0.440		0.428		0.456	
R2 between	0.344		0.336		0.314		0.309		0.317	
R2 overall	0.328		0.322		0.303		0.318		0.288	
F-test	83.01	***	45.33	***	37.81	***	55.41	***	67.34	***
No. of observations	280		300		301		246		291	
No. of countries	26		27		27		26		27	

Note: The table reports country fixed effects estimations. t-values (in parentheses) are based on robust standard errors clustered on the country level.

Table 4: Quality of governance

Rule of law	-1230.18	**								
	(-2.74)									
Regulatory quality			-472.207	**						
			(-2.34)							
Government effectiveness					-598.794	**				
					(-2.16)					
Freedom from corruption							-169.976			
							(-0.75)			
Voice and accountability									-484.842	**
									(-2.14)	
External debt to GDP	27.024	***	24.791	***	25.477	**	23.688	**	25.355	***
	(3.04)		(2.81)		(2.69)		(2.74)		(2.81)	
Arrears to GDP	64.250	***	76.780	***	79.350	***	89.652	***	90.151	***
	(4.26)		(6.76)		(5.60)		(8.82)		(10.57)	
Economic growth	-30.691	**	-31.425	**	-27.764	**	-28.451	**	-29.031	**
	(-2.57)		(-2.70)		(-2.48)		(-2.29)		(-2.50)	
Investment to GDP ratio	-14.800		-13.006		-14.678		-13.376		-9.102	
	(-0.92)		(-0.81)		(-0.99)		(-0.92)		(-0.69)	
Openness	1.826		4.921		4.957		5.208		4.508	
	(0.66)		(1.63)		(1.51)		(1.56)		(1.44)	
Reserves to imports	-56.105	**	-60.530	**	-57.658	**	-70.547	**	-80.164	***
	(-2.30)		(-2.39)		(-2.17)		(-2.66)		(-3.08)	
Current account balance	-30.747	**	-25.271	*	-20.501		-19.030		-21.656	*
	(-2.20)		(-2.00)		(-1.68)		(-1.55)		(-1.76)	
Exchange rate change	-0.819	**	-0.879	**	-0.920	**	-0.704		-0.703	
	(-2.07)		(-2.26)		(-2.25)		(-1.44)		(-1.52)	
TED spread	441.081	***	481.126	***	461.958	***	444.815	***	438.206	***
	(3.33)		(3.35)		(3.64)		(3.51)		(3.34)	
High yield spread	0.040		6.662		7.962		9.643		8.034	
	(0.00)		(0.25)		(0.31)		(0.35)		(0.30)	
U.S. interest rate	-49.230		-28.042		-62.518		-62.563		-81.661	*
	(-1.42)		(-0.78)		(-1.43)		(-1.39)		(-1.71)	
Constant	-62.657		88.250		179.269		249.487		298.974	
	(-0.12)		(0.16)		(0.31)		(0.45)		(0.58)	

R2 within	0.480		0.450		0.447		0.435		0.445	
R2 between	0.476		0.410		0.432		0.360		0.352	
R2 overall	0.391		0.389		0.383		0.347		0.358	
F-test	160.21	***	126.96	***	67.92	***	51.41	***	54.22	***
No. of observations	303		303		303		303		303	
No. of countries	27		27		27		27		27	

Note: The table reports country fixed effects estimations. t-values (in parentheses) are based on robust standard errors clustered on the country level.

Table 5: Estimation results for different country sets

		High risk countries		Low risk countries	
Political system	Polity2 score	-28.277		43.539	**
		(-0.93)		(2.58)	
	Parliamentary system	[1]		128.064	***
				(2.82)	
	Assembly elected president	-66.852		82.952	
		(-0.16)		(1.27)	
Elections	Pre-election dummy	-39.803		111.200	**
		(-0.46)		(2.65)	
	Legislative election year	64.063		7.536	
		(0.82)		(0.15)	
	Executive election year	16.702		-51.755	*
		(0.26)		(-2.05)	
Ideology	Left party government	-215.730		-37.644	
		(-0.60)		(-0.47)	
	Right party government	701.361		[2]	
		(-1.42)			
Political stability	Overall political stability index	-667.244	**	-107.584	
		(-2.37)		(-1.30)	
	Internal conflict	43.519		-147.526	***
		(-0.07)		(-9.17)	
	Military affiliation of chief	128.735		-760.419	***
	executive	(-0.40)		(-11.38)	
	Tenure of government party	-28.774	**	1.837	
		(-2.65)		(1.73)	
	Checks and balances	-81.483		67.174	**
		(-0.80)		(2.34)	
	Drop of veto players	291.390		-40.376	
		(-0.70)		(-0.70)	
Feasibility of	Control of all houses	-524.328	*	-50.949	
policy change		(-1.85)		(-0.81)	
	Government majority	216.023		-42.612	
		(-0.53)		(-0.33)	
	Government fractionalization	-438.482		-103.434	
		(-1.16)		(-1.24)	
	Polarization	-95.403		99.164	*
		(-0.56)		(2.12)	
	Executive constraints	-140.260		117.495	**
		(-1.51)		(2.35)	
Governance	Rule of law	-1885.895	**	-236.767	
		(-3.01)		(-0.94)	

Regulatory quality	-921.974	***	7.444
	(-5.13)		(0.09)
Government effectiveness	-1155.922	**	-173.281
	(-2.52)		(-0.73)
Freedom from corruption	-397.645		-195.898
	(-0.81)		(-1.30)
Voice and accountability	-748.092	**	-121.360
	(-2.21)		(-0.89)

Note: The table reports country fixed effects estimations for the high risk on low risk country samples. Countries are classified as high risk and low risk countries based on the median of the sovereign yield spread during the observation period. The classification of countries is reported in Table A 3 in the Appendix. The specifications for the estimations are the same as in Tables 1 to 4. Tee results for the control variables and the regression diagnostics are not reported in order to save space. t-values (in parentheses) are based on robust standard errors clustered on the country level. (1) Note that no coefficient is reported for parliamentary regime for high risk countries since no country in the high risk sample had a parliamentary regime in the considered observation period. (2)Note that no coefficient is reported for right government for the low risk country set since no country in the low risk sample had a right government in the considered observation period.

Appendix

Table A1: Definitions and sources of the variables

Variable	Definition	Source
EMBI spread	Difference between the redemption yield on domestic U.S. dollar denominated sovereign bonds and U.S. Treasuries; bond returns based on JP Morgan's Emerging Markets Bond Index	JP Morgan, Datastream
Political system		
Polity2 score	Indicator variable characterizing the political system; indicator ranges from +10 (strongly democratic) to -10 (strongly autocratic)	Polity IV Database
Parliamentary system	Dummy variable equals one for countries in which the legislature elects the chief executive; otherwise zero (for presidential regimes and assembly elected presidents)	Database of Political Institutions, World Bank
Assembly elected president	Dummy variable equals one for countries in which an assembly elects the chief executive but cannot easily recall him (if the assembly needs a 2/3 vote to impeach, or must dissolve itself while forcing him out); otherwise zero (for parliamentary and presidential regimes)	Database of Political Institutions, World Bank
Elections		
Pre-election dummy	Dummy variable equals one if the chief executive has zero years left in current term (i.e. election of chief executive is planned next year); zero otherwise	Database of Political Institutions, World Bank
Legislative election year	Dummy variable equals one if legislative election takes place in current year; zero otherwise	Database of Political Institutions, World Bank
Executive election year	Dummy variable equals one if executive election takes place in current year; zero otherwise	Database of Political Institutions, World Bank
Ideology		
Right party government	Dummy variable indicating whether the government's party orientation is right (1) or otherwise (0); Party orientation with respect to economic policy, coded based on the description of the party in the sources, using the following criteria: Right: for parties that are defined as conservative, Christian democratic, or right-wing.	Database of Political Institutions, World Bank, Beck et al. (2001)
Left party government	Dummy variable indicating whether the	Database of

	government's party orientation is left (1) or otherwise (0); Left: for parties that are defined as communist, socialist, social democratic, or left-wing.	Political Institutions, World Bank, Beck et al. (2001)
Political stability		
Political stability index	Index measures the perceptions of the likelihood that the government will be destabilized or overthrown by unconstitutional or violent means, including domestic violence and terrorism	Worldwide Governance Indicators, World Bank, Kaufmann et al. (2010)
Conflict	Dummy variable equals one if revolutionary, ethnic, or political war or an adverse regime takes place in current year; zero otherwise	Political Instability Task Force
Military	Dummy variable equals one if chief executive is military officer; zero otherwise	Database of Political Institutions, World Bank, Beck et al. (2001)
Tenure of government party	Variable indicates how long the party of the chief executive has been in office	Database of Political Institutions, World Bank, Beck et al. (2001)
Checks and balances	Checks and balances measures the number of veto players; Checks is incremented by one if there is a chief executive; if the chief executive is competitively elected; if the opposition controls the legislature; In presidential systems, checks is incremented by one: for each chamber of the legislature unless the president's party has a majority in the lower house and a closed list system is in effect (implying stronger presidential control of his/her party, and therefore of the legislature); for each party coded as allied with the president's party and which has an ideological (left-right-center) orientation closer to that of the main opposition party than to that of the president's party. In parliamentary systems, checks is incremented by one: for every party in the government coalition as long as the parties are needed to maintain a majority; for every party in the government coalition that has a position on economic issues (right-left-center) closer to the largest opposition party than to the party of the executive; In parliamentary systems, the	Database of Political Institutions, World Bank, Beck et al. (2001)

	prime minister's party is not counted as a check if there is a closed rule in place – the prime minister is presumed in this case to control the party fully.	
Drop of veto players	Variable indicates the percent of veto players who drop from the government in any given year. Veto players are defined as in checks and balances	Database of Political Institutions, World Bank, Beck et al. (2001)
Feasibility of policy change		
Control of all houses	Dummy variable equals one if the government party controls all relevant houses of the parliament; zero otherwise	Database of Political Institutions, World Bank, Beck et al. (2001)
Government majority	Fraction of seats in the parliament held by the government. It is calculated by dividing the number of government seats by total (government plus opposition plus non-aligned) seats.	Database of Political Institutions, World Bank, Beck et al. (2001)
Government fractionalization	Sum of squared seat shares of all parties in the government; higher values indicate lower levels of government fractionalization	Database of Political Institutions, World Bank, Beck et al. (2001)
Polarization	Variable measures the maximum difference between the chief executive's party's value (right, center, or left) and the values of the three largest government parties and the largest opposition party; higher values indicate a higher level of polarization	Database of Political Institutions, World Bank, Beck et al. (2001)
Executive constraints	Executive constraints measures the extent of institutionalized constraints on the decision-making powers of chief executives; a seven category scale is used: (1) Unlimited Authority: There are no regular limitations on the executive's actions (as distinct from irregular limitations such as the threat or actuality of coups and assassinations); (2) Intermediate Category; (3) Slight to Moderate Limitation on Executive Authority: There are some real but limited restraints on the executive; (4) Intermediate Category; (5) Substantial Limitations on Executive Authority: The executive has more effective authority than any accountability group but is subject to substantial constraints by them; (6)	Polity IV Database

	Intermediate Category; (7) Executive Parity or Subordination: Accountability groups have effective authority equal to or greater than the executive in most areas of activity.	
Quality of governance		
Rule of law	Index captures perceptions of the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence; higher values indicate more effective legal system	Worldwide Governance Indicators, World Bank, Kaufmann et al. (2010)
Regulatory quality	Index captures perceptions of the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development; higher values indicate better regulatory quality	Worldwide Governance Indicators, World Bank, Kaufmann et al. (2010)
Government effectiveness	Index captures perceptions of the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies; higher values indicate more effective government policies	Worldwide Governance Indicators, World Bank, Kaufmann et al. (2010)
Freedom from corruption	Index captures perceptions of the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as "capture" of the state by elites and private interests; higher values indicate less corruption	Worldwide Governance Indicators, World Bank, Kaufmann et al. (2010)
Voice and accountability	Index captures the perceptions of the extent to which a country's citizens are able to participate in selecting their government, as well as freedom of expression, freedom of association, and a free media.; higher values indicate more democratic rights	Worldwide Governance Indicators, World Bank, Kaufmann et al. (2010)
Control variables		
External sovereign debt to GDP	External debt stock (public and publicly guaranteed) to GDP	WDI
Arrears to GDP	Principal arrears (public and publicly guaranteed) to Gross Domestic Product (GDP)	WDI

Economic growth	Year-over-year percentage change in GDP (in constant U.S. dollars)	WDI
Investment to GDP ratio	Gross fixed investment to GDP	WDI
Openness	Exports plus imports to GDP	WDI
Reserves to imports	Current account reserves plus gold to imports	WDI
Current account balance	Current account balance to GDP	WDI
Exchange rate change	Year-over-year percentage change in the local currency/U.S. dollar exchange rate; positive values indicate a depreciation of the local currency against the U.S. dollar	WDI
TED spread	Yield of 3M LIBOR (USD) minus yield of 3M U.S. treasury bills	Datastream
High yield spread	Rate of return of the Merrill Lynch High Yield Bond Index (in US Dollars) minus the yield of 10 year US Treasuries	Datastream
U.S. interest rate	10-year U.S. Treasury rate	Department of the Treasury

Table A2: High-risk and low-risk classification of countries

High-risk countries	Low-risk countries
Argentina (682), Brazil (489), Colombia (416), Cote d'Ivoire (2468), Dominican Republic (446), Ecuador (859), Kazakhstan (393), Lebanon (408), Peru (421), Philippines (415), Russian Federation (478), Ukraine (487), Venezuela (727)	Bulgaria (362), Chile (139), China (91), Egypt (155), El Salvador (264), Indonesia (256), Malaysia (154), Mexico (317), Pakistan (289), Panama (347), South Africa (203), Turkey (337), Uruguay (297), Vietnam (203)

Note: Median of a country's sovereign bond yield spread is reported in parentheses.