Categories, Creditworthiness and Contagion

Sarah Brooks, Layna Mosley, and Raphael Cunha

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Data Appendix

I. Data Sources and Definitions

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

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

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

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

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

Current Account Balance. Current account balance is the sum of net exports of goods and services, net primary income, and net secondary income. Data are in current U.S. dollars. Source: World Development Indicators.

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

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

Energy Index. Monthly index of world prices of energy commodities, including coal, crude oil, and natural gas. Source: World Bank Commodity Price Data (The Pink Sheet).

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

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

FTSE Category. The FTSE indices classify countries into market development categories for the purpose of equity investment analysis, stock market performance measurement, asset allocation and portfolio hedging. The market status of all countries classified in the FTSE global benchmarks are reviewed annually and assigned to a category: Developed, Advanced Emerging, Secondary Emerging or Frontier. Information used in the classification includes market structure, regulatory and trading practices of the markets within each country. Countries are coded in the following way: Emerging Markets = 1; Frontier = 2; Developed = 3; Advanced emerging =4; Secondary Emerging = 5.

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

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

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

Government Consumption. Expense (% of GDP). Cash payments for operating activities of the government in providing goods and services. It includes compensation of employees (such as wages and salaries), interest and subsidies, grants, social benefits, and other expenses such as rent and dividends. Source: World Development Indicators.

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

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

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

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

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

Months to Election. Number of months until the next parliamentary election; coded zero for years in which an election occurs. Based on election dates contained in the Database of Political Institutions (Beck et al. 2001, 2010 update).

MSCI Category. The MSCI Global Equity Indices provide benchmarks to classify over 75 countries into three categories: Developed, Emerging and Frontier Markets. The categorizations are based on global and cross-regional comparisons of market capitalization size, sector and market segments. This variable codes countries according to a 3-tiered categorization: Emerging Markets = 1; Frontier = 2; Developed = 3.

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

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

Sovereign Spread. The sovereign spread tracks the difference in yield between traded external debt instruments and comparable U.S. Treasuries that are understood to reflect different credit quality. Source: J.P. Morgan Emerging Markets Bond Index Global.

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

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

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

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

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

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

Yrs Office. Measures the number of years that chief executive has been in office. Source: Database of Political Institutions (Beck et al. 2001, 2010 update).

Years until Election. Number of years until the next parliamentary election; coded zero for years in which an election occurs. Based on election dates contained in the Database of Political Institutions (Beck et al. 2001, 2010 update).

II. Average Borrowing Costs by Category

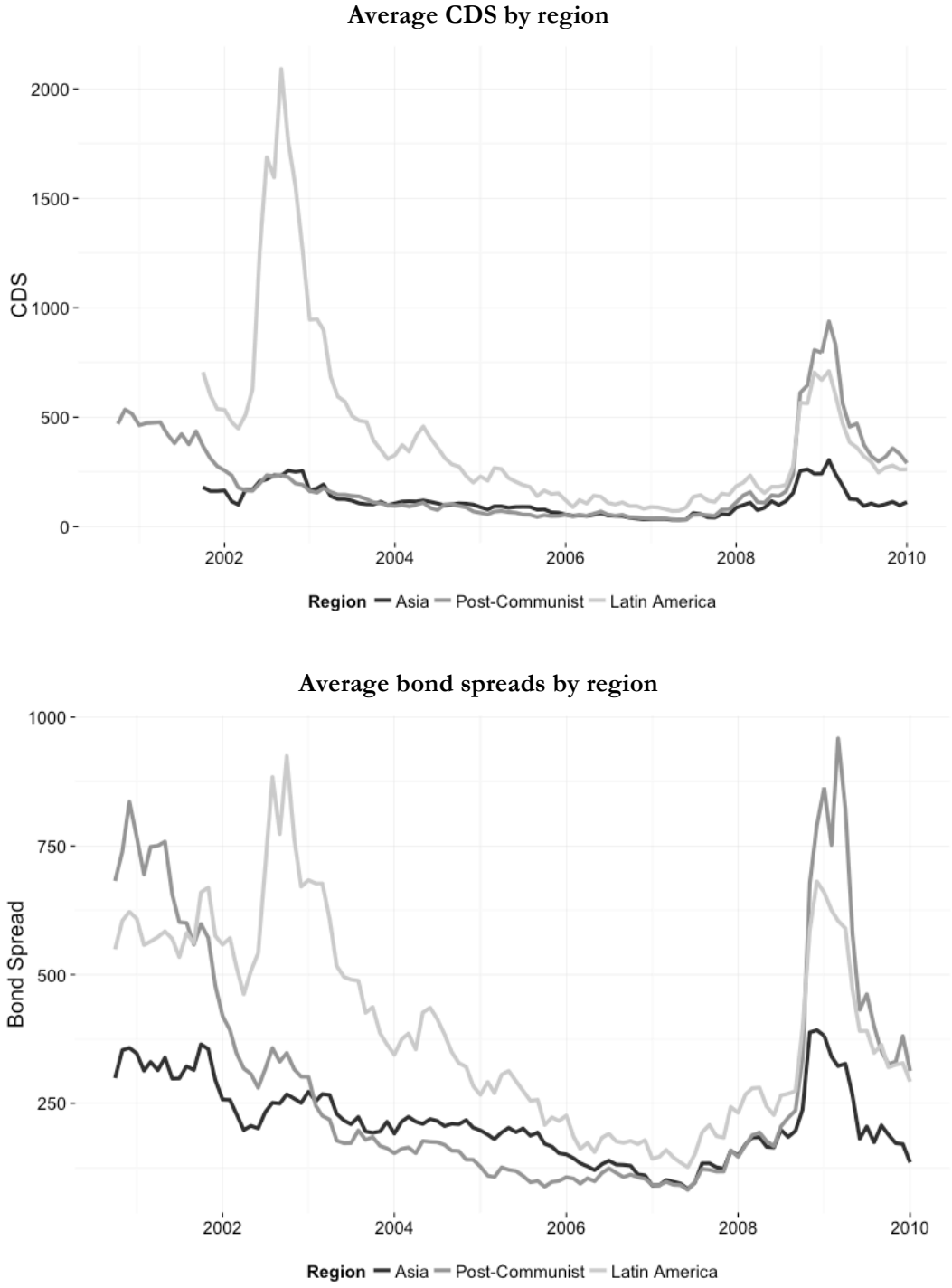
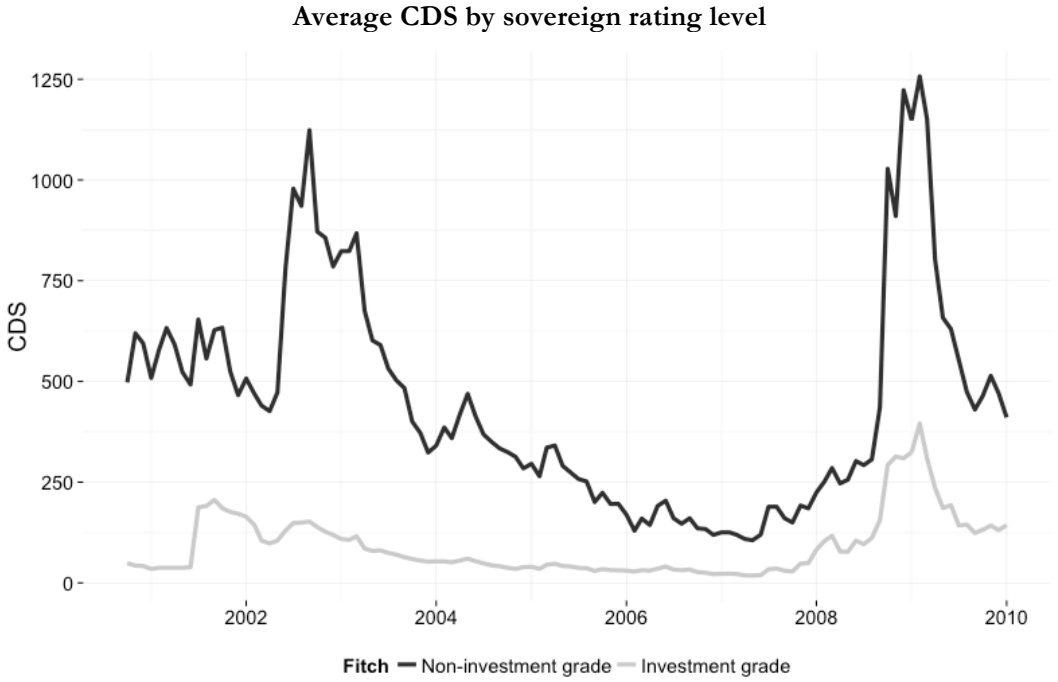
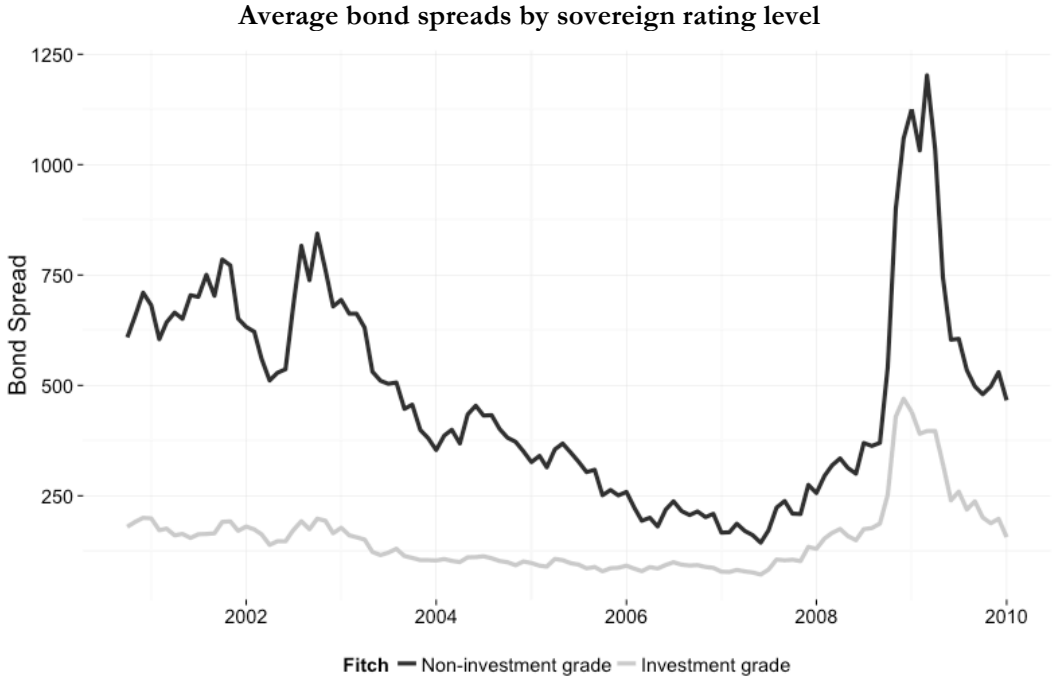


Figure A1. These plots use monthly data for CDS prices (described in Section I above) to display the mean borrowing cost for each region and borrowing category.



Note: Sovereign rating levels based on Fitch ratings. 'Investment grade' includes ratings BBB- and above; 'non-investment grade' includes BB+ and below.



Note: Sovereign rating levels based on Fitch ratings. 'Investment grade' includes ratings BBB- and above; 'non-investment grade' includes BB+ and below.

Figure A2. These plots use monthly data for sovereign bond spreads (described in Section I above) to display the mean borrowing cost for each region and borrowing category.

III. Countries Included in Statistical Analyses

Table A1. Countries included in the analysis of monthly changes in CDS prices (as reported in Table 2)

Country	Model (1)	Model (2)	Model (3)	Model (4)
Brazil	√	√	√	√
Bulgaria	√	√	√	√
China	√	√	√	√
Colombia	√	√	√	√
Malaysia	√	√	√	√
Pakistan			√	√
Peru	√	√	√	√
Philippines	√	√	√	√
Romania	√	√		√
Russia	√	√	√	√
South Africa		√	√	√
Thailand	√	√	√	√
Turkey		√	√	√
Ukraine	√	√		√
Venezuela	√	√	√	√
Total	12	14	13	15

Table A2. Countries included in the analysis of monthly changes in sovereign bond spreads (as reported in Table 3)

Country	Model (5)	Model (6)	Model (7)	Model (8)
Brazil	√	√	√	√
Bulgaria	√	√	√	√
China	√	√	√	√
Colombia	√	√	√	√
Malaysia	√	√	√	√
Mexico	√	√	√	√
Pakistan			√	√
Peru	√	√	√	√
Philippines	√	√	√	√
Russia	√	√	√	√
South Africa		√	√	√
Turkey		√	√	√
Ukraine	√	√		√
Venezuela	√	√	√	√
Total	11	13	13	14

IV. Additional Robustness Checks

We perform four types of robustness checks: (1) we use the same error correction model analysis for annual (rather than monthly) data; (2) we estimate the same error correction models reported in Tables 2 and 3, adding month fixed effects to them; (3) we estimate the risk rating models reported in Tables 2 and 3 (models 2 and 6) using alternative ways of coding the risk rating diffusion variable; and (4) we consider the effects, on a daily basis, of changes in country categorizations. These robustness checks support our claim that peer categorizations represent a significant channel through which sovereign risk premiums are transmitted.

Annual Data Analysis. We use the same error correction model analysis for annual data of sovereign risk to confirm the robustness of the results in monthly data reported in the article. Summary statistics for the annual data are reported in Table A3. Using annual data, we find evidence again that peer groups serve as a mechanism for the transmission of sovereign risk perceptions across global financial markets. These analyses, which use data for the same time frame as our monthly analyses, suggest that there are significant short-term correlations between all four of our peer diffusion measures and a country's sovereign spread. Additionally, we also find evidence of long-term correlations for three of the four peer measures – *Region, Risk Rating* and *MSCI*. These findings strengthen our claim that a government's sovereign risk spread is tied in the long-term to that of its peers, all else being equal, and that short-term changes in the spreads within a region likewise can bring significant, if temporary, changes to the price at which a government can access international bond markets. Note that these effects, like those reported above for the monthly data, are significant in the presence of controls for global market conditions, country-specific factors, and the direct effect of the "category" variable (as opposed to the spread among members of the category, which is our central concern). Although the duration of the error correction process in the annual analysis differs from that of the monthly analysis, this disparity is likely due to differences in the model specifications.

The results from the annual analyses also are consistent with extant research on the forces that shape sovereign risk premiums. For instance, as a country's government debt expands, investors demand a higher premium in return for holding a country's debt, although this effect dissipates fairly quickly. In terms of political factors, which provide the main difference in specification from the monthly analyses, the annual data suggest that national elections significantly increase investors' concerns about risk: the greater the time remaining until an election occurs, the lower the risk

premium, all else equal. Indeed, elections have been shown to be significant moments of uncertainty about future macroeconomic policy management (Bernhard and Leblang 2006, Jensen and Schmith 2005). The annual analyses also suggest, however, and by contrast to the monthly analyses, that the ideological leanings of the government – as well as of the main opposition parties – have little effect on a government's cost of capital (also see Mosley 2003). In addition to country-specific economic and political factors, the analysis of annual sovereign spreads indicates that global financial conditions – proxied using the US prime interest rate – significantly affect spreads, in the short as well as long term. When U.S. interest rates are high, investors become more discriminating with regard to risk and thus charge a higher price to hold emerging market debt.

Table A3. Summary Statistics: Annual Data

Variable	N	Mean	Std. Dev.	Min.	Max.
Spread	493	573.76	754.82	0.00	6342.27
Debt	962	53.11	36.92	0.65	384.01
Maturity	970	17.21	7.89	0.00	48.38
Inflation	1821	28.07	247.55	-16.12	7481.66
Budget	1081	-1.51	8.11	-202.70	29.06
GDP/capita	1930	10315	11202	221	56389
Fitch	1168	3.34	1.75	1	12
KA Openness	1783	0.85	1.56	-1.86	2.46
System	1888	1.65	0.63	1	3
Yrs Office	1702	1.91	1.41	0	6
Left	1885	0.13	0.34	0	1
Right	1885	0.77	0.42	0	1
Opp Right	1614	0.57	0.49	0	1
Opp Left	1614	0.36	0.48	0	1
US Prime	2046	6.64	2.07	3.25	10.01

Table A4 reports on the annual analysis of data on the stripped spreads on sovereign debt, for our set of emerging market economies. As in the main text of the article, country fixed effects are included in the analyses but are not reported in the table. The results in Table A4 again are supportive of our general expectations, and indicate that market corrections in sovereign risk spreads usually occur in a time frame shorter than a year. Indeed, the absolute value of the coefficient on the lagged dependent variable ($Spread_{t-1}$) is greater than 1 in two of the four model specifications (*Region* and *Risk Rating*), meaning that in each instance the rate of correction is shorter than the time frame in which changes are measured here. Thus, when we measure diffusion among

countries grouped by *Region* or *Risk Rating* (*Fitch*), the disturbance in sovereign spreads are corrected in less than a year's time. This is not surprising given that financial liberalization allows investors to evaluate and re-evaluate their portfolios on a daily, or even hourly, basis. Measuring both the level and change in sovereign spreads on an annual basis thus obscures a tremendous degree of intra-year variation in sovereign credit risk.

Table A4. Explaining Annual Changes in Sovereign Bond Spreads

DV: Annual ΔSpread	*Region*		*Risk Rating*		*MSCI*		*FTSE*	
	Coef.	Std. Err.	Coef.	Std. Err.	Coef.	Std. Err.	Coef.	Std. Err.
Spread								
t-1	-1.08***	0.07	-1.18***	0.06	-0.94***	0.08	-0.90***	0.15
Peer Diffusion								
Peer Spread								
t-1	0.21**	0.10	0.33**	0.12	0.38**	0.19	-0.42*	0.25
Δ	0.37***	0.07	0.39***	0.07	0.49***	0.12	-0.25	0.21
Category's Direct Effect								
Category								
t-1	-	-	-66.03	54.66	-56.60	322.36	-905.29***	310.89
Δ	-	-	43.00	47.34	188.37	376.48	-	-
Region Dummies[1]								
Europe	32.86	129.93	-	-	-	-	-	-
Post-Communist	172.17	318.38	-	-	-	-	-	-
Latin America	500.08***	135.31	-	-	-	-	-	-
Caribbean (non-Latin)	-	-	-	-	-	-	-	-
Middle East & N. Africa	167.29	205.97	-	-	-	-	-	-
North America	-	-	-	-	-	-	-	-
South Asia	445.75	377.43	-	-	-	-	-	-
Africa	-242.39	290.25	-	-	-	-	-	-
Domestic Politics and Economy								
Government Consumption								
t-1	1.02	24.23	0.22	27.53	74.45**	33.76	34.50	43.15
Δ	-23.86	19.77	5.38	24.65	41.20	29.07	-5.73	31.79
Debt								
t-1	4.37**	2.17	2.73	1.82	4.85	3.71	1.24	3.38
Δ	6.40**	2.26	2.94*	1.54	8.45*	4.66	3.46	5.50
Maturity								
t-1	1.15	5.10	-6.69	4.31	-3.69	6.00	-8.31	5.25
Δ	-1.79	3.55	-4.00	2.88	-7.78*	4.05	-4.52	4.09
Inflation								
t-1	0.33	0.45	10.74**	4.74	7.14*	4.29	-2.47	11.37
Δ	0.02	0.32	16.57***	3.90	9.24**	3.84	11.43	7.50
Budget Balance								
t-1	-20.89**	10.56	-19.07*	10.66	-2.38	14.13	-10.76	14.03
Δ	-31.89***	8.30	-8.64	8.19	-12.26	11.53	-8.01	11.27
Democracy								
t-1	11.86	14.17	-2.26	16.94	27.01**	12.85	31.25**	14.70
Δ	22.40	22.36	-1.79	21.37	16.32	20.05	24.50	19.56
KA Openness								
t-1	-80.68**	33.54	-11.42	36.36	-5.77	34.90	1.33	43.74
Δ	-59.38	36.41	-23.81	34.52	3.71	33.54	46.68	32.21
Years to Election								
t-1	-32.76**	14.62	-32.05**	12.05	-19.33	13.24	-29.52**	13.05
Δ	-9.47	9.91	-16.31**	7.79	-13.34	9.60	-23.95**	9.52
Left								
t-1	128.18	267.96	500.92	357.68	-686.27**	278.80	210.28*	124.84
Right								
t-1	91.28	183.68	-31.82	248.13	-	-	-	-

Opposition Right									
	t-1	85.90	61.57	-8.82	49.85	-15.59	47.89	8.92	45.90
Opposition Left									
	t-1	116.75*	70.25	10.41	55.12	-26.75	52.36	-10.07	52.73
System									
	t-1	-52.33	39.09	8.48	45.24	-51.09	47.23	-3.54	39.62
Common Shocks									
US Prime Rate									
	t-1	29.75**	12.28	19.51*	10.80	40.68***	13.74	28.63	18.62
	Δ	-25.89*	14.80	-39.85**	11.96	21.51	20.59	-72.46**	31.12
Time		-12.85	8.94	-12.71*	7.07	9.81	15.01	-37.12	23.18
Constant		25456.18	18042.98	26282.14*	14203.01	-20498.43	30287.72	76416.48	46632.07
N		171		142		112		89	
Wald χ^2		454.59		1954.52		529.17		341.78	
Prob > χ^2		0		0		0		0	

FGLS error correction model of annual change in sovereign debt spreads.
Estimates of country fixed effects not shown in table for ease of presentation; available upon request.
*** p<.01; ** p<.05; * p<.1.
[1] East & Southeast Asia is the baseline category. North America and the Caribbean omitted because of collinearity.

That said, Table A4 offers support for our hypothesis of interdependence among country risk spreads. Examining the coefficients on *Region* peer spreads, we observe both long and short-term correlations. The coefficients indicate that the long-term relationship between a country's spreads and that of its regional peers, Υ, is positive and significant; the coefficient of .19 implies that, for every basis-point increase in the spread for other countries in the region, the baseline country will experience a .19 basis point rise in its bond spread. The coefficient on the first difference of the diffusion variable *(ΔPeer Spread)* indicates that a one-year increase in the average spreads among a country's geographic peers will disrupt this equilibrium relationship, bringing an increase in the government's own spreads over the course of that year. However, as mentioned above, the coefficient on the lagged *Spread* level indicates that the error correction rate is less than the units of time (years) measured in this analysis. The results for the other peer variables are similar. The results for *Risk Rating* peer spreads also suggest the existence of a long-term relationship (Υ = .28) between a government's risk premium and its peers' spreads. The coefficient on the lagged *Spread* level here also indicates that the correction occurs in less than a year. In turn, we find a coefficient of .40 for the long-term effect (Υ) of *MSCI* peer spread. Finally, we find no significant diffusion effect for the FTSE specification in the annual analysis.

Year-to-year changes in the electoral cycle seem to systematically alter sovereign bond spreads. The negative and significant coefficients on *Years to Election* in three out of four specifications indicate that spreads tend to be higher on years closer to elections. Interestingly, there is not much evidence to suggest a significant difference between governments headed by left-leaning

executives and the reference category (centrist governments), or between right-leaning executives and centrist-headed governments. Table A5 reports the list of countries included in the annual analyses.

Table A5. Countries included in the analysis of annual changes in sovereign spreads

Country	Model (9)	Model (10)	Model (11)	Model (12)
Brazil	√	√	√	√
Bulgaria	√	√	√	
Colombia	√	√	√	√
Dominican Republic	√	√		
Egypt	√	√	√	√
El Salvador	√	√		
Indonesia	√	√	√	√
Kazakhstan	√	√		
Malaysia	√	√	√	√
Mexico	√	√	√	√
Pakistan	√		√	√
Panama	√	√		
Peru	√	√	√	√
Philippines	√	√	√	√
Russia	√	√	√	√
South Africa	√	√	√	√
Sri Lanka	√		√	
Turkey	√	√	√	√
Ukraine	√	√	√	
Uruguay	√	√		
Venezuela	√	√	√	√
Total	21	19	16	13

Month fixed effects. We re-estimate the error correction models reported in Tables 2 and 3, this time replacing the linear time trend with month fixed effects. The results of the analyses of CDS prices and of sovereign bond spreads are reported in Tables A6 and A7, respectively. We find the effect of *Region* peer spreads to be remarkably robust across specifications. Both in the CDS and the sovereign spread analyses, we find significant short-term diffusion among countries grouped by region. Moreover, we also find a significant long-term relationship for Region peer spreads in the sovereign spread analysis. Moreover, the analysis of CDS prices with month fixed effects reveals a negative and significant coefficient on peer spreads grouped by FTSE and MSCI categories. This is

also true of the FTSE specification in the analysis of sovereign bond spreads. When taking into account month fixed effects, the coefficients on *Risk Rating* peer spreads is not statistically significant neither in the CDS nor the sovereign spread analyses.

Table A6. Explaining Monthly Changes in CDS Prices (Including Month Fixed Effects)

DV: Monthly ΔCDS	*Region*		*Risk Rating*		*FTSE*		*MSCI*	
	Coef.	Std. Err.	Coef.	Std. Err.	Coef.	Std. Err.	Coef.	Std. Err.
CDS								
t-1	-0.09***	0.02	-0.09***	0.02	-0.07***	0.02	-0.06***	0.02
Peer Diffusion								
Peer CDS								
t-1	-0.00	0.03	-0.02	0.02	-0.20**	0.09	-0.03	0.04
Δ	0.15**	0.07	-0.02	0.02	-0.29***	0.08	-0.35***	0.08
Category's Direct Effect								
Category								
t-1	-		7.00	9.14	34.21	43.59	-58.44	84.46
Δ	-		17.72	11.44	-	-	-212.07	152.63
Region dummies[1]								
Post-Communist	61.36	54.76	-	-	-	-	-	-
Latin America	57.48**	25.55	-	-	-	-	-	-
Domestic Politics and Economy								
Debt								
t-1	0.53	0.36	0.55*	0.32	1.13*	0.62	0.54	0.88
Budget Balance								
t-1	0.10	1.45	-0.29	1.32	0.93	1.45	-1.01	2.02
Current Account Balance								
t-1	0.18	0.81	0.23	0.74	0.54	0.90	0.04	1.21
Inflation								
t-1	0.31	1.14	0.27	1.04	0.70	1.36	1.38	1.73
GDP per capita								
t-1	0.02	0.02	0.00	0.02	-0.00	0.02	0.01	0.03
KA Open								
t-1	-4.01	6.43	-4.38	5.47	-1.00	5.30	-7.96	8.95
FX Rate								
t-1	577.39***	139.60	381.93***	105.98	320.20***	89.45	414.72***	134.99
Δ	399.80***	92.39	295.40***	71.03	305.21***	59.46	378.16***	88.94
Democracy								
t-1	-0.65	1.35	-0.81	1.06	0.66	0.79	1.54	1.47
Months to Election								
t-1	-0.01	0.13	-0.04	0.11	-0.04	0.11	-0.08	0.16
Common Shocks								
US Prime Rate								
t-1	-0.02	5.06	2468.30**	1073.99	13.32	10.77	550.11	462.51
Δ	-46.35	46.40	2247.44**	1025.17	-277.66*	148.31	356.68	549.87
US Stock Market								
t-1	-10.69***	2.75	3.30	4.06	2.41	2.63	-7.30***	2.32
Δ	-3.86*	2.13	4.77	3.89	1.18	1.67	-3.83***	1.37
Invest. Grade Yield								
t-1	104.75**	46.33	6.96	20.30	7.63	17.61	-40.45	28.20
High Yield								
t-1	60.42*	32.02	-28.36	19.18	-9.99	15.59	-48.84*	25.24
Treasury Yield								
t-1	177.70*	97.82	-157.55**	69.80	-37.99	32.42	-46.47	40.17
Volatility Premium								
t-1	1.03	1.50	-26.38**	12.66	0.75	0.99	-0.32	5.01
Equity Premium								

	t-1	-	-	13216.74**	5989.95	5883.16***	2041.37	-	-
Term Premium									
	t-1	-14.08	14.59	290.63**	125.37	18.07	19.49	58.73	56.55
Stock Flows									
	t-1	-66.09	44.01	-77.16**	38.28	-99.57***	36.35	-134.28**	52.30
	Δ	-65.50**	28.65	-66.40***	24.59	-86.08***	22.53	-115.92***	32.69
Bond Flows									
	t-1	0.00***	0.00	0.02**	0.01	0.00	0.00	0.00	0.00
	Δ	0.00	0.00	-0.01**	0.00	0.00	0.00	-0.00*	0.00
Energy Index									
	t-1	-0.57	0.43	-7.81**	3.39	-0.78	0.55	-0.46	1.54
Constant		-69.84	107.63	-7576.55**	3288.22	-71.44	220.89	-1739.91	1411.54
N		927		1021		825		885	
Wald χ^2		503.18		634.21		844.85		505.23	
Prob > χ^2		0		0		0		0	

FGLS error correction model of monthly changes in CDS prices.
Estimates of country and month fixed effects not shown in table for ease of presentation; available upon request.
Equity Premium omitted because of collinearity.
East & Southeast Asia is the baseline category. Remaining regions omitted because of collinearity.
*** p<.01; ** p<.05; * p<.1.

Table A7. Explaining Monthly Changes in Sovereign Bond Spreads (Including Month Fixed Effects)

DV: Monthly ΔSpread		*Region*		*Risk Rating*		*FTSE*		*MSCI*	
		Coef.	Std. Err.	Coef.	Std. Err.	Coef.	Std. Err.	Coef.	Std. Err.
Spread									
	t-1	-0.10***	0.02	-0.09***	0.02	-0.11***	0.01	-0.09***	0.02
Peer Diffusion									
Peer Spread									
	t-1	0.06**	0.02	0.02	0.02	-0.25***	0.07	-0.00	0.03
	Δ	0.30***	0.05	0.03	0.02	-2.70***	0.18	-0.08	0.06
Category's Direct Effect									
Category									
	t-1	-	-	10.27	6.62	-12.26	25.04	87.31**	38.88
	Δ	-	-	2.12	10.09	-	-	-32.01	109.33
Region dummies[1]									
Post-Communist		51.55	48.01	-	-	-	-	-	-
Latin America		21.79	22.94	-	-	-	-	-	-
Domestic Politics and Economy									
Debt									
	t-1	0.05	0.25	0.25	0.25	-0.01	0.39	0.23	0.53
Budget Balance									
	t-1	-0.09	1.03	-0.25	0.97	-1.24	0.81	-1.19	1.10
Current Account Balance									
	t-1	-0.25	0.62	-0.17	0.59	0.01	0.56	-1.37*	0.74
Inflation									
	t-1	0.89	0.98	0.27	0.92	-0.10	0.87	0.02	1.16
GDP per capita									
	t-1	0.03**	0.02	0.01	0.02	0.02**	0.01	0.02	0.02
KA Open									
	t-1	-1.62	4.46	-3.03	4.14	-0.84	4.35	-6.90	5.81
FX Rate									
	t-1	495.97***	96.27	423.50***	79.92	169.77**	66.95	385.53***	89.66
	Δ	50.91	66.77	63.05	56.37	-16.81	45.82	60.00	60.77
Democracy									
	t-1	4.26	2.96	1.35	2.60	1.71	1.56	7.55***	2.03
Months to Election									
	t-1	-0.05	0.10	0.01	0.09	0.07	0.07	0.00	0.10

Common Shocks									
US Prime Rate									
	t-1	8.85**	4.35	-918.17	1012.57	19.13**	8.22	308.52	363.38
	Δ	-45.80	30.65	-900.31	954.18	590.29***	122.64	419.29	454.38
US Stock Market									
	t-1	-1.64	1.51	-2.81	3.89	-23.00***	3.13	-3.77	3.83
	Δ	0.49	1.38	-0.89	3.72	0.67	1.38	1.04	1.63
Invest. Grade Yield									
	t-1	78.19***	17.66	-37.45*	19.64	20.49	16.04	-20.16	21.46
High Yield									
	t-1	51.92***	10.87	-14.39	18.79	-6.05	13.60	-16.70	17.42
Treasury Yield									
	t-1	125.96***	48.55	-15.76	65.79	-415.24***	33.73	-96.38***	34.14
Volatility Premium									
	t-1	1.07	1.47	11.11	12.03	-16.18***	1.89	-4.38	4.60
Equity Premium									
	t-1	-	-	-6412.77	5813.84	5523.61***	1579.49	-	-
Term Premium									
	t-1	-21.08***	5.90	-113.68	117.58	71.87***	15.87	9.24	43.25
Stock Flows									
	t-1	-105.62***	34.43	-120.15***	31.21	-99.82***	27.38	-123.92***	36.94
	Δ	-23.10	23.48	-29.18	21.36	-16.52	18.27	-4.57	24.41
Bond Flows									
	t-1	0.00**	0.00	-0.01	0.01	-0.00**	0.00	-0.00	0.00
	Δ	0.00	0.00	0.00*	0.00	0.01***	0.00	0.00*	0.00
Energy Index									
	t-1	-0.52***	0.13	4.58	3.21	4.84***	0.63	1.41	1.21
Constant		-133.54*	74.36	2524.95	3100.78	-550.63***	174.69	-1463.70	1103.35
N		940		1022		911		959	
Wald χ^2		948.05		1097.56		1986.72		1011.82	
Prob > χ^2		0		0		0		0	

FGLS error correction model of monthly changes in sovereign bond spreads.
Estimates of country and month fixed effects not shown in table for ease of presentation; available upon request.
Equity Premium omitted because of collinearity.
East & Southeast Asia is the baseline category. Remaining regions omitted because of collinearity.
*** p<.01; ** p<.05; * p<.1.

Alternative measures of the *Fitch Risk Rating* diffusion variable. The main results reported in Tables 2 and 3 for diffusion among *Risk Rating* peers use the Fitch Sovereign Rating to categorize countries. In coding the categories based on Fitch ratings, we removed the +/- designations, so that the ratings AA+, AA and AA- constitute one category, BBB+, BBB and BBB- constitute another category, and so on.

Tables A8 and A9 report the results of additional robustness checks that use alternative ways of coding the *Risk Rating* diffusion variable. In the first specification in Tables A8 and A9, we use a fine-grained category scheme by keeping the +/- designations when coding the peer groups, so that each rating is treated as a single category. For instance, the AA+ rating constitutes a category in itself, the AA rating constitutes another category, and so on. We label this measure, and the corresponding specifications, *Risk Rating (All)*. In the model of CDS prices (first specification in Table A8), we find no significant diffusion effect, either short- or long-term. In the model of

sovereign bond spreads (first specification in Table A9), we find a significant, albeit small, short-term effect of *Risk Rating* peer spreads. It must be noted, however, that this coding of the *Risk Rating* diffusion variable results in a very fine-grained categorization scheme to the point that some of the categories contain only one or two countries.

In the second specification of Tables A8 and A9, we dichotomize the *Risk Rating* measure and group countries by investment-grade status. Sovereign bonds are considered investment grade if they receive a rating of BBB- or higher. We, therefore, create two categories – investment grade and non-investment grade. We label this measure, and the corresponding specifications, *Risk Rating (Investment grade).* In both the CDS and the sovereign spread analyses (third specification in Tables A8 and A9), we find a significant, short-term diffusion effect based on *Risk Rating* peer groups. We also find a significant long-term diffusion effect in the analysis of sovereign bond spreads. A one-basis-point increase in *Risk Rating* peer spreads is associated with a total increase in the reference country's spread (ϒ) of .25 basis point.

Table A8. Explaining Monthly Changes in CDS Prices
(Alternative Measures of the Risk Rating Peer Diffusion Variable)

DV: Monthly ΔCDS		*Risk Rating (All)*		*Risk Rating (Investment grade)*	
		Coef.	Std. Err.	Coef.	Std. Err.
CDS					
	t-1	-0.12***	0.02	-0.12***	0.02
Peer Diffusion					
Peer CDS					
	t-1	-0.01	0.01	0.01	0.02
	Δ	0.01	0.01	0.20***	0.03
Category's Direct Effect					
Category					
	t-1	1.55	3.29	-3.55	9.18
	Δ	-1.78	6.24	35.47*	20.41
Domestic Politics and Economy					
Debt					
	t-1	0.81***	0.29	0.75**	0.30
Budget Balance					
	t-1	-0.30	1.19	0.01	1.21
Current Account Balance					
	t-1	0.56	0.67	0.16	0.63
Inflation					
	t-1	0.46	0.97	0.08	0.91
GDP Per Capita					
	t-1	0.02	0.02	0.03*	0.02
KA Openness					
	t-1	-5.58	4.48	-5.69	4.44
FX Rate					
	t-1	406.19***	98.06	379.49***	96.29
	Δ	276.39***	64.60	251.62***	62.61
Democracy					
	t-1	-0.58	0.97	-0.74	0.88

Months to Election					
	t-1	0.03	0.10	0.05	0.10
Common Shocks					
US Prime Rate					
	t-1	-1.77	1.37	-1.66	1.55
	Δ	-24.85**	9.97	-18.07*	9.40
US Stock Market					
	t-1	-4.54***	0.76	-2.79***	0.73
	Δ	-3.95***	0.42	-2.75***	0.41
Invest. Grade Yield					
	t-1	-3.89	5.82	-2.51	5.39
High Yield					
	t-1	-7.55*	4.47	-8.38**	4.14
Treasury Yield					
	t-1	-7.18	9.25	-4.67	8.43
Volatility Premium					
	t-1	0.59*	0.35	0.16	0.32
Equity Premium					
	t-1	111.00	644.83	623.23	601.15
Term Premium					
	t-1	2.28	2.14	1.62	1.93
Stock Flows					
	t-1	-65.27**	31.73	-67.30**	30.19
	Δ	-65.18***	20.19	-58.02***	18.96
Bond Flows					
	t-1	-0.00	0.00	0.00	0.00
	Δ	-0.00**	0.00	-0.00	0.00
Energy Index					
	t-1	-0.09	0.07	-0.06	0.07
Time		-0.08	0.19	-0.13	0.20
Constant		-22.49	56.99	-41.42	57.82
N		1021		1021	
Wald χ^2		480.87		544.51	
Prob > χ^2		0		0	

FGLS error correction model of monthly changes in CDS prices.
Estimates of country fixed effects not shown in table for ease of presentation; available upon request.
*** p<.01; ** p<.05; * p<.1.

Table A9. Explaining Monthly Changes in Sovereign Bond Spreads (Alternative Measures of the Fitch Risk Rating Peer Diffusion Variable)

DV: Monthly ΔSpread		*Risk Rating (All)*		*Risk Rating (Investment grade)*	
		Coef.	Std. Err.	Coef.	Std. Err.
Spread					
	t-1	-0.12***	0.01	-0.12***	0.02
Peer Diffusion					
Peer Spread					
	t-1	-0.01	0.01	0.03*	0.02
	Δ	0.04***	0.01	0.34***	0.05
Category's Direct Effect					
Category					
	t-1	-2.58	2.67	-1.32	8.87
	Δ	-19.16***	6.61	77.76***	26.94
Domestic Politics and Economy					
Debt					
	t-1	0.45**	0.22	0.61***	0.23

Budget Balance					
	t-1	-1.55	1.02	-0.78	0.98
Current Account Balance					
	t-1	-0.46	0.60	-0.80	0.59
Inflation					
	t-1	0.43	0.85	0.53	0.81
GDP Per Capita					
	t-1	0.03**	0.02	0.03***	0.01
KA Openness					
	t-1	-6.30	3.94	-8.07**	3.89
FX Rate					
	t-1	414.84***	80.73	392.06***	80.30
	Δ	36.58	55.84	29.08	55.47
Democracy					
	t-1	2.72	2.64	2.12	2.41
Months to Election					
	t-1	0.09	0.09	0.05	0.08
Common Shocks					
US Prime Rate					
	t-1	-1.89	1.18	-0.75	1.23
	Δ	-16.84*	8.96	-15.25*	8.84
US Stock Market					
	t-1	-4.41***	0.65	-2.78***	0.67
	Δ	0.69*	0.37	0.52	0.35
Invest. Grade Yield					
	t-1	15.67***	5.67	10.00*	5.49
High Yield					
	t-1	13.52***	4.30	5.84	4.21
Treasury Yield					
	t-1	-6.07	8.77	-1.56	8.35
Volatility Premium					
	t-1	-0.57*	0.34	-0.36	0.33
Equity Premium					
	t-1	-3256.43***	637.56	-2571.15***	634.14
Term Premium					
	t-1	-0.80	1.96	-1.90	1.85
Stock Flows					
	t-1	-99.81***	29.81	-101.05***	28.81
	Δ	-14.11	20.20	-17.68	19.63
Bond Flows					
	t-1	-0.00***	0.00	-0.00**	0.00
	Δ	-0.00	0.00	-0.00	0.00
Energy Index					
	t-1	-0.23***	0.07	-0.20***	0.07
Time		-0.05	0.17	-0.03	0.16
Constant		-33.66	47.75	-97.73**	47.67
N		1023		1023	
Wald χ^2		741.53		786.59	
Prob > χ^2		0		0	

FGLS error correction model of monthly changes in sovereign bond spreads.
Estimates of country fixed effects not shown in table for ease of presentation; available upon request.
*** p<.01; ** p<.05; * p<.1.

Daily Data Analysis. We perform an additional robustness check to further test the alternative explanation of a direct effect of changes in categories on risk premia. We collected daily data on CDS prices and bond spreads from Bloomberg. In Figures A3-A5, we plot the daily data on CDS prices for different countries around the time of a change in category and visually inspect whether the change had a discernible effect on prices.

We selected a few episodes of changes in categories from FTSE's annual review of country classification. Figure A3 shows CDS prices for countries that were reclassified following FTSE's 2010 review process. In September 2010, FTSE announced the promotion of the Czech Republic, Malaysia and Turkey from "Secondary Emerging" to "Advanced Emerging". The change would be implemented in June 2011. The dotted line in the plots marks the day of the announcement, and the shaded region marks the month of implementation (FTSE does not publish a precise date for the implementation). The time series cover 3 months before the change and 3 months after.

In the cases of the Czech Republic, Malaysia and Turkey, we see that CDS prices dropped precipitously in the days following the FTSE announcement, suggesting that the promotion might be associated with reduced perceptions of sovereign risk by financial markets. In contrast, CDS prices seem to have increased during the month in which changes in the FTSE classification were implemented, which suggests the opposite effect.

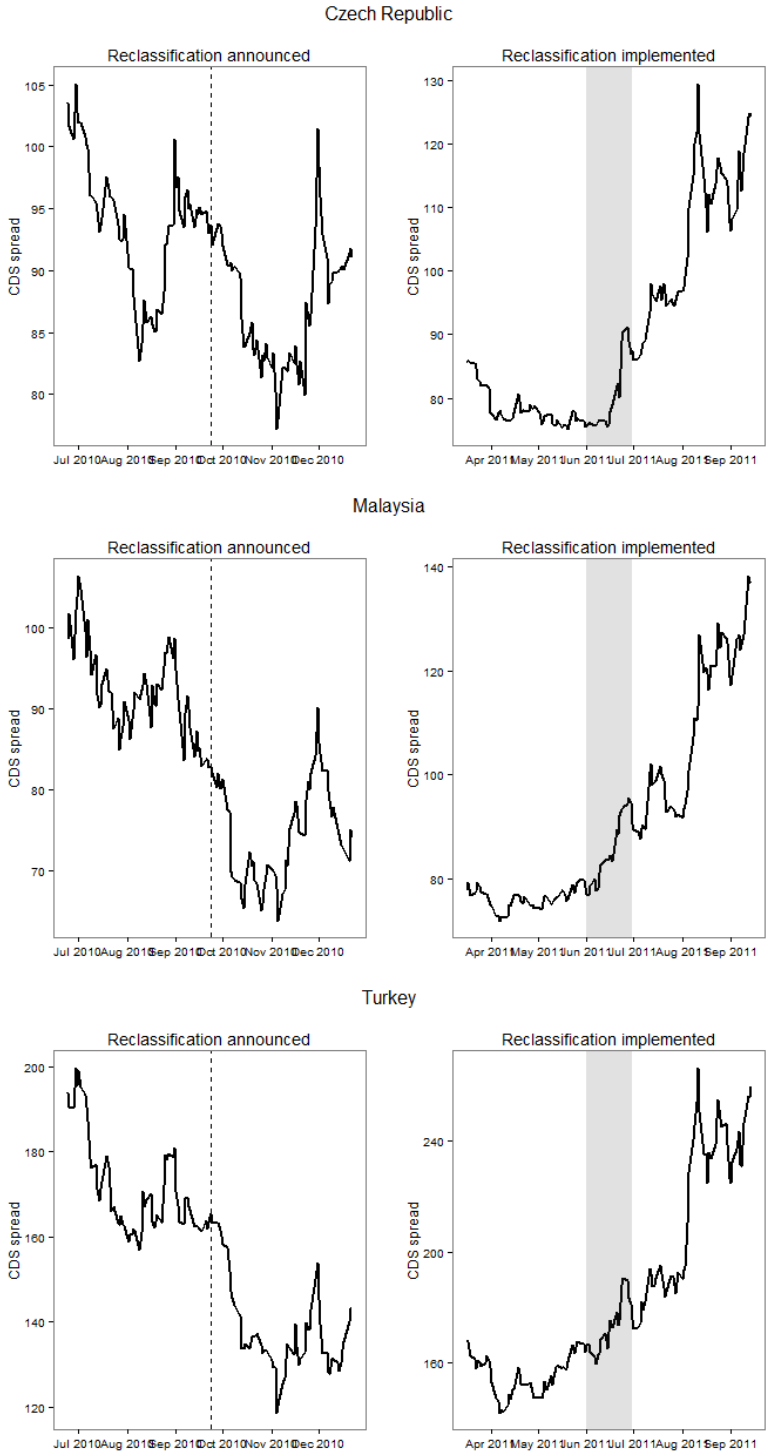
However, because the apparent association between CDS prices and reclassification might be confounded by movements in other determinants of CDS prices, we plot CDS prices for the same period for a set of "control" countries, that is, countries placed in the same category (Secondary Emerging) that were not reclassified by FTSE on that occasion: Chile and Colombia. Because of limitations on data availability (not all countries included in FTSE indices have CDS contracts traded in financial markets), we also include Brazil, which was classified as Advanced Emerging at the time. We observe a similar pattern in CDS prices for these "control" countries as we do in the case of reclassified sovereigns. Prices for Chile, Colombia and Brazil dropped following the announcement of the reclassification of the Czech Republic, Malaysia and Turkey. Changes in CDS prices for Chile, Colombia and Brazil during the month of implementation of these changes also mimic the behavior of prices for the reclassified countries. This suggests that factors other than changes in categories themselves—most likely global market factors commonly affecting all six countries—are causing the changes in CDS prices. These plots, therefore, suggest that there is not enough evidence to discern a direct effect of category changes.

We make similar plots for additional episodes of reclassification by FTSE: (1) the promotion of Israel from "Emerging" to "Developed", and Hungary and Poland from "Secondary Emerging" to "Advanced Emerging", announced in September 2007, implemented in June 2008 (Figure A4); (2) Argentina's demotion from "Emerging" to "Frontier", announced in September 2009, implemented in September 2010 (Figure A5). They also suggest a null direct effect of category changes on CDS prices.

In addition, we do the same exercise using bond spreads instead of CDS prices (Figures A6-A7). Because of differences in data availability, we only use the reclassification of the Czech Republic, Malaysia and Turkey (promotion from 'Secondary Emerging' to 'Advanced Emerging' in 2010) and that of Hungary of Poland (also from 'Secondary Emerging' to 'Advanced Emerging' in 2007). Like the CDS plots, visual inspection of daily bond spreads around the time of reclassification by FTSE do not allow us to reject the null hypothesis of no direct effect of changes in categories on spreads. In Figure A6, we see that, while the Czech Republic and Malaysia enjoyed an increase in spreads immediately following the announcement of their promotion, Turkey saw its spread decline in the same period. Neither do we see a clear pattern in the cases of Hungary and Poland (Figure A7). In sum, visual inspection of daily bond spread data does not allow us to discern a direct effect of changes in categories.

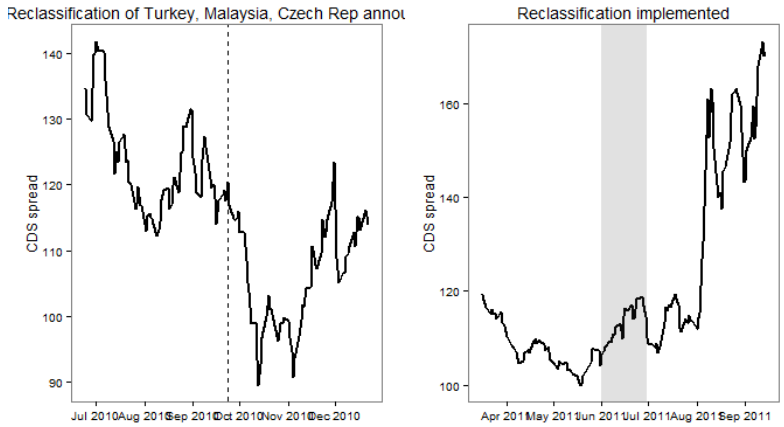
Figure A3. Daily CDS prices. FTSE promotion from 'Secondary Emerging' to 'Advanced Emerging' (Announced 23 Sep 2010, Implemented June 2011)

"Treatment" countries

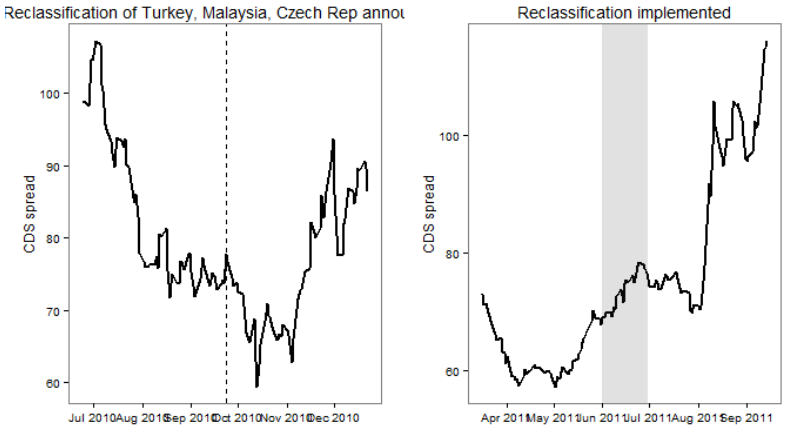


Controls (countries that were not reclassified on the same occasion)

Brazil



Chile



Colombia

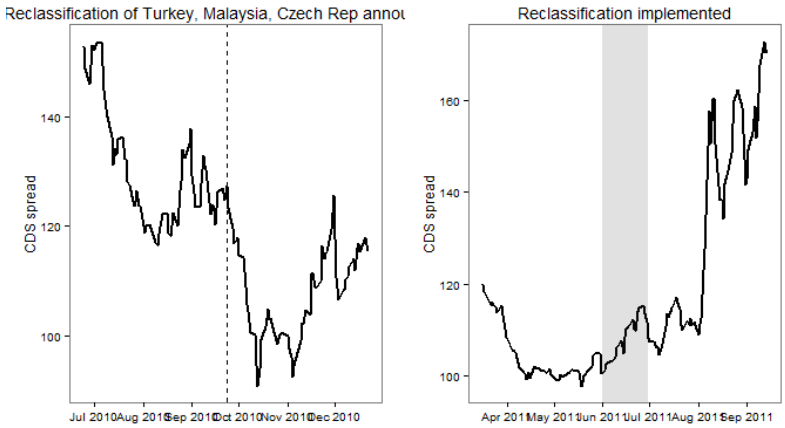
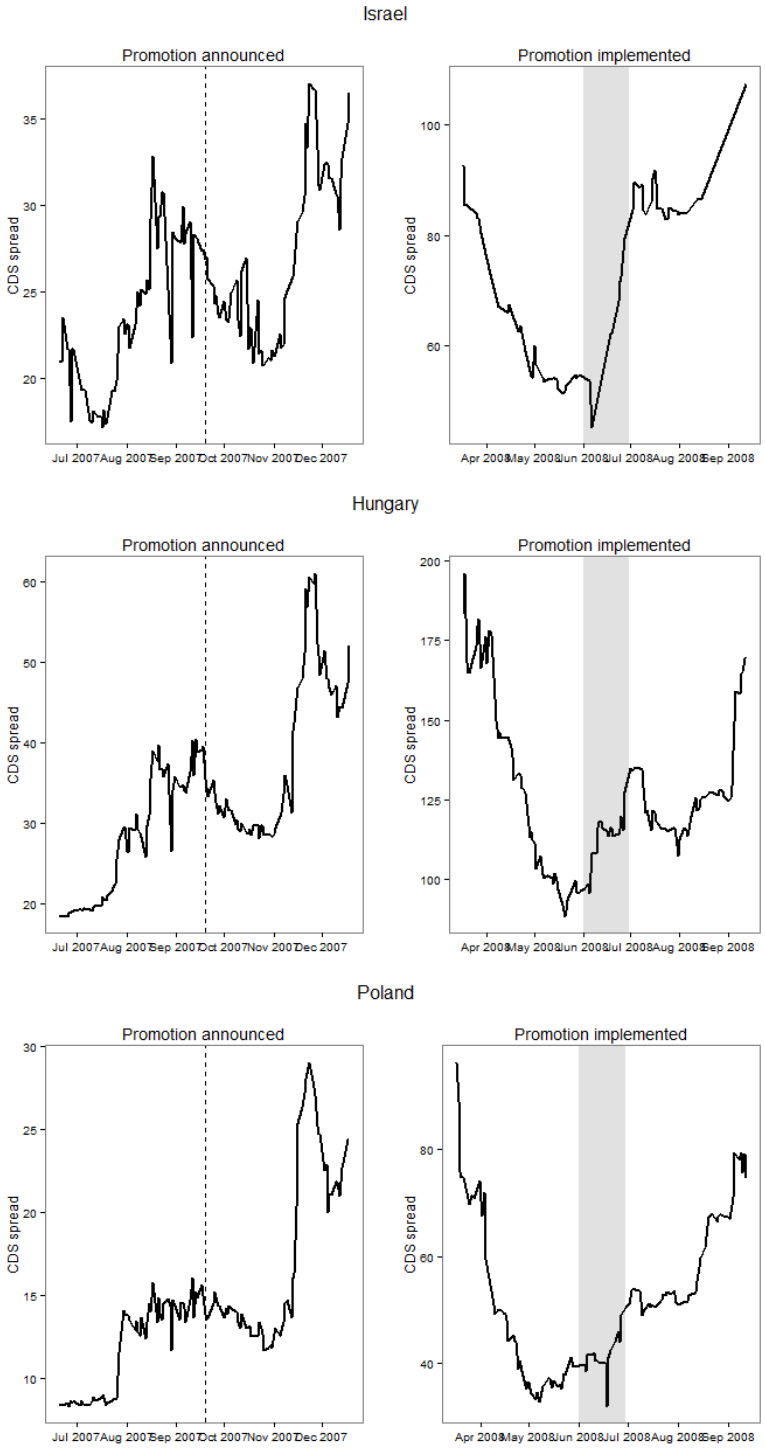


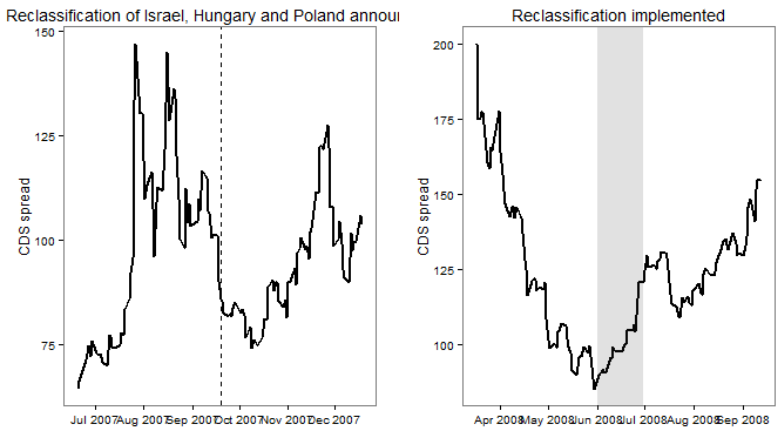
Figure A4. Daily CDS prices. FTSE promotion (Announced 19 Sep 2007, Implemented June 2008). Israel (Emerging to Developed); Hungary and Poland (Secondary to Advanced Emerging)

"Treatment" countries

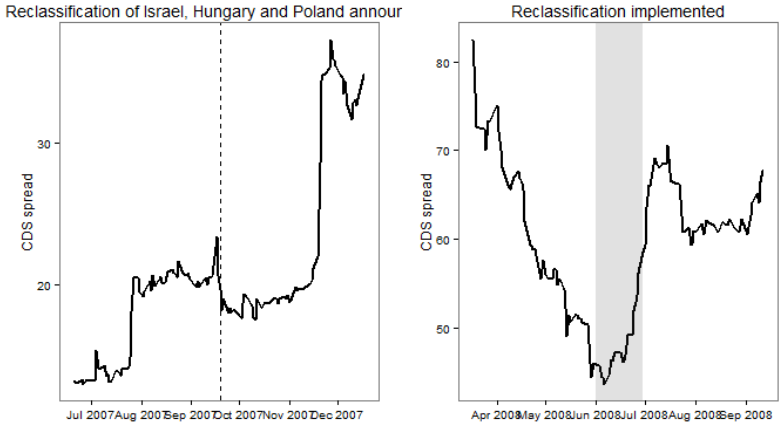


Controls (countries that were not reclassified on the same occasion)

Brazil



Chile



Colombia

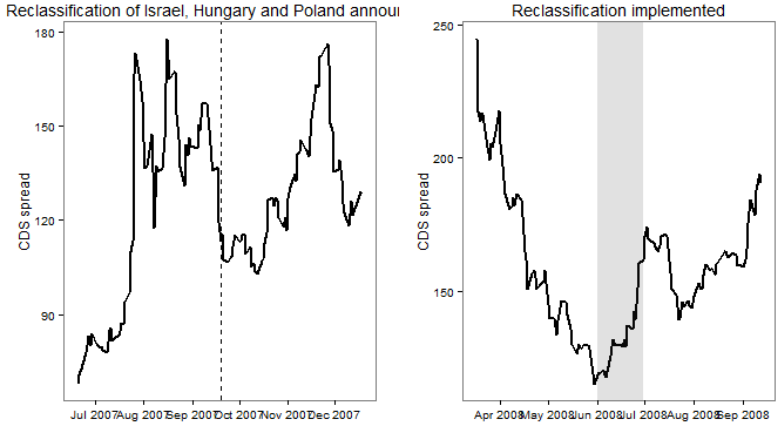
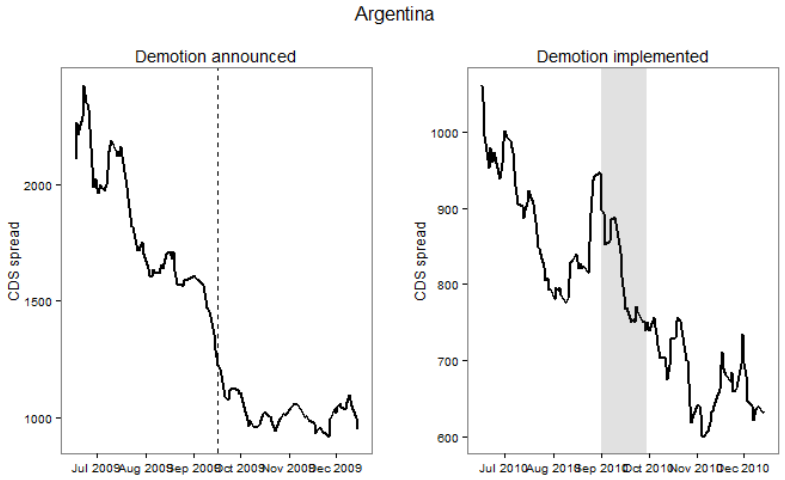


Figure A5. Daily CDS prices. FTSE demotion of Argentina from Emerging to Frontier (Announced 16 Sep 2009, Implemented Sep 2010)



Control (not reclassified on the same occasion)

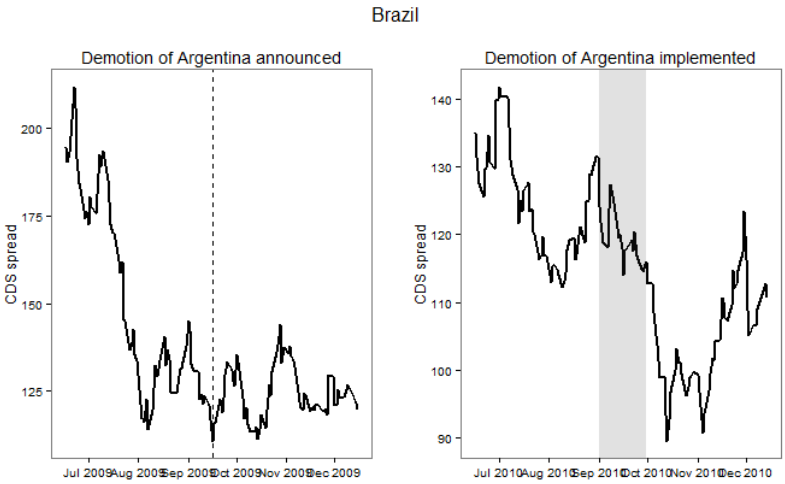
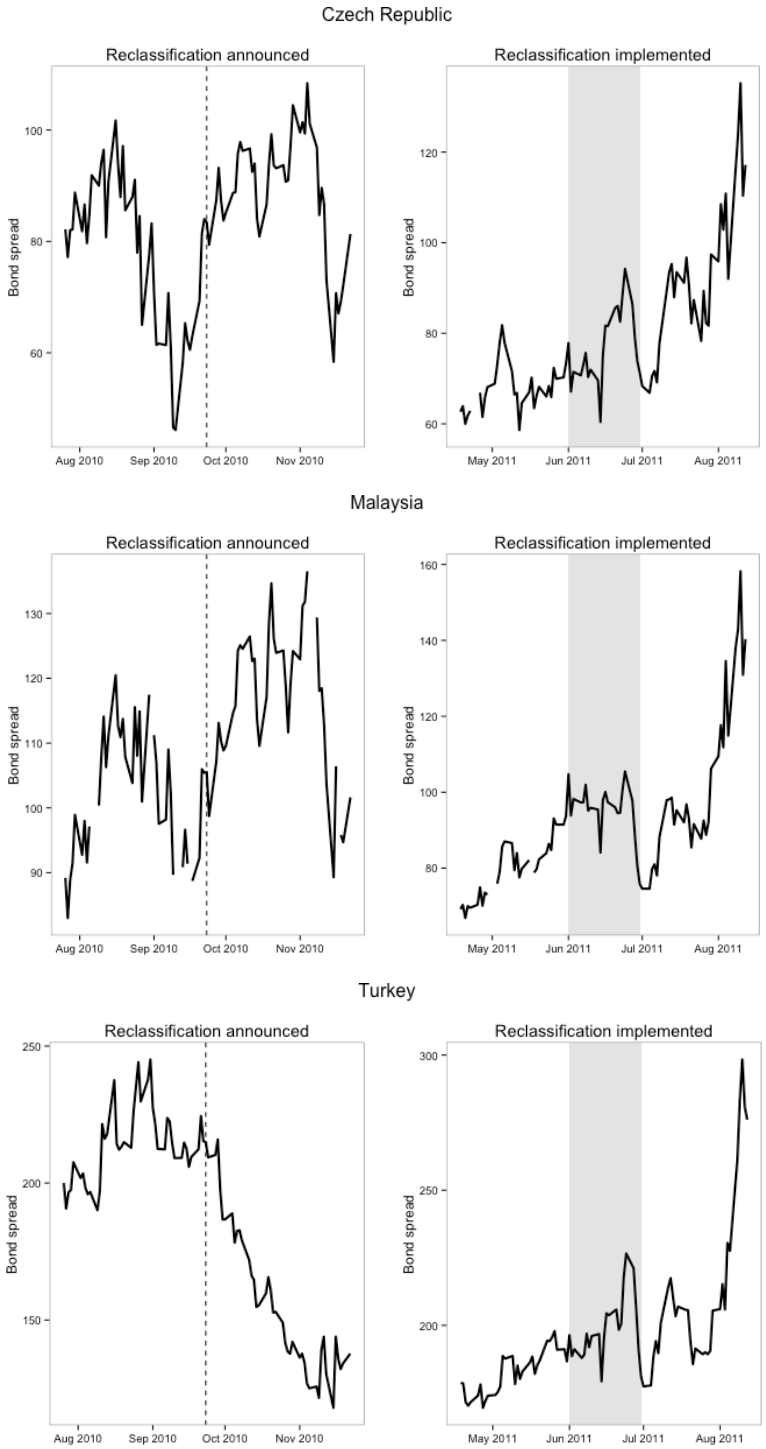


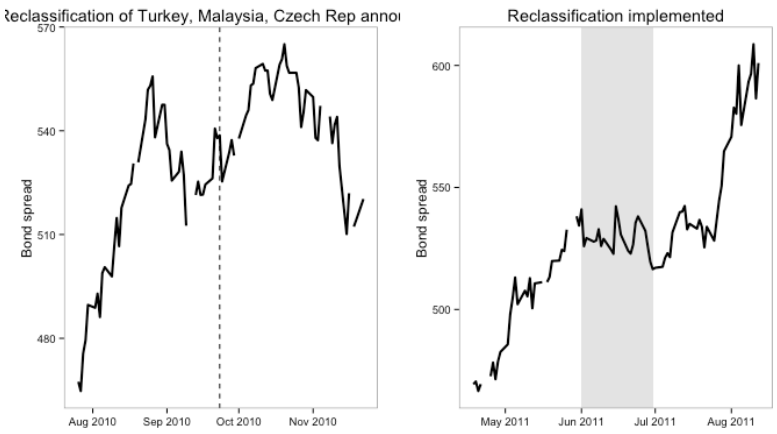
Figure A6. Bond spreads. FTSE promotion from 'Secondary Emerging' to 'Advanced Emerging' (Announced 23 Sep 2010, Implemented June 2011)

"Treatment" countries

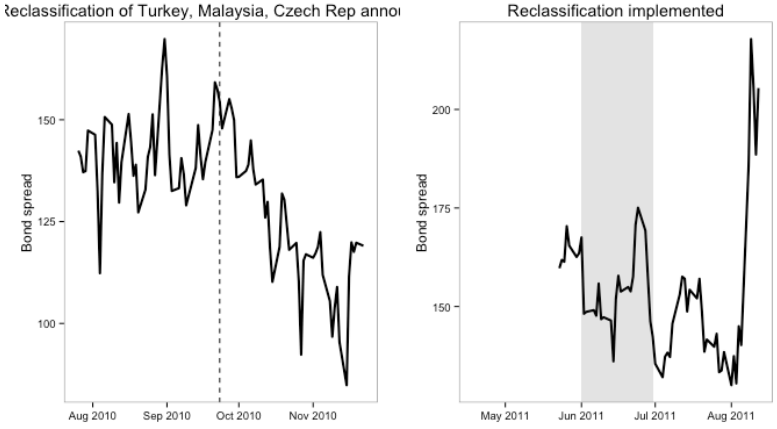


Controls (countries in the same category that were not reclassified on the same occasion)

India



Indonesia



Thailand

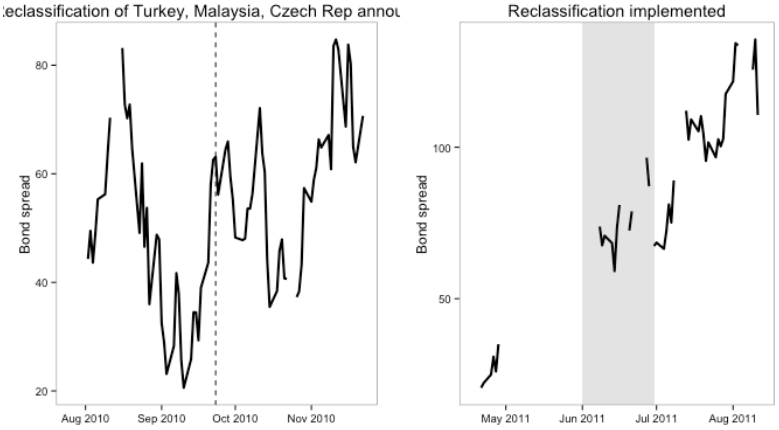
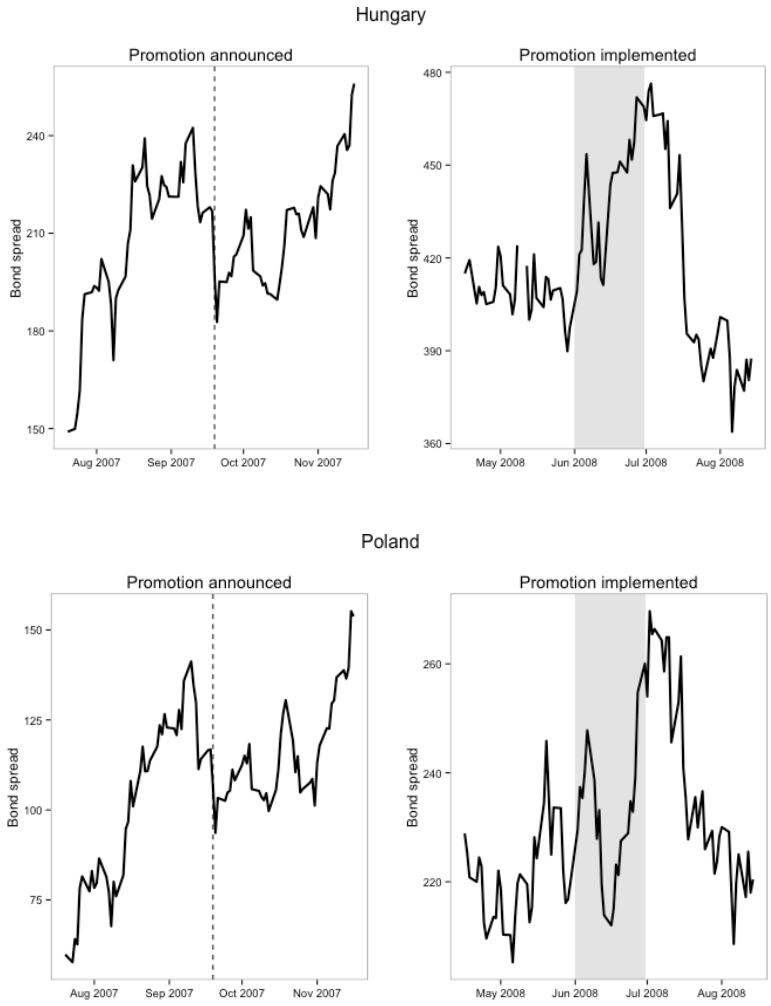
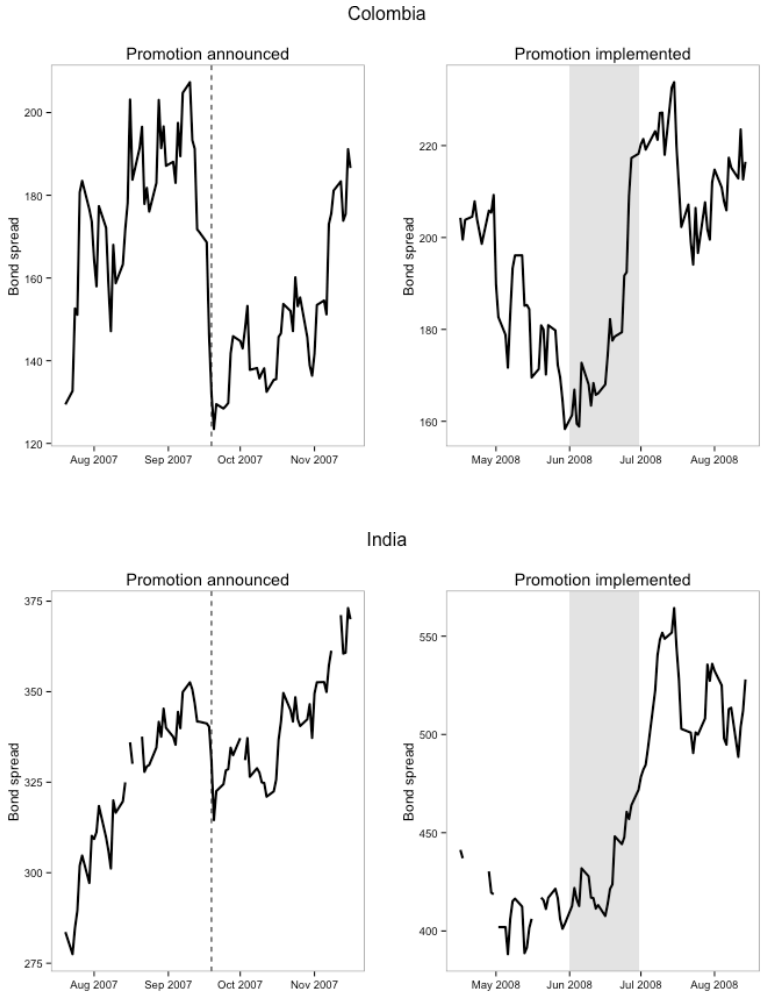


Figure A7. Bond spreads. FTSE promotion (Announced 19 Sep 2007, Implemented June 2008). Secondary Emerging to Advanced Emerging.



Controls (countries that were not reclassified on the same occasion)



V. Changes in Country Categorizations

Some of the categorizations we report, such as geographic region, are fixed over time. Others, especially credit ratings, change with some regularity. In this section, we report changes in categorizations affecting country-months included in our sample. (Other countries are recategorized by MSCI, but given data availability, those recategorizations are not part of our dataset for analysis).

Table A10. Changes in country categorizations included in the sample – MSCI

Country	Date	From	To
Pakistan	May 2009	Emerging	Frontier

Table A11. Changes in country categorizations included in the sample – Fitch Sovereign Ratings

Country	Date	From	To
Brazil	Jun 2002	BB-	B+
	Oct 2002	B+	B
	Nov 2003	B	B+
	Sep 2004	B+	BB-
	Jun 2006	BB-	BB
	May 2007	BB	BB+
	May 2008	BB+	BBB-
Bulgaria	Jan 2002	B+	BB-
	Oct 2002	BB-	BB
	Jul 2003	BB	BB+
	Aug 2004	BB+	BBB-
	Aug 2005	BBB-	BBB
	Nov 2008	BBB	BBB-
China	Oct 2005	A-	A
	Nov 2007	A	A+
Colombia	Jan 2002	BB+	BB
	Jun 2007	BB	BB+
Malaysia	Aug 2002	BBB	BBB+
	Nov 2004	BBB+	A-
Mexico	Jan 2002	BB+	BBB-
	Dec 2005	BBB-	BBB
	Mar 2007	BBB	BBB+
	Nov 2009	BBB+	BBB
Peru	Nov 2004	BB-	BB
	Aug 2006	BB	BB+
	Apr 2008	BB+	BBB-
Philippines	Jun 2003	BB-	BB
Romania	Nov 2000	B-	B
	Jun 2002	B	B+
	Oct 2002	B+	BB-

	Dec 2003	BB-	BB
	Nov 2004	BB	BBB-
	Aug 2006	BBB-	BBB
	Jan 2008	BBB	BB+
Russia	Oct 2001	B	B+
	May 2002	B+	BB-
	May 2003	BB-	BB+
	Nov 2004	BB+	BBB-
	Aug 2005	BBB-	BBB
	Jul 2006	BBB-	BBB+
	Feb 2009	BBB+	BBB
South Africa	May 2003	BBB-	BBB
	Aug 2005	BBB	BBB+
Thailand	Sep 2003	BBB-	BBB
	May 2005	BBB	BBB+
	Apr 2009	BBB+	BBB
Turkey	Aug 2001	B+	B
	Mar 2003	B	B-
	Sep 2003	B-	B
	Feb 2004	B	B+
	Jan 2005	B+	BB-
	Dec 2009	BB-	BB+
Ukraine	Mar 2001	B-	B
	Jun 2003	B	B+
	Jan 2005	B+	BB-
	Oct 2008	BB-	B+
	Feb 2009	B+	B
	Nov 2009	B	B-
	Jul 2010	B-	B
Venezuela	Feb 2002	BB-	B+
	Jun 2002	B+	B
	Jan 2003	B	CCC+
	Jun 2003	CCC+	B-
	Sep 2004	B-	B+
	Nov 2005	B+	BB-
	Dec 2005	BB-	B+

VI. Correlation Matrices for Peer-Group Diffusion Terms

Table A12. CDS Prices

	Risk Rating	Region	FTSE	MSCI
Risk Rating	1.00			
Region	0.34	1.00		
FTSE	0.33	0.61	1.00	
MSCI	0.43	0.54	0.71	1.00

Table A13. Sovereign Bond Spreads

	Risk Rating	Region	FTSE	MSCI
Risk Rating	1.00			
Region	0.44	1.00		
FTSE	0.40	0.69	1.00	
MSCI	0.44	0.70	0.71	1.00