

# The Company You Keep: How Membership in Regional Trade Agreements Affects Investor Risk in Developing Countries

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## Abstract

This paper seeks to establish empirically that institutions matter to financial markets. To this end, I look at the impact of five different regional trade agreements (RTAs) on a composite of four different financial instruments that account for default risk on sovereign debt in developing countries. As expected, some of the agreements have a stronger impact on default risk than others. Although I do not explore the exact theoretical mechanisms of that impact, I measured those trade agreements along five different dimensions: wealth of the richest trading partner in the agreement; and tariff protection, volume of trade, strength of dispute settlement, and institutional quality of the countries in the trade agreement. I find that the institutional quality of the trading partners in the agreement seems to be driving market responses to that agreement. RTAs whose members have strong institutional quality have some negative effect on risk; more strikingly, RTAs whose members have weak institutional quality make perceptions of risk increase substantially.

# 1 Introduction

These are contentious days for international institutions. The European Union's intention to start admission negotiations with Turkey has led the richer members to question the union's long-term sustainability, just as support for accession and turnout in European-level elections declines among the new entrants. Economists have praised, while protesters have decried, the proposed creation of a Free Trade Area of the Americas, slated to stretch from Alaska to the southernmost point of Chile. Trade talks under the auspices of the World Trade Organization (WTO) have twice stalled and once collapsed altogether over the past five years. Many championed that collapse, in Cancun in 2003, as a victory for developing countries struggling against manipulation at the hands of rich countries. Others bemoaned the collapse; the trade minister of Bangladesh supposedly had tears in his eyes. "I'm really disappointed," he is reported to have said. "This is the worst thing we poor countries could have done to ourselves."

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Membership in international institutions may at the same time impose costs and promise benefits to developed and developing countries alike. But how would we measure those costs and benefits? Researchers have long debated the importance of international institutions, but few have empirically tested the more intangible ways in which institutions might matter to different audiences.

This paper seeks to address a part of that deficit. I build from an earlier finding that showed that opening negotiations with the European Union (EU) made sovereign debt in post-communist countries look less risky to investors. I test that finding for other developing countries using four other prominent regional trade agreements (RTAs) — the WTO, the South Pacific Regional Trade and Economic Cooperation Agreement

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<sup>1</sup>"Cancun's Charming Outcome," *The Economist*, 18 September 2003.

(SPARTECA), the Common Market for Eastern and Southern Africa (COMESA), and the Southern Common Market (Mercosur). Rather than attempting to evaluate the economic gains or losses that result from joining those agreements, my approach investigates whether financial markets respond positively or negatively to membership in those agreements, all else equal.

I examine four different dimensions that might be driving market responses: the total volume of trade among countries in the agreement, the income of the richest country in the agreement, the average level of trade protection in participating countries, the strength of the dispute-settlement mechanism in the agreement, and the institutional quality of countries in the agreement. Of all those dimensions, institutional quality, or lack thereof, most strongly affects perceptions of risk in developing countries.

In this paper, I draw hypotheses from the literature on international institutions. I discuss why membership in certain international agreements might have an effect on perceptions of a developing country's future. Much of this paper concerns itself with measurement issues: in that vein, I discuss the different measures of sovereign debt risk, reducing them to a single common factor on which I test my hypotheses. After finding that the institutional quality of members of RTAs seems to play a large part in reducing default risk, I show, through a splining algorithm, that the relationship between institutions and perceptions of risk is somewhat nonlinear, a finding that will guide future theoretical work on the mechanism behind the importance of international institutions.

## **2 The Role of Institutions**

Literature in economic development, international relations, and international political economy alike has long championed the importance of institutions in ensuring all sorts

of positive outcomes, from successful policy reform to economic growth to international cooperation. One influential argument describes institutions as sets of formal and informal constraints that reduce transaction costs and enforce norms (North 1990). The cooperation that ensues after repeated interactions are, for North, the stuff of international institutions, encompassing member concerns about reputation, codes of conduct, and the legacy of history, language, mental models, and ideologies. Those constraints make individual decision-making more reflexive, decreasing uncertainty and creating regularized behavior and stability over time. Thus, institutions can be a form of credible commitment to a pattern of future behavior. Along those same lines, game-theoretic work has shown how institutions can ensure the repeated interaction necessary for future cooperation (Axelrod 1981, 1984).

Recent work in both the policy and the academic field points to the primacy of institutions in economic development. In the development literature, emphasis is shifting from the urgency of so-called “first-generation” economic reforms, such as liberalization, stabilization, budget constraints, and privatization, to a new focus on institutions and governance. These “Type Two” or “second-generation” reforms aimed at reducing corruption, improving regulations, ensuring independence of monetary and fiscal institutions, and strengthening the judiciary (Rodrik 2004, Svejnar 2002).

Specifying both the nature and the effects of institutions, however, has proven difficult. How do we measure norms of behavior? How can the determinants of strong institutions be distinguished from the outcomes? Institutional design is a feature of the literature on exchange-rate arrangements, which seeks to balance a country’s political and economic constraints (such as openness to trade and sensitivity to exogenous shocks) with the need to send a strong signal to financial markets. But few other studies of international institutions engage that level of detail.

Modeling the effect of institutions requires theoretical precision behind one’s treat-

ment of the measurement difficulties presented by institutions. It is true that much of the magic surrounding institutions is unobservable. But there is a distinction between a variable being unobservable because it exists, but simply does not happen to be available to the researcher, and being unobservable because its qualities are impossible to measure. For example, many recent academic studies have focused on measuring and predicting institutional quality by using surveys that measure foreign and domestic investors' perceptions of corruption in a country (Treisman 2002). Those measure not the mechanics of the institutions themselves, but how well those norms appear to work. Rodrik (2002) points out that this causes two problems. One is that those perceptions are shaped by many aspects of a country's economic and political situation, not just institutions. This points to the issue of endogeneity, a recurrent plague in the literature linking economic growth and institutions. Because economic growth is both a cause and a consequence of institutional quality, disentangling the true nature of the relationship between the two presents researchers with a problem. This has prompted a number of empirical studies that explore the best way of estimating this relationship, often through instrumental variables used to proxy for institutional quality (Acemoglu, Johnson, and Robinson 2002, or Gallup, Sachs and Mellinger 1998).

More seriously for Rodrik, those perceptions do not say what specific rules cause investors to feel more secure in their business. He points to sentiments on protection of investor rights in China and Russia in the late 1990s. Even though China did not even have a formal system of property rights at that time, investors still claimed to feel more secure there than in Russia. Thus, the perceptions themselves — if they can be credibly linked to subsequent investment — might have more bearing on the country's fortunes than the institutions actually in place.

Keeping those two issues in mind, my choice of dependent variable for this paper is also a measure of perceptions, but it is generated by a group that has an incentive to

get those perceptions right: traders of a country's sovereign debt. Scholars in political science are increasingly turning to financial market data for empirical work on any number of topics relating to international behavior and domestic policy.<sup>2</sup>

Sovereign debt offers a summary of how markets rate government stability as well as the future levels of development in a country. Unlike other forms of investment, such as foreign direct investment in long-term plants and projects, bondholders have little interest in the promotion of any one good or in the factor endowments per se of any country. Bondholders seek profit, and they profit from trading other country's debt by seeking relatively high rates of return in environments with varying degrees of risk. As such, the yields and spreads on bonds do not directly reflect any features of a country: they reflect perceptions of that economy, both in terms of other investors' assessments as well as in future returns on investment.

Particularly in developing countries, where data are only as reliable as the governments that collect them, this type of financial market data offers at least two major benefits. First, there is a lot of it, and at high levels of detail. Although trading of emerging-market sovereign debt only became widespread in the 1990s, the thirteen years for which data is available represent a full cycle of operations for bond investors, including the heady days of enthusiasm for emerging-market debt in the mid-1990s and the investment backlash following the Latin American and East Asian debt crises (Erb, Harvey and Viskanta 2000).

Second, as the price of sovereign debt is determined by outside observers, it is not only effective as a third-party valuation of many characteristics of a nation's economy, but it may also dodge some of the endogeneity issues discussed above. Certainly a number of domestic economic and political conditions influences financial markets. However, because they do not necessarily translate into investment in a country —

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<sup>2</sup>See recent work by Tomz (2004), Jensen (forthcoming), and Stasavage (2003).

indeed, most sovereign bond instruments are traded in secondary markets — they have at best an indirect effect on other observable factors of a country. Furthermore, the prospect of gaining or losing significant sums of money no doubt concentrates the minds of debt traders, which makes their pricing of sovereign debt a value that they, at least, are willing to put their money behind. Political scientists may not do much better.

How might this measure be helpful in evaluating the effects of institutions? In this paper, I do not examine at length the theoretical mechanisms through which institutional membership impacts investor perceptions. Nonetheless, we might make a few general claims that connect the theory on institutions to this field. Sovereign debt spreads incorporate many different levels of information and speculation about a country's present and future worth, including the popularity of a bond, the prospect of future real returns, and systemic vulnerability to exogenous shocks. Bondholders ask of governments to uphold two commitments, one short-term and one long-term: to make interest payments schedule, and not to default on the debt altogether. A few aspects of institutions, then, might be relevant here. If their selection process is stringent, and if their members include developed, secure countries, inclusion into relatively exclusive institutions might reveal short-term information about a country's "type." Association with other stable and prosperous countries might increase the credibility of a less-developed country. In the long term, institutions that lock in policies would offer guarantees for patterns of future behavior, ensuring that a country will make good on its promises to pay out the debt after it matures.

How do regional trade agreements fit into the literature on international institutions? For the purposes of this paper, I will not focus explicitly on how well RTAs work as instruments of global free trade, but how they act as institutions — that is, as associations between like-minded countries with rules and constraints for behavior. To

varying degrees, they impose both norms and constraints on behavior to all signatories. Since the breakdown of the Bretton Woods regime in the 1970s, RTAs have been on the rise throughout the developed and developing world, with nearly 300 currently in effect. Those can include bilateral agreements that remove tariffs and quotas on trade between two countries, or more comprehensive systems of trade liberalization that also include harmonization of domestic policy and standards. RTAs take several forms, the primary distinction being between free-trade areas, such as NAFTA, which eliminate internal tariffs and non-tariff barriers between countries but do not harmonize external barriers (NAFTA also allows capital mobility), and customs unions, which not only abolish internal tariffs but also implement a common external tariff. The most comprehensive of them, the EU, requires tens of thousands of pages of legislation on not only tariffs but also external budgetary constraints, human rights, and culture to be written into law.

Empirical evidence is mixed on the benefits and drawbacks of regional trade agreements, both in terms of the gains they offer participating countries and the degree to which they contribute to multilateral free trade. Although in practice free-trade arrangements do not always benefit both parties equally, increased liberalization ought to increase aggregate welfare among all countries by allowing them to reap the gains of comparative advantage (Summers 1990). Conversely, some argue that, rather than creating trade, RTAs actually divert trade, with partial liberalization within a few countries, inhibiting broader trade among more countries — particularly if barriers are lessened in the participating countries but raised toward other countries (Bhagwati 1996). More recent studies have tried to show whether countries that are members of international trade agreements trade more than they would have otherwise (Rose 2004; Tomz, Goldstein, and Rivers 2005).

The literature on RTAs does not make explicit predictions on how membership

might affect perceptions of investor risk. In the absence of clear theoretical guidance, I attempt to infer the following hypotheses from both that literature as well as work on international institutions, about the types of RTAs that might make investors judge favorably their ability to pay off their debt on schedule:

1. *Hypothesis One: RTAs anchored by a large, rich country should make risk levels decrease.* Credible welfare gains result from trading with a large and rich country. Thus, preferential trade with a profitable market would ensure future wealth (de Melo and Panagariya 1992), thus affecting the projected real return on a government bond.
2. *Hypothesis Two: RTAs that require countries to decrease tariffs should also decrease risk levels; higher tariff levels should mean higher risk premia.* Market-friendly tariff policy reform undertaken and locked in as part of a multilateral trade agreement might also signal that a country is retreating from government intervention in international trade, and that an economy can stand on its own in the global marketplace. A binding treaty would eliminate tariffs regardless of government turnover in a country.
3. *Hypothesis Three: RTAs that generate high levels of trade should decrease levels of risk.* Increased level of trade regardless of the wealth of the countries involved should be beneficial to a country's welfare, which would lead to stability of debt payments.
4. *Hypothesis Four: A strong enforcement mechanism in the RTA should decrease levels of risk.* A strong dispute settlement mechanism would indicate a mechanism by which member states could sue for breach of the RTA, representing not only the degree of commitment within the RTA but also the reliability of enforcement.
5. *Hypothesis Five: High institutional quality among members of an RTA should have a negative effect on risk.* This approximates reputational effects of a trade agreement, where inclusion in organizations whose members have a high institutional caliber might send a signal to investors of the country's "type." Here, the quality of the known members might rub off on the new members.

Thus, different types of RTAs should have different effects on investor perceptions of risk. We might expect that membership in some RTAs would have either no effect at all on risk, or even a positive effect, if enforcement is low, policy change is minimal, and the institutional credibility of existing members is weak.

### 3 Operationalization

How might we measure the quality and breadth of the world's RTAs? One option might be to code subjectively the impact and scope of trade agreements, either based on a researcher's informed opinion or on a compilation of third-party, expert opinions on those agreements. More objectively, we might code trade agreements on several dimensions, including the scope of the agreement as laid out in its founding documents; enforcement of the principles contained within the agreement; and the degree of a country's product mix that a trade agreement covers. This task, however, would require sorting through documentation that rivals metropolitan phone books, as well as extensive compilation of country-level data on products. Disaggregated trade flow data is not readily available, and though product-coverage data exists for the WTO (Finger 2002), it does not exist for most other RTAs.

Alternately, we might extract from the theories cited above a few objectively measurable criteria for those trade agreements. Unfortunately, most of the data available pertain not to the RTAs per se, but rather to the countries within a trade agreement. Still, this country-level data is not an outlandish proxy for the dynamics I am trying to capture.

To correspond with the hypotheses outlined above, I lay out five dimensions along which varying degrees of conformity might affect investor perceptions of default risk in developing countries:

1. *Richest Country in the Agreement.* I measure this by including the total GDP of the richest country in the trade agreement.
2. *Barriers to Trade.* I measure this by the ratio of import duties to total GDP of countries within the various trade agreements. Although this measure does not capture the amount of tariff reduction particular to a given agreement, it shows the overall level of trade protection in a country.
3. *Total Volume of Trade.* I measure this by using aggregate trade flows among

countries in the trade agreement, compiled from Gleditsch's expanded dataset on dyadic global trade (2004). Though this will likely be biased upward, since trade agreements may only cover some products within a country's total volume of exports, it provides a reasonable proxy.

4. *Dispute Settlement*. I code dispute settlement mechanisms within each RTA from 1 to 3, with 3 being the strongest; the appendix contains more details.
5. *Institutional Quality of Members*. I score institutional quality using a composite measure from a 2004 World Bank study that ranked institutional capacity along several dimensions, including voice and accountability of government; rule of law; quality of regulation; and effective governance.

I examine five of the most well-known trade agreements. The first is the World Trade Organization (WTO), the multilateral trading organization with the longest history and the largest number of members, nearly all 130 of which belong to at least one regional trade agreement.<sup>3</sup> Established in 1995, the WTO succeeded the 1947 General Agreement on Tariffs and Trade, which sought to eliminate tariffs between countries. The second treaty is the Common Market for Eastern and Southern Africa (COMESA) customs union, which, in addition to promoting "cooperation in all economic and social sectors of the economies of the member states," established a common external tariff as well as free movement of persons and the right to establish businesses in the participating countries.<sup>4</sup> The third is the South Pacific Regional Trade and Economic Cooperation Agreement (SPARTECA), which establishes a free-trade area with Australia at the helm.<sup>5</sup> The fourth is the North American Free Trade Agreement (NAFTA) among the United States, Mexico, and Canada. The fifth is the Common Market for South America (Mercosur), a free-trade area exclusive to Latin America.<sup>6</sup> The sixth

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<sup>3</sup>The exceptions are Japan, South Korea and Hong Kong.

<sup>4</sup>Members are Angola, Burundi, Comoros, Eritrea, Ethiopia, Kenya, Lesotho, Malawi, Mauritius, Rwanda, Sudan, Swaziland, Tanzania, Uganda, Zaire, Zambia, and Zimbabwe.

<sup>5</sup>Member countries include Australia, New Zealand, Cook Islands, Fiji, Kiribati, Marshall Islands, Micronesia, Nauru, Niue, Papua New Guinea, Solomon Islands, Tonga, Tuvalu, Vanuatu, and Western Samoa.

<sup>6</sup>Paraguay, Uruguay, Argentina, and Brazil are the members.

and most constraining is the European Union, where member states sign onto policy harmonization on both economic and social fronts.<sup>7</sup>

As for the dependent variable, there is no shortage of measures of sovereign debt. Governments issue dozens of publicly traded debt instruments, whose yields can fluctuate minute to minute. Although this variation could no doubt be informative in analyzing investor mood, my goal for the purposes of this paper is to capture the underlying commonalities of these estimations of risk in developing countries. To this end, I collected four different sovereign debt instruments. The first is JP Morgan's Emerging Markets Bond Index, which presents an average, weighted by the market capitalization of individual issues, of the spread (the difference between a yield of that bond and of a benchmark US treasury bill of similar maturity) of sovereign bonds, denominated in US dollars, issued by a given country. The second is yields-to-maturity on five-year government bond issues. The third is spreads on treasury bills, benchmarked by US treasuries. The fourth is risk premia assigned to government debt.

To examine the patterns of relationship among those measures, I performed a principal-components factor analysis. Again, for the purposes of this paper I am less interested in the possible substantive content of those dimensions, than in simply boiling down the data into a single vector that represents a common underlying factor beneath all measures. This not only cuts down on the clutter of running the same model on four different dependent variables, but also might get rid of some of the peculiarities that are specific to a certain kind of instrument.

Principal-components factor analysis yields one main factor that explains the variation among the four measures. Descriptive statistics for this factor can be found in the appendix, as well as a scree plot that shows the variation explained by each fac-

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<sup>7</sup>Members are Austria, Belgium, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, and the United Kingdom.

tor. Table One displays both the scoring coefficient of each variable, along with the R square of an OLS regression of the common factor on each variable.

**Table 1. Factor Analysis of  
Four Measures of Sovereign Debt Risk**

Variable	Scoring Coefficient	R Squared
Risk premia	.32	.57
Treasury yields	.39	.82
EMBI	.21	.24
Government bond yields	.36	.72

For the remainder of this paper, I will take the liberty of assuming that the common underlying factor extracted from this analysis represents default risk — the primary dimension discussed in the literature on sovereign debt. For the purposes of substantive interpretation, we can translate coefficients back to their direct relevance to any of the above four variables through the OLS regression fit.

What control variables are necessary to explain variation in perceptions of risk over time? Unsurprisingly, the most exhaustive studies on the determinants of sovereign bond spreads come from the literature on finance.<sup>8</sup> Those studies are targeted primarily toward investors and are concerned with finding the specification with maximum explanatory power, not necessarily with parsimonious or theoretically based models. Thus, most studies include no fewer than 30 explanatory variables, many of which are highly collinear, including total debt as a ratio of gross domestic product, real exchange rate misalignment, fiscal balance, the current- and capital account balances, exports as a ratio of total GDP, a country’s default history, and its external amortization.

Those variables seem to be broadly divisible into two categories. The first includes solvency variables, which demonstrate a country’s ability to make its debt payments

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<sup>8</sup>See, for example, Cantor and Packer 1996 for work on determinants of credit ratings; Edwards 1983 on loans to developing countries; Hilscher and Eichengreen and Mody 1998, as well as Min 1998, on issue spreads for emerging-market sovereign bonds.

in the long run. Those are consequences of fundamental, long-term characteristics of a country's economy. The second comprises liquidity variables, which signify a country's capacity to service its debt in the short term. For simplicity of the model, I chose two variables from each family. The solvency variables are gross domestic product per capita, weighted by purchasing power parity, as a measure of wealth in the total population; and growth in per capita GDP. For the liquidity variables, I use inflation rates, which signify a structural inability of a government to generate revenue by any other means than running the printing presses, and debt service payments as a proportion of overall GDP.

I gathered data for thirty-four emerging markets, from 1990 to 2003.<sup>9</sup> This sample represents countries from all regions of the developing world, albeit slightly better off countries — the poorest or war-torn developing countries tend not to issue their debt publicly, as there is not much of a market for it. I further chose countries that had observations on at least two of the variables that went into the factor analysis for the dependent variable.

Time-series, cross-section data such as these offer their own econometric challenges. Because of the time dependence of the observations, I had reason to believe that serial correlation would be a problem in estimating my model. Serial correlation would lead us to expect either biased or inefficient coefficients, and standard errors that are generally too small, which would lead a researcher to falsely conclude statistical significance of some coefficients. Furthermore, the country groupings result in panel heterogeneity or, in other words, unobserved unit-dependent factors that may be consistent within a country or year. Failing to account for those factors wrongly assumes that an indepen-

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<sup>9</sup>The countries are Argentina, Brazil, Bulgaria, Colombia, Cyprus, the Czech Republic, Ecuador, Egypt, Ethiopia, Honduras, Jamaica, South Korea, Malawi, Malaysia, Mexico, Morocco, Namibia, Netherlands Antilles, Nigeria, Pakistan, Panama, Peru, the Philippines, Poland, the Russian Federation, Samoa, Slovakia, the Solomon Islands, South Africa, Thailand, Turkey, Ukraine, Vanuatu, and Venezuela.

dent variable has the same effect on the dependent variable irrespective of country or year, and that the variance in errors differs across units. The presence of relationships within countries and in certain years means that there will be serial correlation among observations, as well as structure in the error terms.

In exploring alternate ways of dealing with serial correlation and panel heteroskedasticity, I tried to balance the limitations of a relatively small dataset with the demands of the common fixes for those problems. I present the results of two different solutions. One corrects for serial correlation by using Prais-Winsten transformations, and for panel heteroskedasticity through regional dummies.<sup>10</sup> In the second set of specifications, I estimated a model with fixed effects for time and unit, which assumes that the intercept of a regression varies across the  $t$  (time period) units.<sup>11</sup> An advantage to this approach is that those variables account for shocks or characteristics associated with certain countries and years. Controlling for those time-specific occurrences affords empirical findings that may hold true after accounting for local factors, such as the Argentine default of 2000 and the Mexican “tequila crisis” of 1994. Additionally, the effects of any one variable that survives the inclusion of controls for any country- and year-specific effects might inspire some confidence. The disadvantage of fixed effects models is that controlling for each country and each year use up several degrees of freedom, making estimates potentially unstable. Another disadvantage is that those variables do not make for a very compelling explanatory model; if the year variables turn out to have more robust effects than the other explanatory variables, it does not speak highly of the theory that provoked that model specification. Nonetheless, that the main finding holds up in both models should inspire some confidence in the

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<sup>10</sup>To preserve the constant, I used  $n-1$  regional dummies. I omit the coefficients on those variables for the sake of space.

<sup>11</sup>Because  $n \cdot t$  (46 countries and 14 years), following Beck and Katz 1995, I did not compute panel-corrected standard errors.

robustness of the results.

Another complication is the presence of a high degree of missingness across observations, as failing to account for missing observations can lead to biased coefficients. Since the missing data across those countries and years did not appear to be missing at random — the poorer countries tended to have more missing observations, as did all countries in the earlier part of the 1990s — I used Amelia (Honaker, King, Joseph, and Scheve 2001) to impute guesses of the missing observations. Save for the generalized additive model, the estimations below reflect averages across ten imputed datasets.

## 4 Statistical Tests

This section sets up a series of statistical tests of the nature of the effect of RTA membership on perceptions of risk in developing countries. Table Two below shows the results of a regression that simply accounts for membership in trade agreements through dummy variables, coded 0 for every country and year in which a country was not a member of an RTA, and 1 otherwise.

We see from the above that, save for inflation, none of the control variables has a strong statistical or substantive effect on perceptions of default risk in emerging markets. It is to be expected that inflation would increase the risk premium; however, the sign of the coefficients on GDP is somewhat unexpected, since we might expect that the richer a country is, the lower level of risk would be associated with its debt.

Note, however, the trade agreements that bring down levels of risk. Though each of those trade agreements do in some sense proxy for certain parts of the world that have different levels of economic development and default history, the region fixed effects as well as the economic control variables should pick up most of the effects that are specific to particular parts of the world. Furthermore, in my sample not all countries

Table 1: **Effects of RTAs on Investor Risk**

	<b>A. Prais</b>	<b>B. FE</b>	<b>C. Prais</b>	<b>D. FE</b>
Constant	-1.10** (.51)	-1.29 (.45)	-.61 (.26)	-1.15** (0.48)
GDP	.04 (.05)	.06 (.05)	-.05 (0.03)	.06 (0.05)
Inflation	.21*** (.02)	.25*** (.04)	0.21*** (0.02)	0.24*** (0.02)
Debt Service	0.01** (.0001)	0.001 (0.001)	0.001 (.001)	0.001 (0.001)
Growth	.001 (.003)	-.0001 (.0001)	0.001 (.001)	-0.001* (0.001)
Mercosur	-	-	0.56** (0.27)	0.46** (0.17)
COMESA	-	-	.42 (.27)	0.51** (0.20)
SPARTECA	-	-	-.13 (.19)	-0.20 (0.16)
European Union	-	-	-.39*** (.12)	-0.32* (0.17)
NAFTA	-	-	-.19 (.27)	-0.22 (0.28)
WTO	-	-	-.18 (.11)	-0.24** (0.11)
Rho	.42	-	.40	-
Durbin-Watson (original)	1.15	-	1.16	-
Durbin-Watson (transformed)	1.94	-	1.90	-

\*Dependent variable is the common underlying factor across four instruments for sovereign debt. Standard errors in parentheses. \*\*\* p<sub>i</sub>.001, \*\* p<sub>i</sub>.05, \* p<sub>i</sub>.10. N=486.

region in each were members of their local trade agreement (neither Ethiopia nor South Africa, for example, are members of COMESA), which should indicate that the effects noted can truly be linked to RTA membership and not to regional factors.

As might be expected, membership in the European Union has the strongest negative effect on default risk. Membership in the WTO also brings statistically significant reductions of risk premiums. More conspicuous, however, is that membership in COMESA and in Mercosur is associated with high levels of risk — their magnitude is over twice that of the other RTAs in the sample. Holding other variables at their means, joining COMESA would bring a country's level of risk up by .49.<sup>12</sup>

What aspect of these agreements drives this result on average? The coefficients for COMESA membership, for example, would indicate that African countries would actually appear less risky if they stayed out of that RTA. But what aspects of COMESA make it seem unpalatable? It is an inward-looking regional trade agreement with no relatively rich members and low institutional quality among its signatories, though it has a strong dispute-settlement mechanism. It is worth examining as best we can the aspects of RTAs that drive perceptions of default risk.

The tables below show the results of trade agreements measured along the five dimensions described above: total trade among countries, barriers to trade, the GDP of the richest country in the agreement, the strength of dispute settlement in the agreement, and the institutional quality of the countries in the agreement. I used these dimensions in place of dummy variables for those agreements, although the structure is the same: countries receive a 0 for each year that they were not a member of a trade agreement, and the combined measure of each dimension for every year that they were in an RTA, including countries both within and outside of the data here. For example,

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<sup>12</sup>I calculate this and other expected values using Clarify (Tomz, Wittenberg and King 2003), using the fixed effects model in one of the ten imputed datasets.

Bulgaria did not belong to any of the trade agreements in my sample until 1995, so its score for those years along all dimensions was 0; it joined the WTO in 1996, so I assigned it the composite WTO score for each of those dimensions. Bulgaria opened negotiations with the EU in 1998, so I added the scores for EU dimensions to the WTO scores from 1998 on. Thus, variation on the scoring of trade agreements comes from the addition of new countries to the agreement (for example, if a country with low institutional quality joins in, say, 1998 the overall score on institutions decreases from the value in 1997) as well as in whether a country is a member of the RTA in a given year (if not, I coded the observation as a 0).

Of the dimensions measured here, the institutional caliber of countries in a trade agreement has the strongest effect, both in terms of magnitude as well as in statistical significance. The only other dimension whose effect is not statistically different from zero is barriers to trade; as expected, higher levels of tariffs and non-tariff barriers has a positive effect on risk premia. Investors also react to the presence of a strong dispute settlement mechanism in a trade agreement. Still, holding all other variables at their means, joining a trade agreement whose members had the highest possible institutional quality (in this case, the EU) would see a reduction of risk by -.59.

Let us examine this dynamic in slightly more detail, at the regional level. The Latin American countries in our dataset could feasibly have belonged to three of these RTAs: Mercosur, NAFTA, and the WTO. Again, I demonstrate the effects of membership of each of those trade agreements first as dummy variables for membership. I then show the scores along each of the four dimensions listed above for each of the possible RTAs. As before, the coefficients on the variables for the richest country in the agreement as well as for the total trade have no real effect, while barriers to trade has some positive effect on risk. It is the institutional quality of the agreements that drives the reaction of financial markets.

Table 2: Dimensions of RTAs

	<b>E. Prais</b>	<b>F. FE</b>
Constant	-1.02 (0.68)	-1.71 (0.58)
GDP	0.07 (0.06)	0.09 (0.05)
Inflation	0.21*** (0.02)	0.25*** (0.02)
Growth	0.001 (0.001)	0.001 (0.001)
Debt Service	0.00 (0.01)	0.01 (0.01)
Members' Institutional Quality	-0.22* (0.12)	-0.11 (0.09)
Trade Barriers Volume of Trade	0.01 (0.01) 0.0002 (0.0003)	0.02* (0.01) 0.002 (0.001)
Dispute Settlement	-0.06 (0.04)	-0.09** (0.04)
Richest Country	0.0007 (0.0009)	0.0094 (0.001)
Rho	0.4	-
Durbin Watson (original)	0.17	-
Durbin Watson (transformed)	1.92	-

\*Dependent variable is the common underlying factor across four instruments for sovereign debt. Standard errors in parentheses. \*\*\* p<.001, \*\* p<.05, \* p<.10. N=486.

Table 3: **Effects of RTAs in Latin America**

	<b>G. Prais</b>	<b>H. FE</b>
Constant	-1.62 (2.44)	-2.80 (2.07)
GDP	0.12 (0.29)	0.26 (0.24)
Inflation	0.34*** (0.05)	0.38*** (0.05)
Debt	-0.01 (0.01)	0.0008* (0.0003)
Service Growth	-0.04* (0.02)	-0.02 (0.02)
NAFTA	-0.19 (0.37)	-0.35 (0.31)
Mercosur	0.46 (0.29)	0.40 (0.24)
WTO	-0.01 (0.21)	-0.19 (0.27)
Rho	0.27	-
Durbin-Watson (original)	1.42	-
Durbin-Watson (transformed)	2.08	-

\*Dependent variable is the common underlying factor across four instruments for sovereign debt. Standard errors in parentheses. Model G uses Prais-Winsten transformations with regional dummies; Model H uses OLS regression with fixed effects for year and country. \*\*\* p<sub>i</sub>.001, \*\* p<sub>i</sub>.05, \* p<sub>i</sub>.10. N=187.

Table 4: Dimensions of RTAs in Latin America

	I. Prais	J. FE
Constant	-1.34 (3.39)	-.97 (4.60)
GDP	0.04 (0.31)	0.25 (0.25)
Inflation	0.34*** (0.05)	0.37*** (0.05)
Growth	-0.03 (0.02)	-0.02 (0.02)
Debt Service	0.01 (0.03)	0.01 (0.02)
Institutional Quality	-0.93** (0.36)	-0.92* (0.48)
Trade Barriers	0.01 (0.07)	-0.06 (0.12)
Volume of Trade	0.001** (0.0003)	0.0001 (0.0001)
Dispute Settlement	-0.01 (0.07)	-0.02 (0.09)
Richest Country Country	0.001 (0.001)	0.001 (0.001)
Rho	0.34	-
Durbin-Watson (original)	1.34	-
Durbin-Watson (transformed)	2.09	-

\*Dependent variable is the common underlying factor across four instruments for sovereign debt. Standard errors in parentheses. Model I uses Prais-Winsten transformations with regional dummies; Model J uses OLS regression with fixed effects for year and country. \*\*\* p<sub>i</sub>.001, \*\* p<sub>i</sub>.05, \* p<sub>i</sub>.10. N=187.

We can see from above that membership in the WTO and NAFTA decreases perceptions of risk, the latter by an appreciably higher degree. It is interesting to note the strength and significance of the coefficient institutional quality of those countries in the Mercosur trade agreement. Holding all other variables at their means, joining Mercosur alone made risk increase by .41. Similarly, when the cumulative institutional quality of countries in the agreement went from the lowest (-0.02 in the Mercosur countries) to the highest (5.6 in NAFTA countries) the expected value of risk is -3.26 — a much greater value than any of the constants in these equations. We might infer from this that association with countries that have strong institutions makes you look a bit less risky, but association with countries that have weak institutions makes you look pretty terrible.

Returning to the full sample of countries, I attempt here to at least offer a clearer picture of the nature of this relationship by using a generalized additive model (GAM). Ordinary least squares assumes linear relationships between the dependent and independent variables. However, in the absence of clear theoretical guidance as to the form of a relationship, GAM estimation allows the data to show relationships that are not linear (Hastie and Tibshirani 1990). This model makes no assumptions about functional form, letting the data show the relationship through scatterplot smoothers rather than straight lines. Instead of coefficients, the GAM routine returns a graph that shows the form of the relationship. Table Six and Figure One show these results.

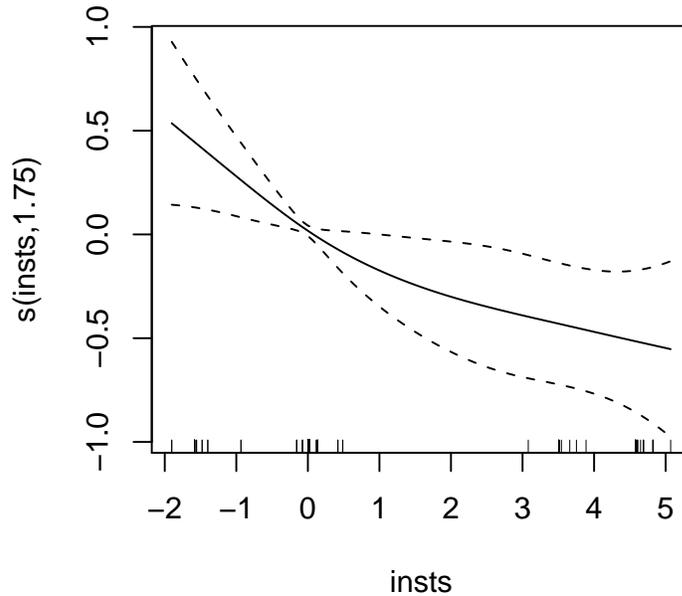
Recall that a score of zero may indicate that a country was not a member of any regional trade agreement in a given year. We see from the figure above that the relationship is indeed not quite linear. Again, negative scores on institutions are associated with high levels of risk. The curve is far less steep once the institutions hit the positive level. While an institutional score of -2 (in this case, COMESA members) translates into a positive evaluation of risk, at 0.5, it takes a score of 4 (as held by

Table 5: **Generalized additive model**

	<b>K. GAM</b>
Constant	-.95 (.17)
GDP	.02 (.01)
Inflation	.24*** (.02)

\*Dependent variable is the common underlying factor across four instruments for sovereign debt. Standard errors in parentheses. Generalized additive model, with fixed effects for time and region; the figure shows the nonparametric estimation of the relationship between institutional quality of trade agreements and risk of default on sovereign debt. Confidence intervals are indicated by dashed lines. The whiskers on the x axis represent observations. Degrees of freedom: 1.75. Chi square: 14.30. P-value: 0.0006 \*\*\* p<sub>i</sub>.001, \*\* p<sub>i</sub>.05, \* p<sub>i</sub>.10. N=187.

Figure 1: Nonparametric estimation of the relationship between RTA institutions and investor risk



NAFTA members) to have an equivalent evaluation of risk in the opposite direction. This seems to illustrate that investors react more strongly to institutional shakiness than to institutional strength.

## 5 Conclusion

The message of this empirical work is clear. Investors in government securities are somewhat impressed by regional trade agreements whose members score high in terms of governance, regulation, accountability, and the rule of law. Those investors do not, however, look kindly on trade agreements among countries where those institutions are weak.

This puts unfortunately us back in the dilemma outlined earlier in the paper. We now see that institutions have a definite and strong effect on market perceptions of risk. But what kinds of institutions are these? They do not seem to be measurable either through policies or by wealth. Rather, we are in a situation where one of the stronger predictors of market perceptions is itself a perception — a more or less subjective estimation of the quality of governance in a developing country. This is not to argue that regional trade agreements are a good or bad idea in terms of possible welfare gains. I have simply tried to show how certain audiences react to membership in a specific kind of international institution.

Several research avenues present themselves here. Theoretical precision on the nature of the mechanism through which institutions affect market perception could lead to more informed empirical work. For example, do markets respond to membership in certain kinds of international agreements because they think it conveys information about a country's "type"? It is also possible that membership in RTAs is a signal about future policy direction. It could also be a signal about future political stabil-

ity. Examining whether members countries' output, trade, and policies changed after membership in RTAs, and whether risk premia moved according with those changes, might illuminate that issue. It is further possible that changes in the level of perceived risk could be a reaction not to any actual new information about a country, but rather to the information available to other investors. The pricing of an investment has much to do with its attractiveness to other potential investors. Thus, membership in RTAs could simply send a signal, in one direction or another, about the mainstreaming of a country into or out of the developed world.

I hope to have contributed at least in tone to the research in international institutions, which is awash in sweeping but imprecise claims. I have focused on one type of institution and tried to isolate a few dimensions encompassed therein. I have then shown their impact on one group of people. The resulting finding is far from exhaustive, but it may have lent precision to at least a portion of the debate on the nature of international commitments. This is an important step toward claims about institutions that rely not on assumptions but on empirical findings.

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