

# When Talks Aren't Cheap: The Impact of Advancing Stages of EU Negotiation on Investor Risk

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## Abstract

When institutions that decrease uncertainty are thin on the ground at home, can countries import them from abroad, through membership in stable and prosperous organizations such as the European Union? I show that EU accession has effects that cut both ways: investor risk decreases for candidate countries, where uncertainty is high, and increases for existing, more secure members. I investigate how three rounds of EU expansion over the past 25 years have impacted yields on German treasury bills as well as on sovereign spreads in candidate countries. I compare those with the expansion of signatories to the Exchange Rate Mechanism and later the Euro. I find that investor risk all stages of accession past application, while the number of entrants to EU institutions — particularly at the negotiations and membership stages — is associated with increases in Germany's perceived default risk. This study has implications for institutional design: as rich-country clubs become more inclusive and adjust to the demands of newer and less-developed members, their own credibility weakens in important ways.

NB: This is a combination of two papers/chapters that I'm working on, with probably too much footnoting on other work that I'm doing at the same time. Apologies for the rough nature, and please do not cite without checking for the most recent version. Comments greatly appreciated.

# 1 Introduction

In December 2004, the European Union set 17 March 2005 as the date to start accession talks with Croatia. Champagne flowed, politicians rejoiced, and Croatia was instantly touted as a model reformer that other post-communist countries should emulate. Earlier that year, EU Enlargement Commissioner Gunther Verheugen had claimed that “the economic position of Croatia ... is better than the majority of countries which will enter the European Union on 1 May [2004].”<sup>1</sup> Enthusiastic market analysis referred specifically to EU talks, noting “falling yields in the wake of the EU’s surprise decision to open membership negotiations with Croatia.”<sup>2</sup>

But on 16 March, the day before talks were scheduled to begin, the EU announced that accession would be suspended indefinitely, until Croatia surrendered Ante Gotovina, who was charged with war crimes against Serbs in the Balkan wars of the mid-1990s, to the International Criminal Tribunal for former Yugoslavia in The Hague. “Croatia is already living Europe, if you mean by that a set of democratic standards, a functioning democracy and free market ... [and] rule of law,” Croatian Prime Minister Ivo Sanader fumed. But financial markets saw it differently. That same day, Croatia’s debt traded at up to 208 basis points above the previous day’s trade, indicating that markets saw an increased likelihood in default. Croatia’s economy was in the exact same position as it had been the day before, but markets responded strongly to this exogenous event — membership in an international institution.

It is perhaps no surprise that markets react to the prospect of a recently war-torn country joining the politically as well as economically stable European Union. But what exactly are investors reacting to? EU accession happens in many stages over a long period of time, with different processes at each stage. Investors could be reacting to the domestic

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<sup>1</sup>“EU or Bust,” *Transitions Online*, 26 April 2004

<sup>2</sup>EIU Country Risk Service: Croatia At a Glance, November 2005.

policy reform that happens in the run-up to negotiations, or to the legislation that must be enacted while negotiations are in force, or in anticipation of the benefits that come from a single market. Furthermore, the same aspects of EU membership that are good news for less well-off countries — particularly the implicit notion of a bailout — could spell trouble for the more developed countries in the EU.

This paper takes a quantitative look at the impact of the different stages and rounds of EU enlargement, as well as the development of the euro, on investor risk first in accession countries and then in Germany, the EU's largest economy and its biggest contributor to the overall budget. I seek to establish first that enlargement has effects that cut both ways, depending on the type of country: it increases sovereign risk for previously more stable (or certain) countries and decreases risk for less stable (or uncertain) countries. Using quarterly data on treasury bill yields in Germany and sovereign spreads, I examine the impact on default risk for candidate countries as well as for Germany of four different stages of EU entry — application, formal opening of negotiations, accession, and membership, as well as the different stages in the evolution of the euro over time. Tracking investor response through different stages of EU negotiation helps isolate whether investors are reacting to signals of willingness to stabilize through policy reform in the run-up to candidacy, signals of EU commitment to expansion through formal negotiation, or anticipation of economic benefits of membership. For candidate countries, I find the largest drops in risk in the negotiation and membership stages. I also find statistically significant increases in Germany's treasury yields associated with negotiation and membership. For Germany, the effects seem to have less to do with economics and more to do with simply adding more bodies to the negotiation corridor.

This is an important contribution to the literature on EU expansion, a phenomenon that has defined the EU's history. Most of the efforts toward addressing the consequences of EU expansion on richer members, or on the institution as a whole, have kept in step

with anxiety over the effects of integration on domestic labor markets, on the ability to reach consensus, or on security issues. Other work has focused on how the number of members and the changing EU rules impact the type of deals struck at intergovernmental consequences. But enlargement may also impact the stability of richer members in the eyes of financial markets. Committing to a broader EU may make it seem less likely for richer members to uphold their own commitments to investors.

Additionally, this paper has insights for the growing literature on institutional variation, as prescribed nearly two decades ago (Keohane 1988). Examining how the EU – effectively a different institution across all three rounds of expansion – has differing effects on investor risk in both its strong and weak economies, as well as across time helps us understand how changes in member type might effect the institution as a whole. Scholars are increasingly attempting to measure change in international institutions, as well as those changes’ impact on various outcomes, either for environments or for members themselves.<sup>3</sup> While strong institutions may be good for new, weak members, including those members affects investors perceptions of the existing members. Market data on pricing of government debt offer a useful shorthand for investment risk, a field that is increasingly of interest to political scientists.<sup>4</sup>

In the sections below, I first sketch out expectations for the differing effects of EU expansion on investor risk, and offer some background on the state of EU expansion. The third section offers theoretical reasons why we might expect new EU members to make Germany look more or less risky to bond traders. In the fourth section, I describe my data and the ways in which I operationalize the hypotheses in question, then present results. The fifth section concludes.

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<sup>3</sup>On broader outcomes, see, for example, Acemoglu and Robinson 2006 on how regime change may or may not effect economic institutions; on how legalization of trade regimes produces asymmetrical outcomes for member nations, see Reinhardt (1999), who argues that the bureaucratization of the WTO has made it more difficult for developing countries with low administrative capacity to file complaints.

<sup>4</sup>See Jensen and Schmith 2005 on stock market responses to elections in Brazil, Tomz (forthcoming) on sovereign debt and international cooperation, Stasavage 2002 on debt payments as signals of commitment.

## 2 Risk and Institutional Membership

First, what do traders of sovereign debt look for in a country? Unlike those who deal in greenfield investment and foreign direct investment, bond traders need not ever lay eyes on the capitals from which their securities are issued. They are buying assets whose returns reflect primarily the perceived likelihood that an issuing government will be unable to make scheduled interest payments on time or default on its debt altogether, as well as the supply of and demand for that asset. Spreads on sovereign debt — that is, the difference between the yield of a country’s bond and that of a treasury note of comparable maturity — are essentially a function of their perceived default risk as well as the liquidity of the trading instrument.<sup>5</sup> This paper will concern itself less with liquidity and more on the perceived default risk. I am less concerned with drawing up a theory of the expectations of portfolio investors, than with testing one of the claims of the literature on international institutions, of how institutions can regularize actions and decrease uncertainty. Investment data is particularly useful in testing claims about uncertainty, since uncertainty is one of the market’s driving forces.

The trick lies in grappling with a lack information by changing it into measurable probabilities; in other words, translating uncertainty into risk, and risk into opportunity. As Root (2005) puts it, “transforming uncertainty into risk is how countries [and individuals] grow rich.”<sup>6</sup> But for countries where uncertainty is high, that transformation is more difficult to pull off; thus, “lack of institutions that make managing risk possible is the

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<sup>5</sup>Bond traders pay a lower price for assets that are illiquid, meaning that they cannot be resold on secondary markets, making it more difficult to hedge risk; see Amihud and Mendelson 1986; Glosten and Milgrom 1984; Lo, Mamaysky, and Wang 2004.

<sup>6</sup>I rely here on Root’s 2005 definition of uncertainty and risk, where the former is a situation where knowledge about a situation is imprecise, and the latter “relates to events that can be assessed with some degree of certainty.”

root cause of the disparity in economic performance between developed and developing countries” (ibid).

If institutions that guarantee certainty — such as political stability and legal enforcement — are thin on the ground at home, they can perhaps be imported from abroad, through membership in constraining international institutions such as the European Union.<sup>7</sup> The combination of extensive policy reform as well as access to a rich common market and, for some, exchange-rate harmonization can benefit less-developed countries not only domestic discipline but also external enforcement. Membership also provides a framework of regulation through which contracts can be enforced. Investment research mentions this phenomenon by name; a January 2003 Deutsche Bank emerging markets bulletin notes that “EU membership will provide a greater degree of legal certainty for both investors at large and corporate direct investment. Therefore, the degree of country risk has decreased.”

The EU has expanded its borders drastically since its inception. Belgium, France, Germany, Italy, Luxembourg and the Netherlands formed the original European Economic Community in 1958, with Denmark, Ireland and the United Kingdom coming aboard in 1973. Greece joined in 1981, and Portugal and Spain in 1986. What was by 1995 known as the European Union included Austria, Finland and Sweden. The year 2004 saw the most sizeable enlargement, with ten countries — the Czech Republic, Cyprus, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Slovakia, and Slovenia — becoming new members. Currently, four more countries — Bulgaria, Croatia, Romania and Turkey — are candidates to join, with stirrings of Serbia and Montenegro, Macedonia, and Bosnia and Herzegovina being included in the perhaps-distant future.<sup>8</sup>

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<sup>7</sup>I look at the effects of membership in other RTAs in a separate paper.

<sup>8</sup>In fact, on 3 May 2006 the EU pulled a similar about-face as with Croatia, suspending promised negotiations with Serbia until suspected war criminal Ratko Mladic was surrendered to the ICTY. That day, bonds traded at 190 basis points above the previous week’s trade.

At the same time that its borders have expanded, the EU's monetary union also deepened. The creation of the European Exchange Rate Mechanism (ERM) established a band of 2.25 percent within which member currencies could fluctuate. This gave way to the abolishment of national banknotes and a single currency — and, by extension, a single monetary policy for an increasing number of members (or at least, the presumption that members should behave as though there were one). EU countries have entered the ERM at different schedules, or not at all. Germany has been a key influence of the criteria surrounding the euro; during ERM talks, France made its entry conditional on Germany's, so that the Bundesbank could not conduct its own monetary policy outside of a European system.<sup>9</sup>

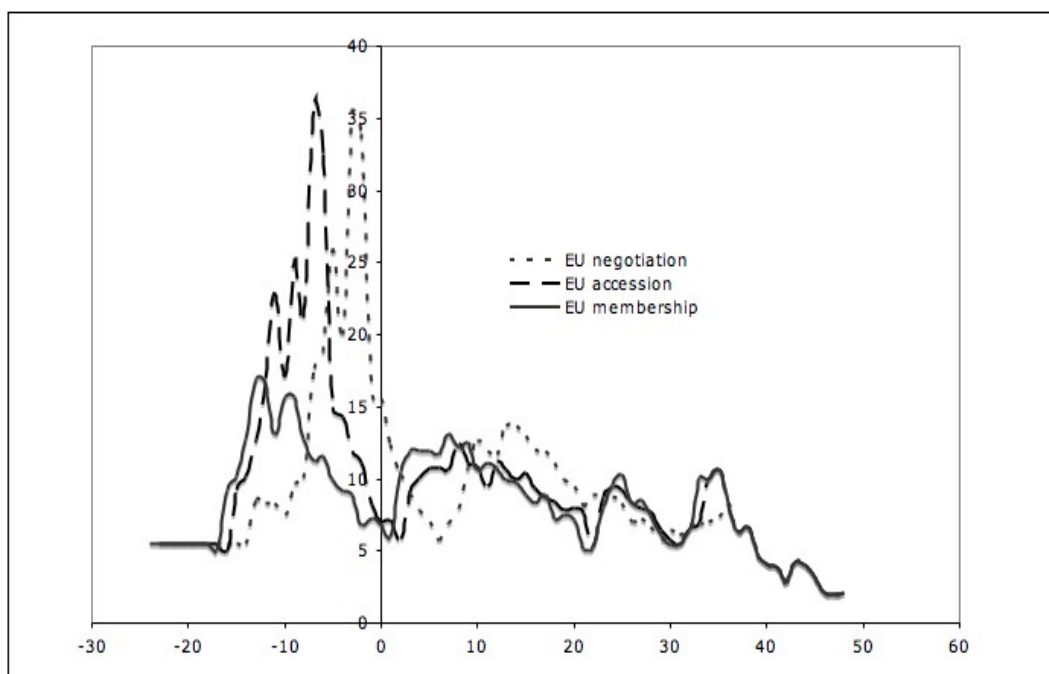
Amid all the controversy surrounding EU expansion, it is generally accepted that on balance, EU accession is incontrovertibly beneficial to new members. The perks are manifold, including access to the common market as well as a strong external impetus for domestic policy reform (Schimmelfennig and Sedelmeier 2005, Vachudova forthcoming). For most of the accession countries, the impact was immediate in at least one respect: investor risk premiums and yields on government bonds dropped almost as soon as Brussels announced their official candidacy. Investors seem to think that EU negotiations provided a credibility boost to those countries and bet on relative future stability for government debt.<sup>10</sup> Figure One, which graphs yields on three-year treasury notes for EU candidates, shows that the time at which countries begin negotiations, accession, or membership with the EU (marked as Year 0) sees big drops in the level of default risk.

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<sup>9</sup> The United Kingdom joined ERM1 in 1990 but withdrew in September 1992 after a speculative crisis; Denmark and Sweden did not join in 1999, when the eurozone officially came into existence, confirming their rejection in referendums in 2000 and 2002, respectively. Similarly, the newer members have different timetables for joining: Estonia, Slovenia and Lithuania are poised to join in 2007, Slovakia in 2009, for example.

<sup>10</sup>I examine the mechanisms of this effect for the post-communist countries in another paper. In brief, I find that the effect is not a result of preexisting policy reform, or of policy reform that is part of the EU negotiation process, or of selection into that group.

Figure 1: Risk Drops for EU Candidates (Year 0=year of change)



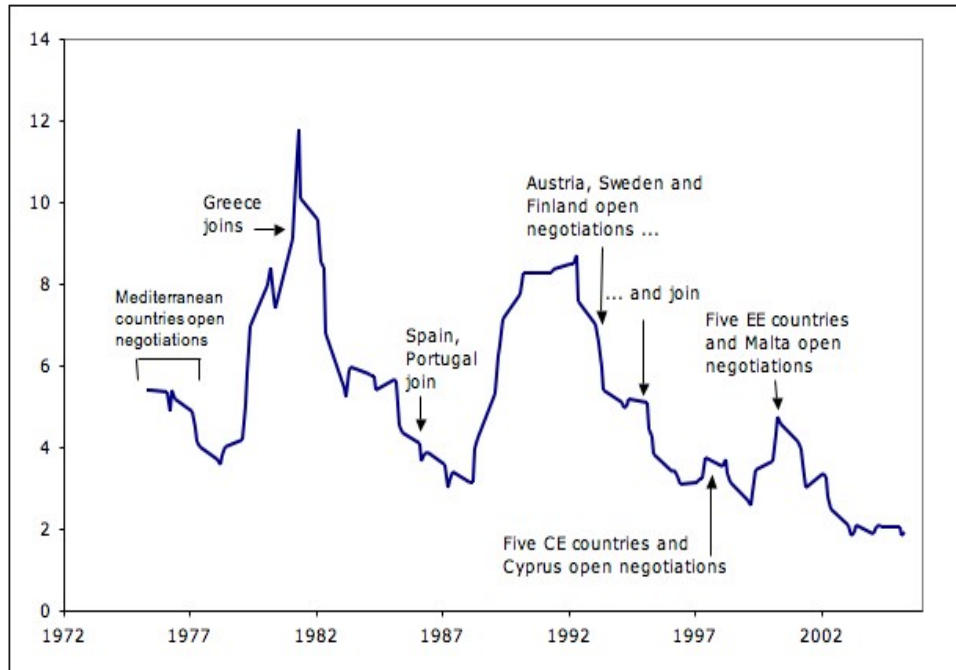
The pattern that emerges here is not only of sharp decreases in risk around the time of negotiation, ratification of the accession treaties, and full-on membership. We also see a marked narrowing of the bands within which treasury bills fluctuate. Thus, getting through the barriers of EU accession not only lead to lower levels of default risk; there is also a decrease in volatility altogether.

In fact, for the market more generally, the late 1990s saw a convergence in yields across maturities as well as across markets, in anticipation of the abolishment of currency risk, a single monetary policy across participating countries, and the hope of increased fiscal discipline as a condition of remaining in the Eurozone. Yields on Italian debt, for example, traded at up to 650 basis points (.6 percent) higher than German bonds. More recently, commentators have noted that the spreads between German bonds and those of poorer countries in the unions seem unnaturally low and do not reflect the actual differences of risk between the markets (Dullmann and Windfur 2000).<sup>11</sup>

<sup>11</sup>Most chalk the lack of disparity up to a combination of factors, both irrational (the market is



Figure 2: German three-year treasury yields, 1975-2006



But this implies that there may be two different risk functions at work here: one for new entrants to the EU, and one for the stronger economies in the EU. A look at the raw data gives a somewhat ambiguous picture; Figure Two shows quarterly yields on German treasury bills since 1975, with indicators for steps along the road to EU expansion. Note that higher values are an indication of higher levels of risk. The two largest spikes in the early 1980s and early 1990s result from the global debt crisis and the ERM crisis, respectively. There is no easily discernable pattern on the effects of EU expansion; particularly the inclusion of the postcommunist countries seems to coincide with spikes in risk, but this is amid an environment of overall volatility.

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inefficient in evaluating actual risk) and rational (Germany's economy itself has not performed well, driving its overall risk up, and since the European Central Bank treats any member national debt as equal in terms of collateral, it makes sense to hold higher yield ones). "Credit where credit is due," *The Economist*, 28 September 2005.

It is commonplace in the finance literature to assume that markets respond to news about the future.<sup>12</sup> But what aspect of EU enlargement would markets be reacting to? Although there seem to be no explicit links between, say, Poland formally opening EU negotiations with investors' estimations of the likelihood of German default on the same day, many direct and indirect processes link the two. Investors do not expect Germany, or any other Western or Northern European country, to default on its debt. Nor do the ties of the EU mean technically that Germany must come to the rescue of an errant member; in fact, Article 104b of the Maastricht treaty specifically prohibits bailouts. But it is generally assumed that either the European Central Bank or a stronger EU economy would bail out Greece, Italy, or any of the economically weaker member states. Within the context of the single market, it would be in the interest of the entire economic union to avert a default of one of its members; one default would undermine the stability of all.

If investors might be responding to EU negotiations, what exactly are they reacting to? Again, different processes are likely at work for accessors and existing members.<sup>13</sup> On the former, one way of isolating what might be going on is by looking at different stages of accession. Each milestone on the pathway to accession represents two things: stepped-up efforts on the part of the candidate country to adhere to EU standards, as well as an increasing level of commitment on the part of the European Union to accept that country into the fold. There is no *a priori* reason to expect that any one stage should be pulling the weight; indeed, all stages could have some decrease in risk associated with it, but for different reasons. Thus, we might put forward the following hypotheses:

- **H1** *Anticipation of EU commitment: Markets would react in event windows leading up to negotiation, or in the accession stage.* If markets were simply pricing in

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<sup>12</sup>See Jaimovich and Rebelo 2005 on how news about future total factor productivity spurs recessions, Bussie and Mulder 2000 on how elections impact investment flows.

<sup>13</sup>In other work, I look more explicitly at the mechanisms of selection and policy reform.

convergence at early stages, we would expect to see the biggest impact in an “event window” prior to countries actually opening negotiations with the EU, or at the accession stage, when countries have formally passed all the requirements for EU entry and ratify the treaties into their own domestic law; they are often then put in a holding dock of up to a few years prior to entry. The date of EU accession is sometimes delayed at this stage, but has not yet been reversed. Similarly, once negotiations are formally opened, the accession process has not yet to date been reversed for any country; the delays tend to come at the application stage (where Turkey has languished since 1987). The negotiation stage spells a commitment to an as-yet irreversible process of EU integration. This would indicate that markets anticipate the EU’s commitment to open negotiations with a country in advance, and price that expectation in advance. Event analysis is widely used in finance and indicates the importance of announcements and news in levels of risk.

- **H2** *EU-sanctioned policy change: Markets would react at the negotiation stage.*

Once negotiations are formally opened, a country must “close” 30 negotiation chapters, on topics ranging from agriculture to fisheries to cultural and audiovisual policy. If the largest effect were found here, it might indicate that the process of EU approval of those reforms carried the most importance for investors. The difference between this hypothesis and the first one is that, according to the first hypothesis, markets are better informed and reach convergence more quickly; in this hypothesis, there is still learning that goes on in the negotiation stage as to the country’s progress.

- **H3** *Prior policy change: Markets would react during the application stages.*

If this were true, it would indicate that financial markets were taking note of the work done on the ground by EU members to make themselves compatible with

EU standards. Thus, the policy reform itself would have the strongest effect; EU accession per se would be irrelevant.

- **H4** *Membership benefits: Spreads decrease once countries become members.*

Results in this area would indicate that, even taking account for market anticipation of convergence at the earlier stages, different processes — including the functioning of the common market and transfers from the EU budget — were at work that kept spreads low once countries join the EU.

- **H5** *Currency convergence: Adoption of the euro should decrease risk.*

If markets were exclusively reacting to the possibility of joining the euro and the removal of exchange-rate uncertainty from their risk equation, inclusion of this variable should wash out significance at any of the stages of EU adoption.

For the stronger economies of the EU — particularly Germany, the bedrock of the European Central Bank — we would have different expectations. These fall along two dimensions: efficiency and economic. On the former, with respect to the EU itself, a large body of literature has addressed the changing institutional rules in the EU and their impact on efficiency. Schultz and Konig (2000) examine whether administrative reform in EU institutions has made decisionmaking easier; similarly, Tsebelis and Yata-ganas (2002) predicted that changes in the voting rules, established through the Treaty of Nice, made legislative decisions more difficult to reach. A more explicit focus on the composition of member states new and old is offered in the literature on how ideological distances among negotiating countries influence the shape of deals (Slapin 2006), how the domestic economic structure of members balances weighs into their positions (Garrett 1992), and how admitting members with different voting power changes decisions (Hosli 1993). The outcome of interest is usually EU deals, not necessarily impacts on specific member states once they leave the bargaining table. Nonetheless, we could an-

ticipate that a greater number of players might mean that it is more difficult for German preferences to hold sway. This is a much-discussed in the press: as the BBC noted in June 2004, “It will be less easy for France and Germany, acting together, to dominate the enlarged EU.” Similarly, even before the latest wave of enlargement became official, Germany itself had broken the budget constraints of the Stability and Growth pact, as had Greece; Hungary is now outdoing them all, with government debt at 12 percent of GDP rather than the proscribed 6 percent. Rule enforcement becomes more difficult with more members breaking rules.<sup>14</sup>

Thus, we can lay out the following hypotheses:

- **H6 Efficiency:** More members should increase Germany’s default risk.

More countries at the decisionmaking table should mean less efficiency in reaching consensus. It might be that markets anticipate that more countries will make it harder for German preferences on fiscal discipline. Markets would anticipate this effect by seeing the more countries that are at the for entry into the EU, the more difficult it might be to reach consensus, and the outcome will be farther away from German market-friendly preferences. High levels of government debt, for example, might indicate a government’s spending preferences.

- **H7 Economic:** Accession of weaker or more unstable economies should increase Germany’s default risk.

If poorer or less stable economies joined the European Union, the perceived burden of Germany to provide a bailout might increase. High levels of inflation, exchange-rate instability, or low GDP per capita could indicate a greater amount of risk in the candidate countries.

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<sup>14</sup>Interview, Oct 28, 2005.

Similarly as above, the effects would be different if realized at the negotiation, accession, or membership stage. Since the opening of negotiations typically signals a firm beginning to the process of that country's integration, negotiation might have particularly strong effects. But membership itself provides more information to markets on how those countries act once inside the EU, which would be more relevant to pricing German default risk.

### 3 Data Analysis

This section tests the hypotheses laid out above, starting first with the countries that are acceding to the European Union, and then moving on to Germany. For the former, I use both linear regression and nearest-neighbor matching.

#### 3.1 Candidate countries

I gathered quarterly data from the first quarter of 1980 to the first quarter of 2006 for 37 countries, including the Mediterranean countries that joined the EU in the early 1980s, the Scandinavian countries and Austria that joined in the 1990s, and the post-communist countries, plus Cyprus and Malta, that opened negotiations in the late 1990s. I also included Eastern European countries that could potentially join the EU.<sup>15</sup> To correct for serial correlation, I use Prais-Winsten transformations with semi-robust standard errors, and I include region dummies to allow for different intercepts for different parts of Europe.

In order to evaluate the risk associated with different stages of EU negotiation, we would want to control for in-country uncertainty through the following variables. Controlling for *inflation* takes into account not only the fundamental stability of the economy but also the government's ability to effectively leverage monetary policy. As such, drastic changes in consumer prices indicate uncertainty not only in an economy's present but also in its medium-term future, since policy measures such as currency revaluation may

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<sup>15</sup>Countries included are Albania, Austria, Belarus, Bulgaria, Croatia, Cyprus, the Czech Republic, Estonia, Finland, Greece, Hungary, Latvia, Lithuania, Macedonia, Malta, Moldova, Poland, Portugal, Romania, Russia, Slovakia, Slovenia, Spain, Sweden, and Turkey.

be necessary to keep inflation under control. Additionally, high amounts of hard-currency *reserves* means that a country will be able to service its foreign-currency-denominated debt. A higher level of exports in a country's *current-account balance* indicates that a country is receiving hard currency for its goods, which increases liquidity in that market. A high degree of *exchange-rate* volatility are indicative of speculator activity in that country, and emergency *financing* packages from the IMF are indicative of previous bail-out measures. The EU variables are coded 1 for each country and year when a particular stage is instigated, and then 0 after it is closed. I designate the event window values equal to one in the event window is  $[4, 0]$ , where four quarters is the one-year window in which investors anticipate an announcement of negotiations. This window varies across countries but on average, state visits and press conferences begin occurring around ten or 12 months prior to accession, and the official announcement setting a date for the beginning of talks usually comes some six months prior to that date.

Table One shows the effects of each stage of EU membership for subsamples of the data. I have broken down the results into four groups in an attempt to investigate whether EU candidacy might have had different effects in different times, regions, or types of countries. First is the full sample; second is the Western European countries that joined prior to 1995, and third is the "big bang" of enlargement that occurred in the late 1990s.<sup>16</sup>I also show the effects for countries that have the greatest level of uncertainty associated with their sovereign spreads, which I define as exceeding one standard deviation of the dependent variable for any point in the sample.<sup>17</sup> To make comparisons across variables easier, Table Two shows the expected results of a change in one standard deviation of each of the dependent variables.

#### TABLES ONE AND TWO ABOUT HERE

According to these results, Hypothesis One, which stated that markets anticipated either announcements from the EU (in the form of an event window prior to EU negotiations) or policy reform done in the application stage, can be rejected; the application stage is not associated with statistically significant changes in sovereign spreads for any of the groups of countries. Nor is the event window of one year prior to negotiations; the sign is even wrong. But EU negotiation is associated with drops in risk levels, particularly for the post-communist countries. Hypotheses Two through Four, however, seem to be supported by these tests, with statistical significance across all divisions of the data for

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<sup>16</sup>None of the latter group has yet adopted the euro; thus, I dropped that variable for that group.

<sup>17</sup>Those countries are Albania, Belarus, Bulgaria, Croatia, Moldova, Poland, Romania, Russia, and Turkey; as none of those countries have officially yet adopted the euro, the Euro membership are dropped.

ever stage after negotiation. However, for Western European countries, Euro membership seems to be more important than EU membership per se, indicating that most of the benefits to investors of joining the EU are actually currency convergence. For the full sample, holding all other variables at their means, opening negotiations brings down levels of risk by 1.14 — the equivalent of a move from Poland’s risk level to Portugal’s. Accession and membership see even greater drops; by 1.51 in the former stage and 1.5 in the latter — in country terms, the equivalent of going from Portugal to Austria. The effects shown in Table Two indicate generally accelerating effects for each new stage in EU negotiation.

To be sure that the analysis measures the effect of actually making progress in EU talks, rather than on attributes of each of those countries that might predispose them toward EU talks, I turn to a different method: nearest-neighbor matching (Ho, King, Imai, and Stuart 2004). Matching methods have been proposed to alleviate the problems of model dependency (Ho et al 2005), meaning that the results are less sensitive to model assumptions.

Matching assumes that for any individual observation, there exist two possible outcomes: the outcome under a condition of a dichotomous “treatment” (here, advancing in EU negotiations), and the counterfactual outcome that we would have observed had that individual not undergone that “treatment.” We can express the causal effect of that treatment for the entire set of observations through the following equation:

$$\tau_i = Y_i1 - Y_i0 \tag{1}$$

where the treatment,  $\tau$ , is the difference between potential outcomes (Y) if an individual,  $i$ , is treated (1) or not (0); or, the treatment effect is the difference between potential outcomes  $Y_i1 = Y_i(T_i = 1)$ , and  $Y_i0 = Y_i(T_i = 0)$ .<sup>18</sup> The average treated effect on the treated can be expressed as

$$\theta = E(Y_{i1}|T_i = 1) - E(Y_{i0}|T_i = 0) \tag{2}$$

Here,  $\theta$  is the causal effect averaged over all individuals, which is the difference between  $E(Y_{i1}|T_i = 1)$ , the outcome (sovereign spread) for countries that were assigned the treatment (advancing in EU accession), given that they were assigned; and  $E(Y_{i0}|T_i = 1)$ , the outcome under the control case, that is, if those countries had not been assigned

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<sup>18</sup>Notation comes from King and Zeng 2005, Ho et all 2005.



treatment. This case in reality is not observed, but is simulated. Thus, the average treatment on the treated shows the additional effect of being treated, even if they have characteristics that would seem to make them more likely to be treated in the first place.

Table Three shows the results of the average treatment effect on the treated, after preprocessing using nearest-neighbor matching, which finds the best match in a given sample, conditioning on the same covariates as in the regression models. As before, I break the groups into different subsamples, thus narrowing the pool of possible potential matches for each observation.

### TABLE THREE ABOUT HERE

Some notable differences emerge as a result of using the two techniques. For Western European countries, as with the linear regressions, statistically significant drops in risk are associated with nearly every step along the road toward full EU membership. However, for candidate countries, as well as for the high-uncertainty countries, huge hits in risk occur in the event windows prior to negotiation, and negotiation itself also carries statistically significant drops in risk. This is perhaps indicative that it is poorer, less stable countries to effectively signal to markets their ability to reform, without the sanctioning of the EU negotiation process. Hence, once formal negotiations are anticipated, those countries see substantial drops in risk.

## 3.2 Germany

I return now to estimating the effects of expansion on Germany's economy. To test the hypotheses I laid out above, I assemble quarterly data on Germany's treasury bill yields, from the first quarter of 1970 to the fourth quarter of 2005.<sup>19</sup> To control for serial correlation in time-series data, I use an ARIMA model with autoregressive and moving average terms, such that forecasts are a linear function of past observations and nonlinear functions of the coefficients, and preceding estimation errors are taken into account when estimating subsequent values.<sup>20</sup> To enable linear estimation and in keeping with standard techniques in finance, I take the natural log the dependent variable; predicted values and substantive interpretations are translated back into original units.

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<sup>19</sup>These range from 11.77 (in the third quarter of 1981) to 1.82 (in the second quarter of 2002), with a mean of 5 and a standard deviation of 2.17.

<sup>20</sup>I assume an AR1 process and MA 1 and 4, as is common for quarterly data.

In an attempt to balance both accuracy and parsimony, I include controls standard to models of bond yields, including overall output (measured in euros); inflation of consumer prices; the trade-weighted real exchange rate, adjusted to consumer prices; and total government debt. These are taken from the vast literature on finance that includes an equally vast number of explanatory variables; these are widely agreed to be the most robust predictors.<sup>21</sup> To ensure that the EU accession variables are not picking up on preexisting economic activity between Germany and the rest of the EU, I also control for lending to the countries in the EU 25. I control for exogenous and endogenous shocks by constructing a dummy variable with values of 1 for the quarters around the ERM crisis and central bank intervention of 1992 and the global debt crisis of the early 1980s, and 0 otherwise.

I evaluate changes in the nature of the European Union in several ways. First, I create four variables that count the number of countries with whom the EU has formally opened membership negotiations; the number of countries that are in the process of accession to the EU; and the number of full EU members; the number of countries that in a given quarter. The EU variables themselves are straightforward; membership ranges from 6 to 25, and negotiation and accession from 0 to 12.<sup>22</sup> For the euro variable, those numbers are also dependent on the progress of the euro project itself. I define the cutpoints as the first quarter of 1979, when the Economic and Monetary System and the Exchange Rate Mechanism were established, with six countries; the first quarter of 1992, when the Maastricht treaty establishing convergence criteria was signed by ten countries; the first quarter of 1999, which witnessed the formal transition of the ERM to the euro, with eleven countries; and the first quarter of 1992, when euro notes and coins were formally introduced in twelve countries.<sup>23</sup> The results of this basic specification are in Table Four.<sup>24</sup>

#### TABLE FOUR ABOUT HERE

Of the domestic economic variables, inflation and government debt are the two big per-

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<sup>21</sup>See Min 2001, Edwards 1998.

<sup>22</sup>Once countries are in the process of ratifying the accession treaty, they are not counted as negotiators; similarly, once they become members, they are not counted as being in the accession stage. Thus, particularly the accession variable has a rather large number of zeros, since countries usually ratify the accession treaty within a year or two.

<sup>23</sup>Arguably, other cut points could be included into the measure, but it is hard to see how their omission would bias the results.

<sup>24</sup>Here I have used a linear model, although EU expansion has not been a linear process; it has proceeded in various stages. A nonparametric model might provide additional insight.

formers. Higher levels of inflation are associated with increases in German debt yields that are statistically significant, at the .005 level. Higher levels of government debt coincide with similarly significant decreases in treasury yields; this is perhaps a reflection of greater demand for treasuries.<sup>25</sup>

Turning to more international variables, as expected, the more countries that are negotiating or actually inside the European Union, the greater Germany's risk levels. These affects are statistically significant at the .001 level for the stages of initial negotiation and of membership. The number of members at the accession stage is not statistically significant at the conventional levels. This is consistent with research on the impacts for EU accessor countries, as well; the biggest bite for accessors comes at the stage of negotiation. One might expect, too, that different processes may be at work when it comes to Germany; investors may build into their pricing Germany's credible commitment of admission to the union at the time of negotiation, but membership brings different strains to stronger economies that are factored into debt pricing.<sup>26</sup>

For a substantive interpretation of these results, consider the effect of varying the numbers of negotiators and members. Holding all other variables at their means, moving from one to two negotiators (as occurred from 1976 to 1979, when first Greece, then Portugal, then Spain) increases treasury yields by .06 (from 1.03 to 1.09). Moving from six to 12 negotiators (as occurred during the "big bang" in 1999, when many of the postcommunist countries were brought onto the negotiating table), predicted treasury yields move from 1.2 to 1.43. Under the same procedure, moving from nine to 12 EU members, as occurred with the membership of Greece, Portugal, and Spain in the mid-1980s, makes for a predicted increase in yields of .20; moving from 15 to 25, with the accession of the post-communist countries, Cyprus and Malta, has a predicted increase in yields of 1.02. The last is a particularly sizeable jump; by contrast, yields increased at the advent of the ERM crisis in 1992 by 3.16.

To enable comparisons across the different units in which the independent variables are measured, Table Five shows the effect on treasuries for of a change in one standard deviation for each of the variables. These indicate that, save for inflation, the numbers of countries negotiating or inside the European Union do have substantively significant

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<sup>25</sup>It should be noted that debt often works differently in predicting the yields of developing countries; where in OECD countries, high levels of debt mean high demand and thus lower yields, in developing countries debt is often a sign of a government's inability to raise revenues domestically, and often is associated with higher yields.

<sup>26</sup>I am developing this idea in a second paper.

effects, second only to inflation.

#### TABLE FIVE ABOUT HERE

But what aspects of these acceding countries reflect poorly on Germany? Turning back to the hypotheses I laid out in Section Two, I measure the effects of different characteristics of the EU hopefuls along six dimensions. I include these in two separate classes of models. The first, shown in Table Six, gives average values on each dimension of countries in each stage of accession for a given year. The second, in Table Seven, is the sum of each dimension for all countries. For example, in 1994, when three countries (Austria, Finland, and Sweden) were negotiating for EU admission, their average inflation was 3.66, and the sum was 11.54. Theoretically, we would expect both to have an impact on German treasury bills, but the summed amount takes into account the number of countries at any given stage of accession — which I have already shown to be significant.

#### TABLES SIX AND SEVEN ABOUT HERE

No dimension measured here seems to be consistently doing all the work in these regressions, with most of the coefficients not achieving conventional levels of statistical significance. In terms of the characteristics measured here, are averages more important than the overall numbers? Note that the summed dimensions shown in Table Four only find statistical significance below .05 levels for inflation among accessors and ERM members, as well as for interest rates in EU members and in ERM participants. None of the summed dimensions for negotiators are significant here. For the averages in Table Five, higher levels of GDP per capita both in negotiators and in members seems to be associated with increases in risk, a puzzling result. What is striking in these tables is that economic dimensions do not seem to capture what was going on in our first set of results; there is some significance of EU expansion that goes beyond what is being measured here.

If anything, the significance of the raw numbers of countries along the road of accession compared with the relative insignificance of particular economic aspects of those countries might indicate a few things. First and most obvious is omitted variable bias: there might be other aspects of those countries to which investors are reacting, such as their political stability or their institutional quality.<sup>27</sup> It is also possible that the rise

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<sup>27</sup>Other tests I have performed suggest that institutional quality, as measured by Knack and Keefer's World Bank 2005 dataset, is paramount in investor evaluations of regional trade agreements; unfortunately, these data only exist beginning in the mid-1990s and could not be employed here.

in yields associated with enlargement has less to do with the attributes of individual members, and more to do with changing institutional dynamics in an enlarged EU. With a greater number of members from which to wrangle consensus, German preferences — typically preferences that investors like — might have a harder time holding sway.<sup>28</sup>

Recall the literature in political science on how new members, or members with differing preferences, hampers efficiency in EU institutions. This is in concert with the vast literature on political constraints and veto players, which argues that an increased number of bodies with different preferences at the decisionmaking table will make policy change more difficult (Tsebelis 2002, Henisz 2004). This theory has been used to predict no shortage of outcomes, including infrastructure deployment (Henisz and Zellner 2006), attraction of foreign direct investment (Roberts 2005), and monetary policy (Keefer and Stasavage 2003). However, this literature would predict that enlargement would produce an *overall* decrease in efficiency, which ought to resonate across all members. There is nothing to explain the different effects for acceding members — who, as illustrated in Figure Two, all experienced sharp decreases in default risk — and for Germany, where accession was associated with an increase in default risk.<sup>29</sup> Testing for ideological differences among new member states would be feasible for the more recent rounds of admittees, but most ideology data does not extend back much farther than the 1990s.

The implication of the veto players literature, though, is that more actors with greater variance in their policy positions means that policies become more difficult to change. The policy positions that might be of particular concern to investors, however, would likely be economic. In the run-up to admission, new entrants are at least in theory supposed to sign on to a single monetary policy. Past adherence to these policies would already be reflected in the economic dimensions that I have measured above.

We can, at least, eliminate certain variables from further consideration; new entrants' levels of government debt and exchange rate stability seem to have no impact on Germany. The dimensions that have the highest levels statistical significance across the most models are inflation and interest rates. Holding all other variables at their means, increasing summed inflation by one standard deviation for accessors and ERM entrants increases German treasury bill yields by 1.99 and .99, respectively; the same procedure for summed interest rates for members and ERM members increases yields by 3.77 and

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<sup>28</sup>That depends on where power comes from in EU negotiations, as discussed in Slapin 2006.

<sup>29</sup>Veto players theory might, however, explain the decrease in volatility experienced by new members, also shown in Figure Two, which may be a function of policy stability.

.10, respectively. More than any other variables tested here, these two represent past instability and past risk; thus, it could be that greater levels of uncertainty associated with new entrants brings up uncertainty about Germany as well.

## 4 Conclusion

The effects for candidate countries differ depending on the method of analysis and the subsample of countries discussed. The results of the matching procedure indicate that countries with a greater need to signal to markets — that is, poorer or more unstable countries — benefit the most from the official announcement that negotiations will be opened. Those countries are in most need of the EU commitment to eventual membership; once that is in the cards, drops in risk continue but are not comparable. This shows, perhaps, the inadequacy of EU proposals to establish closer ties short of membership to countries such as Ukraine; the perceived benefits do not come close to actual membership.

Turning to Germany, it is not surprising that an expanding European Union makes that country's debt payments look less certain. What is somewhat surprising is the magnitude of the effect when compared with other domestic economic indicators. But is expansion really that destabilizing to Germany? Whether these changes in treasury bill yield actually do enlargement as well as the German economy justice is a matter not addressed here, and ends up being in no small part a function of whether one believes markets to be efficient.<sup>30</sup> Additionally, much has been made in the recent drop in demand for more stable government paper, which can itself push up yields; in fact, German bond yields are currently lower than United States treasuries.<sup>31</sup>

In terms of policy implications, this ought not necessarily fuel Euroskepticism. Increases in yields, taken at face value, are difficult to interpret, since different types of investors might chase higher or lower yields at different times. Higher yields also indicate a more dynamic market — and dynamism has been in short supply in Western Europe.

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<sup>30</sup>This is part of a larger debate in finance. Those who believe in market efficiency think that over- or undervaluation of share prices is offset by arbitrage on the part of sophisticated investors. But believers in behavioral finance doubt that smarter investors are often unable or unwilling to correct sentiment traders, especially when there are constraints to arbitrage.

<sup>31</sup>“Foreign Investors Lose Appetite for U.S. Treasuries as Deficit Rises,” Bloomberg, 15 November 2005.

The way to read these results is less as an indictment on the dangers of enlargement, and more as an investigation of how we might measure how international confederations, and changes in the member composition, might impact members. As such, avenues of future research would entail examining other changes in the EU as an institution, including shifts in the perception of rule enforcement (as evidenced by the now-obvious toothlessness of the Stability and Growth) or of the potential rules itself (as in the repeated trashing of the EU constitution), although a mechanism that links those changes with investor risk would have to be articulated. As mentioned above, future work should examine other, non-economic dimensions of members, such as political stability or institutional quality, that would impact Germany's status as an investment. But this is a first step in empirically detailing at least one consequence of a changing European Union.

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Table 1: **Effects of EU Candidacy on Accession Countries**

	Full	Western Europe	Post- communist	High uncertainty
Constant	.522 (1.40)	1.58 (.63)	.23 (4.67)	3.63 (.55)
Inflation	.09*** (.02)	.08 (.05)	.08 (.07)	.66 (.61)
Financing	-.01 (.03)	.01 (.01)	-.03 (.02)	.21*** (.019)
Reserves	.01*** (.004)	.02*** (.003)	.03*** (.004)	-.02*** (.005)
Exchange Rate	-.08 (4.69)	1.62 (.81)	.09 (.07)	.11 (.08)
Current Account	-.81*** (.32)	.376*** (.09)	-.37* (.15)	.582*** (.11)
EU apply	-.62 (.31)	-.14 (.06)	-0.16 (.09)	2.39 (1.58)
EU negotiate Event	.02 (.07)	.01 (.08)	.01 (.10)	-.887 (1.72)
EU Negotiate	-.41 (.14)	-.31*** (.13)	-.39*** (.17)	-1.52*** (.73)
EU Accession	-.85** (.46)	-.29*** (.14)	-.49*** (.20)	-1.87*** (.59)
EU Membership	-1.09*** (.49)	-.28 (.14)	-.57*** (.19)	-1.32** (.61)
Euro membership	-1.04*** (.18)	-1.01*** (.28)	-	-
R squared	.49	.56	.49	.21

\*Dependent variable is sovereign spreads against on German treasury bills, quarterly from 1980 to 2006. Prais-Winsten transformations with semi-robust standard errors in parentheses. Fixed effects for region. \*\*\* p<.001, \*\* p< .05, \* p< .10.

Table 2: Predicted Effects of a One-SD change in Independent Variables

	Full	Western Europe	Postcommunist Countries	High-Uncertainty Countries
Inflation	0.79	.96	0.74	0.78
Financing	1.0	1.0	0.97	0.99
Reserves	9.96	4.39	5.21	9.95
Exchange Rate	.14	.27	.30	0.13
Current Account	1.01	1.01	1.03	1.01
EU apply	1.1	.98	0.98	1.10
EU negotiate event	.97	1.5	1.26	0.97
EU negotiate	1.26	.84	1.14	1.25
EU accession	1.29	1.51	1.51	1.28
EU membership	1.33	1.5	1.5	1.32
Euro membership	1.45	1.85	-	-

\*\*\*\* p<.001, \*\* p< .05.

Table 3: Results of Matching

	Full	Western Europe	Postcommunist Countries	High-Uncertainty Countries
EU apply	-.59*** (.06)	-.66 (.09)	-6.17** (2.57)	3.73** (1.15)
EU negotiation event	-2.49*** (.76)	-.59*** (.06)	-10.76*** (5.78)	-40.68*** (18.51)
EU negotiation	-.19 (.12)	-.53*** (.15)	-1.34*** (.50)	-5.01*** (2.16)
EU accession	-1.34 (.74)	-.53*** (.15)	-2.01 (1.37)	-5.77 (13.82)
EU membership	-.99*** (.17)	-1.28*** (.22)	-.26 (1.08)	-.38 (1.01)
Euro	-1.29*** (.32)	-1.45*** (.23)	-	-

\*\*\*\* p<.001, \*\* p< .05.

Table 4: **Expansion's effects on Germany**

Constant	2.552***	2.52***
	(.723)	(.71)
Output	3.23	-3.91
	(2.64)	(2.94)
Inflation	1.102**	1.185***
	(.359)	(.342)
Real exchange rate	-.0048	-.006
	(.0048)	(.0047)
Government Debt	-.12**	-.13**
	(.04)	(.04)
Shocks	.29	.23
	(.09)	(.10)
Lending to EU 25		-5.73**
		(1.90)
Number of ERM countries	-	-.007
		(.007)
Number negotiating	-	.03***
		(.006)
Number acceding	-	.0043
		(.003)
Number of members	-	.043***
		(.009)
AR	.935	.954
	(.026)	(.02)
MA L1	.41	.495
	(.078)	(.091)
MA L4	.139	.135
	(.10)	(.097)
$\sigma$	.081	.07
	(.0054)	(.0051)

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\*Dependent variable is the natural log of yields on German treasury bills, quarterly from 1972 to 2005. ARIMA regressions with robust standard errors in parentheses. \*\*\* p<.001, \*\* p< .05, \*p< .10. N=139.

Table 5: **Effects of one standard deviation change of IVs**

Output	-0.86
Inflation	1.11***
Real exchange rate	-0.97
Government Debt	-0.71**
Shocks	0.36
Lending to EU 25	-0.99
Number of ERM countries	-0.02
Number negotiating	1.09***
Number acceding	1.03
Number of members	1.07***
Number of ERM entrants	0.98

\*\*\*\* p<.001, \*\* p< .05.

Table 6: Models with Averages for New Entrants on Six Dimensions

	<b>Debt</b>	<b>GDPpc</b>	<b>Inflation</b>	<b>Growth</b>	<b>Interest</b>	<b>REER</b>
Constant	1.897*** (.839)	2.15*** (.75)	2.216*** (.769)	2.55*** (.710)	2.85*** (.68)	2.42*** (.78)
Output	-1.08 (2.57)	-.618 (2.55)	1.17 (2.88)	.940 (2.61)	2.56 (2.16)	1.99 (2.44)
Inflation	1.06** (.368)	1.195** (.375)	1.115*** (.372)	1.157*** (.39)	1.32*** (.327)	
Government	-.11** (-.0519)	-.11* (.47)	-.12** (.462)	-.13*** (.466)	-.15*** (.462)	-.12** (.42)
Debt						
Real Exchange	-.005 (.004)	-.0045 (.0047)	-.005 (.0044)	-.004 (.004)	-.003 (.0042)	-.004 (.003)
Rate						
Shocks	.23 (.09)	.27 (.11)	.21 (.11)	.19 (.09)	.21 (.12)	.21 (.12)
Lending	-.291 (.208)	-.569 (.269)	-.226** (.130)	-.489** (.258)	-.247 (.220)	-.29 (.234)
to EU 25						
Negotiator	.001 (.001)	.0004** (.0002)	-.003 (.002)	-.001 (.004)	-.00008 (.001)	-.003 (.004)
average						
Accessor	-.0005 (.001)	.0003 (.0003)	.003 (.0018)	.001 (.004)	.002 (.003)	-.004 (.003)
average						
Member	.034 (.024)	.0008** (.0004)	.03 (.017)	-.042 (.017)	.099 (.04)	-.007 (.005)
average						
ERM	-.0001 (.002)	.0003 (.0003)	.009* (.005)	.035** (.01)	.006 (.002)	-.006 (.004)
average						
AR	.934 (.027)	.927 (.028)	.932 (.029)	.927 (.03)	.89 (.05)	.91 (.06)
MA L1	.412 (.083)	.4448 (.0890)	.38 (.084)	.429 (.09)	.416 (.082)	.43 (.09)
MA L4	.1601 (.091)	.196 (.102)	.155 (.108)	.15 (.14)	.13 (.11)	.14 (.07)
$\sigma$	.080 (.005)	.0788 (.005)	.078 (.005)	.078 (.005)	.077 (.005)	.078 (.005)

\*Dependent variable is the natural log of yields on German treasury bills, quarterly from 1972 to 2005. ARIMA regressions with robust standard errors in parentheses. \*\*\* p<.001, \*\* p<.05, \* p<.10. N=139.

Table 7: Models with Sums for New Entrants on Six Dimensions

	<b>Debt</b>	<b>GDPpc</b>	<b>Inflation</b>	<b>Growth</b>	<b>Interest</b>	<b>REER</b>
Constant	2.51*** (.697)	2.48*** (.72)	2.14*** (.77)	2.62*** (.75)	1.79** (.73)	2.12*** (.79)
Output	-1.03 (2.66)	-1.31 (2.47)	3.02 (2.71)	-2.01 (2.74)	-1.19 (2.24)	-1.98 (2.12)
Inflation	1.11*** (.36)	1.17*** (.36)	1.12*** (.38)	1.15*** (.36)	1.24*** (.34)	1.19*** (.36)
Government	-1.12*** (.51)	-1.20*** (.47)	-1.18*** (.46)	-1.20*** (.47)	-1.19** (.48)	-1.21*** (.51)
Debt						
Real exchange rate	-.0043 (.0046)	-.004 (.004)	-.004 (.005)	-.005 (.005)	-.001 (.004)	-.003 (.004)
Lending to EU 25	-.44 (.21)	-.50 (.26)	-.30 (.23)	-.49 (.28)	-.47 (.19)	-.43 (.21)
Negotiator sum	.05* (.027)	.008 (.005)	-.06 (.06)	.03 (.05)	.05 (.06)	.04 (.03)
Accessor sum	-.03 (.03)	.004 (.0093)	.21** (.08)	.004 (.009)	-.046 (.07)	.03 (.02)
Member sum	.02 (.04)	.001* (.0007)	.002 (.14)	.001* (.0007)	.042** (.017)	.04 (.022)
ERM sum	-.044 (.06)	.03 (.02)	.023*** (.008)	.001 (.001)	.01** (.004)	.02 (.01)
AR	.938 (.02)	.93 (.02)	.933 (.02)	.938 (.02)	.91 (.03)	.92 (.03)
MA L1	.417 (.09)	.41 (.08)	.409 (.09)	.416 (.07)	.44 (.10)	.42 (.10)
MA L4	.153 (.08)	.14 (.11)	.141 (.108)	.161 (.10)	.122 (.097)	.123 (.10)
$\sigma$	.079 (.0053)	.08 (.005)	.08 (.005)	.0792 (.005)	.078 (.005)	.08 (.006)

\*Dependent variable is the natural log of yields on German treasury bills, quarterly from 1972 to 2005. ARIMA regressions with robust standard errors in parentheses. \*\*\* p<.001, \*\* p<.05, \* p<.10. N=139.