THE WILLIAM DAVIDSON INSTITUTE
AT THE UNIVERSITY OF MICHIGAN BUSINESS SCHOOL

DEMOCRACY'S SPREAD:
Elections and Sovereign Debt in Developing Countries

By: Steven A. Block, Burkhard N. Schrage, and Paul M. Vaaler

DEMOCRACY'S SPREAD:
Elections and Sovereign Debt in Developing Countries*

Working Paper

Revised: May 2003

Steven A. Block

Burkhard N. Schrage

Paul M. Vaaler

Abstract

We use partisan and opportunistic political business cycle ("PBC") considerations to develop and test a framework for explaining election-period changes in credit spreads for developing country sovereign bonds. Pre-election bond spread trends are significantly linked both to the partisan orientation of incumbents facing election and to expectations of incumbent victory. Bond spreads for right-wing (left-wing) incumbents increase (decrease) as the likelihood of left-wing (right-wing) challenger victory increases. For right-wing incumbent partisan and opportunistic PBC effects bondholder risk perceptions are mutually reinforcing. For left-wing incumbents partisan PBC effects dominate bondholder risk perceptions compared to opportunistic PBC effects.

Keywords: economics; elections; developing countries; sovereign bonds; spreads;
JEL codes: D72, F30, F34, G12, G14, G15, G29

*Please contact Paul M. Vaaler regarding this paper. Paul M. Vaaler, Assoc. Professor, Fletcher School of Law & Diplomacy, Tufts University, Medford, MA 02155. tel: 617-617-2243; fax: 617-627-3712; Email: paul.vaaler@tufts.edu. Steven Block, Assoc. Professor, Fletcher School of Law & Diplomacy, Tufts University, Medford, MA 02155. tel: 617-617-2717; fax: 617-627-3005; Email: steven.block@tufts.edu. Burkhard Schrage, Instituto Superior Técnico, Av. Rovisco Pais, 1049-001 Lisbon, Portugal; tel: 351 (21) 841-9404; fax: 849-6156; Email: bschrage@web.de.

1

DEMOCRACY'S SPREAD:
Elections and Sovereign Debt in Developing Countries

Non-Technical Summary

This empirical study investigates the impact of developing country electoral politics on private, often foreign-based financial actors making decisions about risks associated with developing country lending and investment. It is a companion piece to another recent William Davidson Institute working paper entitled: "Democratization's Risk Premium: Partisan and Opportunistic Political Business Cycle Effects on Sovereign Ratings in Developing Countries" (WDI Working Paper #456).

Since the 1970s, political business cycle ("PBC") theory has been debated among academic researchers largely in the context of industrialized democracies and almost exclusively in the context of interactions among domestic political stakeholders, such as between elected incumbents and voters. Early, so-called "opportunistic" PBC models posited opportunistic politicians using expansionary fiscal, monetary and related policies during elections to boost their chances of retaining office, even if such policies have detrimental economic consequences in the post-election period. Later, so-called "partisan" PBC models also assumed that candidates championed economic policies for electoral purposes; however, their policies differed markedly with right-wing candidates characteristically emphasizing lower inflation, and left-wing candidates preferring lower unemployment. Empirical researchers using PBC models have generally chosen either the opportunistic or the partisan branches, even though both may be relevant to explaining the behavior of individuals, firms and governments during election periods.

This study differs in many ways from this previous stream of research. First, we focus on the impact of PBC-related factors on private, foreign based financial actors rather than on domestic elected officials and voters. Second, we focus on developing countries where PBC-related factors are less studied rather than on industrialized countries. Finally, we examine the PBC-related behaviors of private, foreign-based financial actors using both opportunistic and partisan PBC model assumptions, rather than choose one or the branch of models. In "Democratization's Premium," we examined these PBC behaviors in the context of major credit rating agencies and their election-period assessments of sovereign risk in developing countries. In this study, we examine such PBC behaviors in the context of individual and institutional investors holding developing country sovereign bonds ("bondholders").

Sovereign bonds and bondholders are playing an increasingly important role in developing country finance, investment and economic growth. The origins of the developing country sovereign bond market were in the debt crisis of the early 1980s. So-called "Brady bonds" arose to securitize that debt, to create secondary markets for it, and to lower the overall cost of borrowing to sovereigns and sub-sovereign individuals by reducing investor liquidity (though not basic default) risks. In addition to Brady bonds, developing country sovereign and sub-sovereign individuals in the 1990s issued new debt securities, primarily on European markets, often with face amounts in $ billions. By 2000, annual trading volume in Brady and non-Brady Eurobonds issued by developing country sovereigns and sub-sovereigns topped $1.6 trillion or approximately $4.3 billion in daily trades. Broker-dealers, investment banks, governments, insurance companies, pension, hedge and mutual funds, and wealthy individuals comprise this trading secondary market of bondholders linked electronically and capable of quickly connecting buyers and sellers, executing and clearing their trades in "round lots" of at least $2 million.

Our study proposes that private, often foreign-based financial actors including these bondholders, care about PBC-related considerations, and "vote" on the sovereign creditworthiness of developing countries during election periods based on such considerations. To the extent that an incumbent's pre-election spending sprees or the likely electoral victor's partisan economic policy choices are perceived by agencies to undermine sovereign financial commitments, election-period assessments of creditworthiness

could become markedly less favorable. For bondholders, a less favorable assessment of a developing country's sovereign creditworthiness means an increase in the yields they will require to hold that same developing country's sovereign bonds. As developing country sovereign creditworthiness decreases, the "spread" between yields on its sovereign bonds compared to US Treasury bonds of comparable maturity will increase. We measure this spread in relative terms : $(Yield_{Foreign} - Yield_{U.S.})/Yield_{U.S.}$. Increasing spreads indicate decreasing sovereign creditworthiness from a bondholder perspective; decreasing spreads indicate increasing sovereign creditworthiness.

We develop a conceptual framework for understanding how bondholder decisions about sovereign creditworthiness may be shaped by partisan and opportunistic PBC considerations. We then derive and test several hypotheses from the framework, which is illustrated below:

Predicted Directions of Pre-Election Changes in Relative Bond Spreads Based on Partisan and Opportunistic PBC Considerations

Incumbent Partisan Orientation $\rightarrow$ Bondholder Electoral Expectation $\downarrow$	r (Right-Wing)	l (Left-Wing)
$\lambda \cong 1$ (Right-Wing Expected to Win)	(0,0) Right-Wing Base Case	(-,+) Compared to Left-Wing Base Case
$0 < \lambda < 1$ (Mixed Expectations)	(+,+) Compared to Right-Wing Base Case	(-,+) Compared to Left-Wing Base Case
$\lambda \cong 0$ (Left-Wing Expected to Win)	(+,+) Compared to Right-Wing Base Case	(0,0) Left-Wing Base Case

Predicted direction of change in spread based PBC considerations: (Partisan, Opportunistic)

Think of an investor holding a sovereign bond from a developing country in the final stages of a presidential election campaign pitting right-wing versus left-wing candidates. Given the partisan orientation of the incumbent facing election (right-wing or left-wing), and given the expectations of his/her re-election on that day prior to the final poll, we can predict the direction of any change in spreads the bondholder might demand using opportunistic and partisan PBC considerations. We assume that right-wing incumbent policy preferences favor creditor interests (and thus induce better bondholder assessments of sovereign credit risk).

Against this backdrop we have two "base case" scenarios. In the right-wing base case, a right-wing incumbent faces re-election and is expected to win. In that case, there is likely to be no change in trends sovereign bond spreads already exhibit over time (0,0): From a partisan PBC perspective, current right-wing policies favorable to creditors are likely to continue after the election; from an opportunistic PBC perspective, the expectation of right-wing electoral victory puts little pressure on the incumbent to engage in pre-election spending sprees meant to buy votes, again assuaging the credit concerns of bondholders. The left-wing base involves a similar logic (0,0): If a left-wing incumbent is expected to win easily, both partisan and opportunistic considerations indicate no change in trends for bond spreads.

Interestingly, though, the predicted pre-election trend in bond spreads differs from these base cases for countries with right- and left-wing incumbents once electoral expectations become mixed or it becomes clear that the challenger to the incumbent is likely to win. For instance, with a right-wing incumbent, uncertainty regarding the eventual electoral outcome –what we call "mixed expectations"— or likely ouster by a left-wing candidate acts like a double negative increasing pre-election spreads relative to the right-wing base case (+,+): From a partisan PBC perspective, the prospect of possible or likely partisan shift unfavorable to creditors will prompt an increase in pre-election spreads; from an opportunistic PBC perspective the possibility (mixed expectations) or expectation of left-wing victory is likely to prompt the right-wing incumbent to engage in a spending spree meant to buy votes and stave off electoral defeat, a prospect that also increases pre-election spreads. With left-wing incumbents, the predicted effects of partisan and opportunistic PBC considerations is not mutually reinforcing as in right-wing incumbent cases, but mutually counteracting. When expectations of left-wing incumbent victory are unclear (mixed expectations) or if ouster by a right-wing challenger is likely then the PBC effects on pre-election bond spreads are both negative and positive (-,+): From a partisan PBC perspective, the possibility or great likelihood of a partisan switch to creditor-friendly right-wing policies will negatively affect spreads; from an opportunistic PBC perspective, however, the possibility or great likelihood of losing out to the right-wing challenger will prompt the left-wing incumbent to engage in a spending spree to buy votes, a prospect that will positively affect spreads.

To test these predictions drawn from partisan and opportunistic PBC models, we collected data spreads observed in the last 90 days prior to 19 presidential elections occurring in 12 developing countries between 1994 and 2000. We analyzed these data in a robust general estimation equation that also included a range of control variables found in previous research to explain pre-election trends in spreads. Our analyses revealed substantial evidence consistent with our framework for right-wing incumbents. We found significant positive effects on sovereign bond spreads compared to the right-wing base case when right-wing incumbents faced left-wing challengers likely to defeat them, or at least, likely to make it a "close call" for the right-wing incumbent on election day. Interestingly, we found the same hierarchy in bond spreads for developing country elections with left-wing incumbents. As the likelihood of left-wing incumbent re-election fell from likely to a "close call" to unlikely, bond spreads also fell. We take this as indication that partisan PBC considerations dominate over opportunistic concerns for bondholders observing developing country elections with left-wing incumbents.

These results and others suggest to us that agencies behave consistently with partisan and opportunistic PBC considerations, and, in certain instances exact a risk "surcharge" on the cost of developing country sovereign debt based on these considerations. The changes in bond spreads we observed may, at first glance, seem small. For example, the Polish presidential elections on October 8, 2000 saw the left-wing government of Aleksander Kwasniewski being re-elected to office by a large margin. Our analyses predict an increase in spreads on Polish sovereign bonds of roughly 38 basis points (.38%) over the last 90 days prior to election. The actual increase in the yield on the Polish series FRB sovereign bond used in our sample in the 90-day pre-election period was 30 basis points. With Polish outstanding foreign debt of approximately $63 billion at the end of 2000, the implied increase in the cost of funding such debt (30 basis points) is approximately $189 million annually. Small differences in the likelihood of re-election as well as differences in the partisan preferences of the incumbent may, indeed, have substantial real effects on the cost of capital for investment and economic growth.

We think our findings have substantial practical management and public policy implications as well as implications for academic researchers. First, PBC considerations and analytical models may have a substantial power in explaining the risk perceptions of bondholders and, perhaps, other individuals (*e.g.*, banks, multinational corporations, donor government agencies) involved in international capital pricing and allocation to the developing world. Second, future research using PBC models should seek to integrate partisan and opportunistic factors rather than treat one or the other in isolation. Third,

developing country governments and political parties more generally might benefit from more active engagement and dialog with agencies that otherwise show a tendency to penalize or reward countries with different ratings based on a rather simple set of PBC considerations.

Such related issues are relevant, not only to the PBC literature as it is increasingly extended to developing countries, but also to broader issues of the relationship between democracy and growth. While in the long run democracy undoubtedly is a good in itself, its long-term benefit may be offset by the short- to medium-term perception that competitive elections induce costly economic misbehavior of both partisan and opportunistic sorts. To the extent that this perception increases the cost and reduces the supply of capital to developing countries, it imposes a spread surcharge on democracy that is still nonetheless worth paying.

1. Introduction

RECOMMENDATION: WE CONTINUE TO RECOMMEND CLIENTS REDUCE EXPOSURE AHEAD OF THE ELECTION…The steady decline in Brazilian bond prices turned into panic selling last week. The sovereign spread (or risk premium) on Brazilian USD debt gapped out from 1250 basis points (bp) on Monday (June 17) to 1700 bp by the close on Friday (June 21). Brazilian spreads are now wider than during the country's currency crisis in January 1999…Bond investors are clearly worried about the outcome of the presidential elections in October. Worker's Party (PT) candidate Lula continues to lead in opinion pools…The widespread perception among market participants seems to be that a Lula presidency would put Brazil on a path towards defaulting on its external debt.

Excerpt from Credit Suisse Private Banking Newsletter to Investors, June 26, 2002 (CSPB, 2002)

It is readily apparent from casual observation of the international investment community that political uncertainty matters to those who hold and trade developing country sovereign debt. The above excerpted admonition from Credit Suisse to its investors regarding the anticipated dangers of Brazilian debt as the election of Luiz Ignacio Lula da Silva ("Lula") appeared increasingly likely highlights the centrality of elections in generating political uncertainty. Similarly, the Goldman Sachs investment bank created a "Lulameter" as the Brazilian election approached, intended to measure the impact of his anticipated election on currency markets (Goldman, Sachs, 2002).[1] It is curious, then, that academic research has devoted little effort to formalizing, either conceptually or empirically, the effect of elections and or likely election outcomes on the price of sovereign debt in developing countries such as Brazil. This study attempts to fill that gap by developing an analytical framework grounded in established political business cycle (PBC) theory, but applied to the behavior of a group of non-voting, often foreign based financial actors, institutional and individual investors holding developing country sovereign bonds ("bondholders").

Since the seminal papers of Nordhaus (1975), Lindbeck (1976) and Tufte (1978), PBC theory has been debated largely in the context of industrialized democracies and almost exclusively in the context of interactions among domestic political stakeholders, such as between elected incumbents and voters. These original models, as well as more recent models developed by Rogoff and Siebert (1988) and Rogoff (1990) posited opportunistic politicians using expansionary fiscal, monetary and related policies

---

[1] See Martinez and Santiso (2003) for a thorough case study of the reaction of financial markets to the Brazilian presidential election of October, 2002.

during elections to boost their chances of retaining office, even if such policies have detrimental economic consequences in the post-election period. PBC models developed by Hibbs (1977, 1987), Alesina (1987; 1988), Alesina *et al.* (1997) and Drazen (2000) also suggest that candidates champion economic policies for electoral purposes; however, their policies differ markedly with right-wing candidates characteristically emphasizing lower inflation, and left-wing candidates preferring lower unemployment.

While a substantial stream of empirical studies from the US and other industrialized democracies has yielded a mixed bag of supporting and contrary results regarding both these opportunistic and partisan PBC behaviors, recent reviews of PBC research in Drazen (2000), Imbeau *et al.* (2001), Franzese (2002) and others (*e.g.*, Block and Vaaler, 2004) indicate that there has been much less empirical testing to date in developing country settings. Research in these settings has been based largely on the opportunistic rather than partisan PBC branch, and has focused on explanation of domestic interactions between elected officials and election policies on the one hand and voters on the other hand.

Yet, PBCs of a partisan or opportunistic nature may also have important implications for various non-voting, often foreign-based actors crucial to developing country investment and economic growth. Institutional and individual bondholders based largely in the US, Europe and Japan traded sovereign debt instruments of all types worth merely $90 billion in 1990 but almost $1.6 trillion in 2000 (EMTA, 2001). These bondholder risk assessments have a direct and increasingly influential impact on the cost and availability of capital during election periods in developing countries; yet PBC research has yet to address their "voting" behavior during election periods.

We develop a conceptual framework for understanding how bondholder decisions may be shaped by both partisan and opportunistic PBC considerations, and then derive and test two hypotheses from the framework using regression analysis of daily bond spread observations for sovereign bonds issued by 19 developing countries sovereigns holding 19 presidential elections from 1994-2000. Consistent with the framework, we find that bondholders in the run-up to elections perceive higher credit risks in the form of larger bond spreads as the likelihood of right-wing incumbents being defeated by left-wing challengers

increases. Interestingly, we also observe that bondholders in the run-up to elections perceive lower credit risks in the form of smaller bond spreads as the likelihood of left-wing incumbents being defeated by right-wing challengers increases. Overall, these results suggest that bondholders during election periods consider partisan and opportunistic PBC factors, and in certain cases, exact a spread "surcharge" on developing countries based on these considerations. We propose a framework that supports the interpretation of these results in the context of PBC theory.

The remainder of this study is divided into five sections. Section 2 describes the relevant theory and empirical findings for opportunistic and partisan PBCs applied to traditional incumbent government-domestic voter interactions, and to interactions with the private financial actors of central interest in this research. Section 3 summarizes our conceptual framework for analyzing sovereign bondholder decisions using partisan and opportunistic PBC considerations, and derives testable hypotheses. Section 4 describes the empirical methodology for testing these hypotheses. Section 5 presents descriptive and regression analysis results. Section 6 concludes by discussing the findings' implications for partisan and opportunistic PBC research and policy.

2.   Research Background

Opportunistic and Partisan PBC Theory and Empirics

Traditional partisan PBC models originated with Hibbs (1977, 1987), who argued that politicians seeking election tended to adopt economic policies according to ideological preferences. His explanation distinguished the partisan branch of PBC research from an opportunistic branch originating in Nordhaus (1975, 1989), who contended that election-period economic policy choices were based more on the general support they would generate from voters with homogenous preferences. While early models assumed naïve voters with adaptive expectations and capabilities to anticipate incumbent policies during election periods, opportunistic models developed later by Rogoff and Siebert (1988) and Rogoff (1990) posited voters with rational expectations and relative ease at anticipating election-period spending sprees by politicians.

8

In contrast, according to traditional partisan PBC models, incumbents again use economic policy to garner voter support, but based on their partisan political orientation, they will prefer economic policies with different emphases to accomplish this end. In terms of a simple Phillips curve approach, left-wing incumbent policies will tend to favor employment at the expense of inflation, while right-wing incumbent policies favor inflation at the expense of employment. Because voter preferences are assumed to be heterogeneous based on these types of partisan preferences, such policy differences can generate substantial differences in political support during election periods, substantial differences in employment, inflation and economic growth after elections, and substantial right-left partisan swings across several election periods (Drazen 2000).

Alesina (1987; 1988) and others (*e.g*., Alesina and Rosenthal, 1993) refined traditional partisan PBC models to be consistent with rational-expectations assumptions. So-called rational partisan cycle ("RPC") models assume a less exploitable Phillips curve compared to traditional partisan PBC models. Thus, Alesina *et al.* (1997) argued that the main difference between traditional partisan PBC and RPC models is that real effects of partisan shifts in government tend to persist in traditional models but is temporary in rational models.

Recent reviews of the PBC research, in Drazen (2000), Imbeau *et al*., (2001), Franzese (2002) chronicle a growing empirical literature with, perhaps, more growth in the opportunistic compared to partisan PBC branches, and with more growth in both branches for industrialized compared to developing country contexts. Recent empirical research across various developing country contexts reveals consistent support for the existence of PBCs (*e.g*., Schuknecht, 1996, 1999, 2000; Block, 2002).

Relatively few PBC empirical studies address interactions between politicians and private (non-voting) actors. Alesina *et al.* (1997) found partisan political effects on US bond forward rates; Santa-Clara and Valkanov (2003) suggested that US stock market returns in the post-World War II period were actually higher under Democrat rather than Republican governments; and, Bachman's results (1992) linked changes in bias in forward exchange rates to changes in government, though follow-on work by Bernhard and Leblang (2002) presented contrary evidence.

Fewer, still, are studies that address interactions between politicians and private financial actors in developing countries. Leblang (2002) found that speculative currency attacks were more likely during election periods with left- rather than right-wing incumbents, and more likely in the post- rather than pre-election period. Block and Vaaler (2004) found that election periods coincided with downgrades of sovereign ratings by major credit rating agencies and fluctuating bond spreads, both indicative of concerns that incumbents might be or were in fact engaged in opportunistic PBC behavior. Block *et al.* (2003) elaborated on this insight with an analytical framework integrating both partisan and opportunistic PBC considerations for agencies rating developing country sovereign risk during election years. Empirical testing of the framework suggested that right-wing incumbents facing election generally enjoy higher (more creditworthy) ratings than left-wing incumbents, though other factors, including the prospect of incumbent re-election, also had a significant impact on election-period risk assessments by the agencies. These preliminary results suggest that such integrative analytical frameworks may implicate a much broader range of private actors, including sovereign bondholders.

3.   Empirical Background, Conceptual Framework, and Hypotheses

Empirical Background

Brief explanation of institutional practices in the developing country sovereign bond market provides helpful background for developing a conceptual framework to predict changes in bond spreads due to partisan and opportunistic PBC considerations. The origins of this sovereign bond market were in the LDC debt crisis of the early 1980s and the emergence of so-called "Brady bonds" designed to securitize that debt, create secondary markets for it and lower the overall cost of borrowing to sovereigns and sub-sovereign individuals by reducing investor liquidity (though not basic default) risks. In addition to Brady bonds, developing country sovereign and sub-sovereign individuals in the 1990s issued new debt securities, primarily on European markets, often with face amounts in $ billions. By 2000, annual trading volume in Brady and non-Brady Eurobonds issued by developing country sovereigns and sub-sovereigns topped $1.6 trillion or approximately $4.3 billion in daily trades. Broker-dealers, investment banks, governments, insurance companies, pension, hedge and mutual funds, and wealthy individuals comprise

this trading secondary market linked electronically and capable of quickly connecting buyers and sellers, executing and clearing their trades in "round lots" of at least $2 million (EMTA, 2001).

Risks associated with holding such sovereign bonds are typically gauged by the market-determined spreads bondholders are able to command. Expressed either absolutely (*e.g.*, in Larrian *et al.*, 1997; CSPB, 2002), or in relative terms (*e.g.*, Block & Vaaler, 2004),[2] bond spreads provide a valid proxy for overall risk of default by the sovereign issuer. Empirical studies by Cantor and Packer (1996a, 1996b) as well as numerous industry analyses (*e.g.*, J.P. Morgan, 2000) indicate that both average levels and changes in day-to-day spreads for sovereign bonds from industrialized and developing countries are significantly and substantially correlated with major credit-rating agency ("agency") assessments of sovereign default risk. Amadou (2002) also notes the strong relationship between bond spreads and default risk, particularly those issued by developing country sovereigns.

Conceptual Framework: Overview

Against this institutional background, we develop a conceptual framework integrating both partisan and opportunistic PBC considerations into investors' reactions to elections in developing countries. Assume a liquid market for sovereign bonds from a given developing country with astute institutional and individual bondholders revising on a daily basis their subjective probabilities of credit risks related to default by the developing country sovereign. Assume further that it is during an election period with, say, only 90 days left before the final poll. A 90-day window is primarily illustrative, though we note that windows of 60-90 days approximate the length of many general election campaign periods.[3] For clarity, we designate this pre-election window as *T-*. The election occurs on day *t=T*. Then, a post-election period ensues designated as *T+*. On any given day, *t*, during this pre-election period change in relative spread for a given developing country bond with respect to both partisan and opportunistic PBC considerations is given by:

---

[2] Lamy and Thomson (1988) suggest that relative spreads are a more stable risk measure than absolute spreads especially where the general level of interest rates fluctuates substantially. Consistent with this approach, we define spreads on a foreign sovereign bond relative to comparable US Treasuries: $(\text{Yield}_{\text{Foreign}} - \text{Yield}_{\text{U.S.}})/\text{Yield}_{\text{U.S.}}$
[3] Consistent with this thinking, our empirical analyses reported below utilize both 90 and 60 day pre-election windows.

$$\text{(1)} \qquad \Delta S_{t<T,i}^{P,O} = f\left(\Delta S_{t,i}^{P}, \Delta S_{t,i}^{O}\right) \qquad i = r, l$$

where ΔS_t is the change in spreads on day t, the superscripts (P,O) indicate respectively the change with respect to partisan or opportunistic PBC considerations, and the subscripts (r, l) define respectively whether the incumbent is from a right-wing or a left-wing party.

The Partisan Dimension

Consider first the partisan term in equation (1), $\Delta S_{t,i}^{P}$. Assume that a bondholder's decision rule for partisan considerations affecting spreads takes the form:

$$\text{(2)} \qquad \Delta S_{t,i}^{P} = g\left(\pi_{T+}^{e} - \pi_{T-,i}\right)$$

where $\pi_{T-,i}$ is the inflation rate on any given day during the pre-election period for incumbent from party i, π_{T+}^{e} is the expected inflation rate in the post-election period $(T+)$, and $g(\cdot)$ is a function that translates the difference within the function into daily changes in spreads. Equation (2) assumes that the greater the difference between expected post-election inflation and the current inflation imposed by party i, the larger the change in spreads. While in theory, these changes are virtually boundless, as a practical matter daily changes tend to be small: In the sample of 19 elections we analyze empirically below, the average daily spread change over a 90-day pre-election period was approximately -0.14% indicating a slightly negative trend over time (less risk relative to US Treasuries); the maximum daily increase ("max^+") and decrease ("max^-") were both approximately 20%.

Recall that a fundamental assumption of partisan PBC theory is that right-wing incumbents are willing to suffer higher unemployment for the sake of lower inflation, while left-wing incumbents impose the opposite preferences. Assume, therefore, that $\pi_r < \pi_l$ in all periods. Expected post-election inflation (π_{T+}^{e}), thus, becomes an average weighted by the bondholder's subjective probability (λ) that the right-wing party will win on election day:

$$\text{(3)} \qquad \pi_{T+}^{e} = \lambda \pi_r + (1-\lambda)\pi_l \qquad for \quad 0 \le \lambda \le 1$$

12

Substituting (3) into (2) yields the bondholder's decision rule with respect to partisan considerations:

(4) $$\Delta S_{t,i}^{P} = g\big([\lambda\pi_r + (1-\lambda)\pi_l] - \pi_i\big)$$

The implications of this decision rule depend on which party is incumbent. For right-wing incumbents ($i = r$), $\lambda < 1 \Rightarrow \Delta S_{t,r}^{P} > 0$, if there is any positive probability of a right-wing incumbent losing to a left-wing contender, spreads will tend to rise compared to the case where right-wing incumbent victory is certain. We assume that as an election nears, the bondholder becomes increasingly certain as to the outcome, and λ thus converges to 1 or 0 (though this does not exclude close calls or surprises, as we discuss below). As $\lambda \rightarrow 1, \Delta S_{t,r}^{P} \rightarrow 0$, and as $\lambda \rightarrow 0, \Delta S_{t,r}^{P} \rightarrow \max^{+}$. That is, as the bondholder's certainty that a right-wing incumbent will be retained increases, the required increase in spread declines towards zero. On the other hand, as the bondholder's certainty of a left-wing victory over a right-wing incumbent increases, spreads, too, will increase, bounded only by the empirical maximum.

The bondholder's decision rule in the case of left-wing incumbents ($i = l$) is the inverse of the right-wing incumbent case. In the left-wing incumbent case, $\lambda > 0 \Rightarrow \Delta S_{t,l}^{P} < 0$. Thus, as $\lambda \rightarrow 1, \Delta S_{t,l}^{P} \rightarrow \max^{-}$, and as $\lambda \rightarrow 0, \Delta S_{t,l}^{P} \rightarrow 0$. For any positive probability that a right-wing challenger will prevail over a left-wing incumbent, spreads will fall compared to the case where left-wing incumbent victory is certain. As the bondholder's certainty of right-wing victory increases, expected post-election inflation falls increasingly below pre-election inflation, and the daily *decrease* in spreads approaches the empirical maximum. On the other hand, when the bondholder's certainty of a left-wing incumbent being retained increases, change in spreads diminishes to zero.

The Opportunistic Dimension

During election periods, opportunistic PBC considerations are also assumed to influence the bondholder's perceptions of developing country bonds with default risk in equation (1). Opportunistic PBC theory asserts that incumbents are identical, regardless of party, in their motivation to retain office, and in their incentives to use expansionary monetary, fiscal and or related policies as a means to retain office. As Franzese (2002) and others suggest, however, opportunistic incentives may be modified by the

incumbent's likelihood of victory going into the campaign. Incumbents certain of victory will have fewer incentives to resort to opportunistic policies compared to incumbents with their backs against the wall. This assertion is in keeping with Schultz (1995), who shows that expectations of incumbent party victory in British parliamentary elections are negatively correlated with the likelihood of expansionary economic policies in the run-up period, as well as with Block, Ferree, and Singh (2001), who make a similar point in the African context.

The linkage between incumbent electoral expectations and the likelihood of opportunism is important to our framework: It links bondholder assessments of incumbent re-election and opportunism in the pre-election period, to post-election inflation expectations. Specifically, assume that for an incumbent of either party, post-election inflation will exceed pre-election inflation if the incumbent is perceived to be facing defeat at the polls. That is, the incumbent's incentive to engage in opportunistic pre-election manipulation of the economy (*e.g.*, a pre-election spending spree to be financed by higher inflation in the post-election period) increases with the probability of defeat.

This opportunistic dynamic affects the bondholder's perception of default risk and, thus, influences pre-election trends in spreads. To see how in our framework, recall again that any change in spreads demanded by the bondholder will be a positive function of the difference between pre-election actual inflation and expected post-election inflation:

(5)
$$\Delta S_{t,i}^{O} = h\left(\pi_{T+,i}^{e} - \pi_{T-,i}\right)$$

In equation (5), expected inflation exceeds pre-election inflation as a positive function of the subjective probability of the incumbent losing office. That is:

(6)
$$\pi_{T+,i}^{e} = \begin{cases} \lambda \pi_{T-,r} + (1-\lambda)\pi_{r}^{+} \\ \lambda \pi_{l}^{+} + (1-\lambda)\pi_{T-,l} \end{cases}$$

where $\pi_{i}^{+} > \pi_{T-,i}$ is a relative statement indicating that, for a given incumbent party, post-election inflation increases (π_{i}^{+}) beyond pre-election inflation for that party. Equation (6) states simply that the

14

bondholder expects post-election inflation to increase for either party beyond its current level if the incumbent's defeat seems likely compared to where its re-election is a certainty.

Substituting equation (6) into equation (5) yields the bondholder's decision rule with respect to opportunistic PBC considerations:

$$(7) \qquad \Delta S_t^O = h\left(\begin{array}{c} [\lambda \pi_{T-,r} + (1-\lambda)\pi_r^+] - \pi_{T-,r} \\ [\lambda \pi_l^+ + (1-\lambda)\pi_{T-,l}] - \pi_{T-,l} \end{array} \right)$$

As in the partisan case, empirical implications of this decision rule with respect to opportunistic PBC theory depend on which party is the incumbent. For right-wing incumbents, equation (7) implies that, for $\lambda < 1, \Delta S_{t,r}^O > 0$. As $\lambda \to 1, \Delta S_t^O \to 0$, while as $\lambda \to 0, \Delta S_t^O \to \max^+$. That is, for any positive probability of a left-wing challenger replacing a right-wing incumbent, spreads will increase compared to the case of certain right-wing incumbent victory. Similarly, for any positive probability of a left-wing incumbent losing to a right-wing challenger, spreads will increase compared to the case of certain left-wing incumbent victory.

Equation (1) requires that these partisan and opportunistic PBC considerations be merged to determine the bondholder's overall reaction to impending elections. Table 1 summarizes our predictions about bondholder reactions under various circumstances defined above. The columns of Table 1 distinguish between bondholder considerations where there is a right-wing ("r") versus left-wing ("l") incumbent, while the rows distinguish between electoral expectations of certain right-wing victory ($\lambda \cong$ 1), mixed expectations of right- or left-wing victory ($0 < \lambda < 1$), and certain left-wing victory ($\lambda \cong 0$). Each of the six cells includes a pair of directional effects on spreads ("P, O"), indicating, respectively, their partisan or opportunistic PBC origins. Increase (+) and decrease (-) effects on spreads are stated in comparison to the "base case" of certain incumbent retention, where partisan and opportunistic PBC effects captured in our framework are nil (0,0).

*** *Insert Table 1 approximately here* ***

15

Note that for right-wing incumbents, our framework suggests that partisan and opportunistic considerations reinforce one another. For left-wing incumbents, however, the two work in opposition to one another. Where, in the case of right-wing incumbents the pair of PBC considerations are both positive (+,+), we predict a positive trend in spreads on sovereign bonds compared to the base case of certain right-wing re-election. Where in the case of left-wing incumbents the pair of PBC considerations are negative for partisan but positive for opportunistic effects (-,+), the overall outcome is ambiguous *à priori*. Compared to the base case of certain left-wing incumbent retention, the overall change in spreads, if any, will depend empirically on whether bondholder decisions are systematically dominated by partisan (-) or opportunistic (+) PBC considerations.

Hypotheses

To test these proposed relationships between PBC considerations and change in spreads, we must first modify electoral expectations operator, λ. To begin, we first recognize that λ, in practice, will rarely equal exactly 0 or 1. Moreover, we do not directly observe subjective assessments by bondholders regarding the probability of a right-wing victory. We, thus, construct λ based on the assumption that bondholders are generally able to predict with reasonable accuracy the outcomes of elections when elections are not close.[4] Recall, as well, that bondholders in sovereign debt markets may update and trade on their assessments daily. Brazil's 2002 presidential election experience would appear to validate this construction. In that case, where frequent polling data were available, Martinez and Santiso (2003) demonstrate a high correlation between Lula's lead in the polls and increases in spreads on Brazilian debt during the months leading up to Lula's election.

With these assumptions, we modify λ to take on one of three discrete ordinal values. We infer that $\lambda = \lambda^{hi}$ in either of two scenarios: If a right-wing incumbent wins by a large margin (right-wing base case); or if a left-wing incumbent loses by a large margin. As described in greater detail below, we define

---

[4] Ideally, we would have regular polling data from each country for each election in our sample. As such data are unavailable to us, we are effectively making the assumption that those polling data were available to bondholders at the time, and that they formed and updated their subjective probabilities based on those polls. We are thus "seeing" the polling data retroactively through bondholder eyes.

16

a "large" margin to be an election outcome in which the winner's vote share exceeds the loser's by more than 3%. Similarly, we infer that $\lambda = \lambda^{lo}$ in either of two scenarios: If a right-wing incumbent loses by a large margin; or if a left-wing incumbent wins by a large margin (left-wing base case). In the final two scenarios, the margin of victory for right- or left-wing incumbent is not large but a "close call" with a winning margin for left- or right-wing incumbents of less than 3%. In these scenarios, $\lambda = \lambda^{med}$.[5]

For right-wing incumbents, the framework now predicts a clear link between the ordinal hierarchy of election-day victory expectations and change in spreads on developing country sovereign bonds: Compared to the base case of likely right-wing incumbent retention, both partisan and opportunistic PBC considerations generate mutually reinforcing and increasingly positive changes in bondholder spreads:

H1:   *Given a right-wing incumbent, pre- election bond spread changes compared to the base case will be positive and increasing in magnitude as the likelihood of re-election falls from high to low (i.e., $\Delta S_{T-,r}^{P,O}\big|_{\lambda=\lambda^{hi}} < \Delta S_{T-,r}^{P,O}\big|_{\lambda=\lambda^{med}} < \Delta S_{T-,r}^{P,O}\big|_{\lambda=\lambda^{lo}}$).*

For left-wing incumbents, the framework predicts contradicting partisan and opportunistic directions in spread as we move from the base case of likely left-wing incumbent victory (λ^{lo}) to ever greater likelihoods of right-wing challenger victory (λ^{med} and λ^{hi}). The increasing likelihood of a partisan switch from left- to right-wing engenders a decrease in the spread while the increasing likelihood of an incumbent resorting to opportunistic interventions to stave off defeat engenders an increase in spreads. We, therefore, have no *à priori* basis for asserting that either partisan or opportunistic PBC effects will systematically dominate the other. Thus, we presume for prediction purposes only that the two effects will cancel each other out: Pre-election bond spread changes in developing countries with left-wing incumbents will exhibit no significant differences across different levels of λ:

---

[5] Changing the definition of "close call" election to victory margins of less than 5% or 10% does not change the overall results of our analyses reported in Tables 1 and 2 below. Results using these alternative measures are available from the authors on request.

H2: *Given a left-wing incumbent, pre-election bond spread changes compared to the base case will be neither positive nor negative, regardless of the incumbent's likelihood of re-election (i.e.,*

$$\Delta S_{T-,l}^{P,O}\Big|_{\lambda=\lambda^{hi}} = \Delta S_{T-,l}^{P,O} = \Delta S_{T-,l}^{P,O}\Big|_{\lambda=\lambda^{lo}}).$$

Rejection of this second hypothesis would also shed important light on the relative impact of partisan versus opportunistic PBC considerations from a bondholder perspective. Increasingly negative changes in spreads from the base case of certain left-wing incumbent retention would indicate the predominance of partisan considerations, while increasingly positive changes would indicate the predominance of opportunistic considerations.

4. Methodology

Spreads Model and Hypothesis Tests

To test our hypotheses predicting pre-election period change in developing country sovereign bond spreads based on partisan and opportunistic PBC considerations, we define the following equation:

$$
\begin{aligned}
Spread_{cty} = {} & \beta_0 + \beta_1 Day_t + \beta_2 GovRbegin_{cy} + \beta_3 (Day * GovRbegin)_{cty} \\
(8) \quad & + \beta_4 (Day * \lambda D)_{cty} + \beta_5 (Day * GovRbegin * \lambda D)_{cty} + \sum_{c=1}^{11} \gamma_c Country \\
& + \sum_{y=1994}^{1999} \xi_y Year + u_{cty}
\end{aligned}
$$

In equation (8), the dependent variable, $Spread_{cty}$, is the market-determined credit-spread relative to a comparable US Treasury security on day t of year y for a sovereign bond issued by developing country c. Day_t is a numeric counter for each day t in a 90-day span comprising the 90 days before the election and the polling day itself.[6] As a check on the robustness of our results, we re-estimate equation (8) with a 60-day window. The $GovRbegin_{cy}$ term is a 0-1 indicator distinguishing pre-election incumbent government partisan orientations (1 if the pre-election incumbent government of country c in year y is right-wing; 0 if left-wing). λD is an indicator term intended to capture bondholders' subjective probability of a right-wing victory. It takes one of three values:

---

[6] By "election day" or "polling day" we mean the final day for electors to cast ballots in the general (rather than preliminary or primary polls) election. If there are multiple general election polling dates for purposes of establishing a majority victor, we mean the final "run-off" election date.

$$\lambda D = \begin{cases} 1 \ if \ \lambda = \lambda^{hi} \\ 0 \ if \ \lambda = \lambda^{med} \\ -1 \ if \ \lambda = \lambda^{lo} \end{cases}$$

The terms in equation (8), permit us to derive slope estimates for each of the six cells in our bondholder framework developed above (Table 1):

$$\left. \frac{\partial Spread}{\partial Day} \right|_{\substack{GovRbegin=0 \\ \lambda D=-1}} = \beta_1 - \beta_4 \qquad (base-case : left \ incumbent, \lambda^{lo})$$

$$\left. \frac{\partial Spread}{\partial Day} \right|_{\substack{GovRbegin=0 \\ \lambda D=0}} = \beta_1 \qquad (close \ call : left \ incumbent, \lambda^{medi})$$

$$\left. \frac{\partial Spread}{\partial Day} \right|_{\substack{GovRbegin=0 \\ \lambda D=1}} = \beta_1 + \beta_4 \qquad (right \ victory : left \ incumbent, \lambda^{mid})$$

$$\left. \frac{\partial Spread}{\partial Day} \right|_{\substack{GovRbegin=1 \\ \lambda D=1}} = \beta_1 + \beta_3 + \beta_4 + \beta_5 \qquad (base \ case : right \ incumbent, \lambda^{hi})$$

$$\left. \frac{\partial Spread}{\partial Day} \right|_{\substack{GovRbegin=1 \\ \lambda D=0}} = \beta_1 + \beta_3 \qquad (close \ call : right \ incumbent, \lambda^{med})$$

$$\left. \frac{\partial Spread}{\partial Day} \right|_{\substack{GovRbegin=1 \\ \lambda D=-1}} = \beta_1 + \beta_3 - \beta_4 - \beta_5 \qquad (left \ victory : right \ incumbent, \lambda^{lo})$$

The also permit tests of the two hypotheses, which reduce to:

H1: $\beta_4 + \beta_5 < 0$ [7]

H2: $\beta_4 = 0$ [8]

Data Sources and Sampling

To test these hypotheses we collected several types of data. First, we collected data on presidential elections held during the 1987-2000 period using the World Bank's Database of Political Institutions ("DPI") (version 3, described in Beck *et al.* 2001) a database providing comprehensive information through 1997 on election dates, electoral systems, electoral competitiveness, and candidate partisan orientation. Where the DPI database proved to be incomplete for certain elections held between

---

[7] H1 above is the reduced form of the following inequality: $\beta_1 + \beta_3 + \beta_4 + \beta_5 < \beta_1 + \beta_3 < \beta_1 + \beta_3 - \beta_4 - \beta_5$.
[8] H2 above is the reduced form of the following equality: $\beta_1 - \beta_4 \cong \beta_1 \cong \beta_1 + \beta_4$.

1998 and 2000, we turned to two alternative sources: The International Foundation for Election Systems ("IFES") (2002); and the on-line version of the Political Reference Almanac 2001-2002 edition ("Polisci.com") (2002). Election-related information from these alternative sources were sampled using the same criteria as the DPI unless otherwise noted below. From the DPI, IFES and Polisci.com databases, we extracted dates of presidential elections where direct popular votes or indirect votes of legislators or specialized electors chose chief executives judged to exert substantial executive governmental power rather than mere state ceremonial duties as presidential heads of state tend to have in parliamentary systems.

Our decision to exclude non-presidential systems, most notably, parliamentary electoral systems, followed from data observation and estimation issues. Elections in countries with presidential systems tend to follow fixed schedules. By contrast, executives in parliamentary systems often have substantial discretion in choosing the date of their re-election within an existing term in office. This distinction can lead to endogeneity problems in empirical models of political business cycle effects. The DPI database also includes assessments of executive electoral competitiveness as measured by the extent of multi-party competition. The measure ranges from 1 (least competitive executive electoral systems) to 7 (most competitive executive electoral systems). All of the presidential elections to be sampled score 6 or 7 on this scale, indicating that they were "real" elections. DPI classifications of competitive elections in 1997 were judged to continue through 2000.

Our empirical analysis relies on identification of the partisan (left- versus right-wing) orientation of electoral candidates, particularly incumbent (government) candidates. The DPI, IFES and Polisci.com databases provided information on the partisan orientation of candidates, including characterization of their parties as left-wing, right-wing, centrist- or otherwise-oriented. Beck *et al.* (2001) explain the decision rules used for this DPI categorization. Two types of classification criteria were used: content of party names; and judgments by academic and professional commentators. In terms of content, parties were defined as "right-wing" based on whether terms such as "conservative" or "Christian democratic" were included in their names. A "left-wing" definition followed from party names with terms such as

"communist" or "Marxist" or "socialist" or "social democratic." Failing a clear indication based on content, academic and professional commentator judgments were used. The "centrist" classification followed from no clear criteria based on party-name, thus academic and professional judgment was the primary source. Centrist parties advocated the strengthening of private enterprise but also supported some substantial redistributive role for government. Parties were placed in a fourth classification as "other" if both name-based and commentator-based criteria could not clearly classify them into left-wing, right-wing, or centrist-orientations. Using IFES and Polisci.com databases, we applied the same criteria to ascertain preliminary classifications for post-1997 elections not covered by DPI.

Noting the increased subjectivity associated with the centrist classification, as well as the similarities of central propositions in economic policy between centrist and right-wing governments, we chose to collapse centrist parties into the right-wing classification; thus, our final classifications are limited to two: left-wing and right-wing (including centrist). Where an incumbent party in our sample was classified as "other" by the DPI—and there were only three such instances—we consulted IFES and Polisci.com for additional information on which to make a judgment of left- versus right-wing party orientation.[9] These sources also provided the final election results that we use to construct λ.

Using Bloomberg International (2002) on-line data sources, we collected data on bond yields for large-size, dollar-denominated bonds issued by developing country sovereigns from 1994-2000. Where possible, we chose Brady bonds with the longest trading history available to us for each sovereign in our sample.[10] We also noted the comparable US Treasury bond yield, either actual or synthetic from a

---

[9] Results excluding observations we re-classified from "other" are completely consistent with those reported below, and are available from the authors on request.

[10] The sovereign bonds in our sample included: 1) Republic of Argentina, Series FRB, Issued 03/31/93, Maturing 03/29/05, Amount $8.5 billion, Coupon LIBOR + 0.8725%, Listing in Dusseldorf; 2) Federal Republic of Brazil, Series 20Y, Issued 04/15/94, Maturing 04/15/14, Amount $7.4 billion, Coupon 8%, Listing in Luxemburg; 3) Bulgaria, Series A, Issued 7/28/94, Maturing 07/28/24, Amount $1.7 billion, Coupon LIBOR + 0.8725%, No Listing; 4) Republic of Chile, No Series, Issued 4/28/99, Maturing 04/28/09, Amount $500 million, Coupon 6.875%, Listing in Luxemburg; 5) Republic of Colombia, No Series, Issued 2/23/94, Maturing 02/23/04, Amount $250 million, Coupon 7.25%, No Listing; 6) United Mexican States, Series A, Issued 03/28/90, Maturing 12/31/19, Amount $6.2 billion, Coupon 6.25%, Listing in Luxemburg; 7) Republic of Philippines, Series B, Issued 12/01/92, Maturing 12/01/17, Amount $1.7 billion, Coupon 6.5%, Listing in Luxemburg; 8) Republic of Poland, Series PDIB, Issued 10/27/94, Maturing 12/01/17, Amount $2.7 billion, Coupon 6%, Listing in Luxemburg; 9) Ministry of Finance of Russia, Series IV, Issued 05/14/93, Maturing 01/14/03, Amount $3.5 billion, Coupon 3%, No Listing; 10) Republic of South Africa, No Series, Issued 05/19/99, Maturing 05/19/09, Amount $1.5 billion, Coupon 9.125%, Listing in Luxemburg; 11) Banco Central del Uruguay, Series B$, Issued 02/19/91, Maturing 01/19/07, Amount $448 million, Coupon LIBOR+0.875%,

21

constructed yield curve. With these data sources, we calculated the spread for each sovereign bond relative to comparable U.S. Treasury bonds during the 90 days before a presidential election. The resulting 90-day sample comprised a balanced panel of 1,710 daily bond spread observations for 19 elections held in 12 countries from 1994-2000. We also created a sub-sample based on a 60-day window, which resulted in 1,140 daily bond spread observations for the same elections, countries and years.

Estimation Strategy

Given the high (daily) frequency of the time series and cross-sectional groupings (elections) in our panel, we used a weighted general estimating equation ("GEE") approach to estimate equation (8). The GEE procedure provides general linear model estimates, with independent correlation structures and semi-robust standard errors for defined groups in the sample cross section. This permits us first to define groups in each sample – 19 election groups in our spreads model. The GEE procedure also allows for higher-order autocorrelation adjustment of error terms for observations in each election group, with additional adjustments for heteroskedasticity in the cross-section.[11]

A second consideration in estimating equation (8) was the probable influence of outliers resulting from unknown idiosyncratic events, which could confound estimation of broader trends in the data. Preliminary analyses of the 90-day (60-day) sample using OLS permitted calculation of Cook's Distance measures indicating the presence of 310 (174) gross outlier spread observations distributed evenly across six elections (Argentina, 1995, 1999; Brazil, 1994; Mexico, 2000; Russia, 2000; and Venezuela, 1998).

To mitigate the possible confounding effects these outliers may have, we employed to a two-step procedure similar to robust regression. In the first step, we used the OLS estimation to identify gross outliers with Cook's Distance measures more than 100x the mean value, which were approximately all observations with Cook's D > 1. In the second step, we gave the gross outliers a zero-weight and

Listing in Luxemburg; and 12) Republic of Venezuela, Series DL, Issued 12/18/90, Maturing 12/18/07, Amount $5.2 billion, Coupon LIBOR+0.875%, Listing in Luxemburg.
[11] We obtained more efficient results using an AR(9) correction.

weighed the remaining observations with the inverse of their absolute Cook's Distance measure. The

resulting estimation was, therefore, a weighted GEE.[12]

5.   Results

Tables 2-4 report results from estimation of sovereign bond spreads using equation (8): Table 2

reports the coefficients from 60- and 90-day weighted GEE analyses; Table 3 reports results from slope

estimation of spreads for each of the six possible outcomes developed in our Table 1 framework; and

Table 4 reports results from formal tests of Hypotheses 1 and 2.

****   *Insert Table 2 Approximately Here*   ****

Table 2's weighted GEE analyses yielded coefficients for the key terms in equation (8) (β_1

through β_5) that were consistently significant at commonly acceptable statistical levels ($p < 0.01$) and

exhibited consistent signs whether we use 60- or 90-day pre-election windows. This consistency in sign

and significance proved robust to the inclusion of two additional controls. First we added a 0-1 indicator

term to control for possible differences between spreads on bonds with floating (LIBOR+) rather than

fixed rate coupons. Second, we added a control for the "background" sovereign risk in each country at

the beginning of an election year. This background sovereign risk control took the form of a number

between 16 and 0 inclusive, and representing the 17 ordinal rating levels commonly used by major credit-

rating agencies to assess the "ceiling" sovereign risk on long-term foreign currency denominated

instruments issued by individuals domiciled in a particular developing country. We used the rating from

Moody's Investor Services published on December 31 of the year preceding an election (AAA = 16, Aa1

= 15, Aa2 = 14,…, B2 = 2, B3 = 1, C = 0).[13]

---

[12] This is precisely the procedure performed in "robust regression" (*rreg*) procedure in Stata (Stata Corp 2001), from which we derived our regression weights for the weighted GEE. Unweighted GEE analysis using a 90-day window yields key coefficient estimates (β_1 through β_5) with signs identical to those reported using weighted GEE. Unweighted GEE analysis using a 60-day 60-day window yields key coefficient estimates (β_1 through β_5) with signs identical to those reported using weighted GEE in four cases ($\beta_1, \beta_2, \beta_4, \beta_5$). Standard error estimates are substantially higher with these unweighted GEE analyses, thus, reducing statistical significance. These unweighted GEE results for 60-day and 90-day samples are available from the authors on request.
[13] Signs and significance obtained in unweighted GEE analyses are also unchanged with inclusion of these two additional controls. These weighted and unweighted GEE results are available from the authors on request.

Table 3 used the coefficient estimates in Table 2, individually or in linear combination, to calculate slopes in spreads associated with each of the cells of our framework summarized in Table 1. Table 4 reports results from formal testing of Hypotheses 1 and 2 using the slope estimates.

****   *Insert Tables 3 and 4 Approximately Here*   ****

Overall, Table 3 indicates a hierarchy of response by bondholders to differing likelihoods of incumbent re-election for both right- and left-wing incumbents. Hypothesis 1 drew on the reinforcing effects of partisan and opportunistic PBC considerations for right-wing incumbents when predicting this hierarchy of response. Against the base case of likely right-wing incumbent re-election (λ^{hi}), we saw that trends in pre-election spreads are increasingly positive, indicating greater risk, as the likelihood of right-wing incumbent re-election fell (λ^{med} and λ^{lo}).

Recall that we made no specific prediction about the sign and significance for the base case. With 90- and 60-day pre-election windows, the base case spreads slope was negative and significant ($p < 0.01$).[14] The 90-day (60-day) base case slope of -0.00086 (-0.00195) for right-wing incumbents likely to be re-elected is cut in half to a statistically significant ($p < 0.01$) -0.00043 (-0.00095) when right-wing re-election goes from likely to a close call. The negative trend in pre-election spreads disappeared when the right-wing incumbent was likely to be defeated by the left-wing challenger. Hypothesis 1 test results reported in Table 4 generally confirmed the view that pre-election trends in spreads were increasingly positive as the likelihood of right-wing re-election fell, though the level of statistical significance was different for 90-day ($p < 0.01$) versus 60-day ($p < 0.10$) pre-election windows.

---

[14] Indeed, slopes for pre-election spreads in five of six possible cases in Table 3 exhibit negative point estimates of varying magnitude. This generally negative trend in the run-up to polling is consistent with the downward sloping trend in pre-election slopes Block and Vaaler (2004) observed. They connected this trend to a larger pre-election spreads "bubble" phenomenon extending over a six-month period: From approximately 180 to 90 days before elections, spreads on several developing country sovereign bonds increased, only to decrease substantially in the final run-up to polling. The resulting "bubble" was interpreted as a temporary risk premium on developing country debt associated with rising and then declining uncertainty about electoral outcomes and the extent of opportunistic behavior by incumbents. Recurring negative trends here, however, have a different interpretation given our framework: As uncertainty regarding electoral outcomes are resolved in the final run-up to polling, steeper or shallower (or, in one case slightly positive) spreads slopes reflect bondholder consideration of both opportunistic and partisan effects.

We did not predict but nonetheless found again a hierarchy of bond spreads corresponding to left-wing incumbents with differing electoral expectations. Recall that Hypothesis 2 predicted that, against the base case of likely left-wing incumbent re-election (λ^{lo}), trends in pre-election spreads would show no significant trends as the likelihood of left-wing incumbent re-election fell (λ^{med} and λ^{hi}). As the likelihood of left-wing incumbent re-election fell from likely to close call to unlikely, our framework suggested that partisan and opportunistic PBC considerations would work at cross purposes: Partisan PBC considerations would drive down spreads, indicating bondholder expectations of economic policies typically championed by right-wing candidates; but opportunistic PBC considerations would drive up spreads as left-wing incumbents felt increasingly pressured to stave off defeat by the right-wing with pre-election spending sprees. With no reason *à priori* to conclude that partisan or opportunistic considerations would dominate, we predicted in Hypothesis 2 that they would be approximately equal in force and cancel each other out.

Results in Tables 3 and 4 clearly rejected this prediction, and suggested instead that bondholders weighed partisan substantially more than opportunistic PBC considerations in developing country elections with left-wing incumbents. In the left-wing incumbent base case, spreads were either flat (60-day window) or slightly positive (90-day window), depending on the pre-election window chosen. Compared to this base case of likely left-wing incumbent victory (λ^{lo}), spreads trended significantly and substantially negative as the likelihood of right-wing challenger victory increased (λ^{med} and λ^{hi}). The 90-day (60-day) base case slope of 0.00065 (-0.00044) changed to a statistically significant ($p < 0.01$) -0.00872 (-0.00758) when left-wing re-election expectations went from likely to a close call. That negative slope roughly doubled to -0.01472 (-0.01810) and remained statistically significant ($p < 0.01$) when left-wing incumbent's chances of re-election fell from close call to unlikely. In this context, it came as no surprise that test results in Table 4 rejected Hypothesis 2; indeed, we confirmed through pair-wise comparison that the increasingly negative slopes corresponding to increasingly dim chances of left-wing

incumbents (λ^{lo} to λ^{med} to λ^{hi}) were statistically significant from each other (p < 0.01) for both 90-day and 60-day pre-election windows.

Practical implications of the trends we observe in pre-election spreads more generally are illustrated concretely through two case examples drawn from our sample. Figure 1 graphs the absolute yield and relative spreads for Argentine sovereign bonds 180 days before and after the May 15, 1995 presidential election. Carlos Menem was re-elected to office by a large margin at the final poll, which in terms of Table 3, Column 2 implies the "right-incumbent, λ^{hi}" cell. Relative bond spreads and absolute yields during the 90 days before elections exhibit a negative trend, which is consistent with the negative slope we also predict. Interestingly, though, our predicted negative slope is less pronounced than the actual slope illustrated in Figure 1: Our results predict a decrease of approximately 60 basis points in the final 90 days prior to election, while actual yields came down by 550 basis points in the last 90 days.[15] With Argentine outstanding foreign debt of approximately $99 billion at the end of 1995, the implied decrease in the cost of funding such debt (60 basis points) represents a saving of approximately $594 million annually.

**** *Insert Figures 1 and 2 Approximately Here* ****

Contrast the Argentine case of right-wing incumbency and the expectation of re-election with the case of Polish presidential elections on October 8, 2000. Graphs of relative spreads and absolute domestic yields on Polish government sovereign bonds during this period are presented in Figure 2. This election saw the left-wing government of Aleksander Kwasniewski being re-elected to office by a large margin. In terms of Table 3, Column 2, this implies the "left-incumbent, λ^{lo}" cell. Here, spreads are predicted to have a slightly positive slope throughout the 90-day pre-election period. Actual results follow this prediction quite closely. We predict an increase of roughly 38 basis points over the last 90

---

[15] 90 days before the election, the yield on Argentina's series FRB sovereign bond maturing in March 2003 stood at 22.16% while US Treasuries of comparable maturity yielded 7.41%, implying a relative spread of approximately 1.99. Based on the weighted GEE analysis using a 90-day pre-election window (Tables 2-3, Column 2), we predict for elections with a right incumbent (r) and a high likelihood of re-election (λ^{hi}) a negative daily relative spreads slope coefficient of -0.00086 (($\beta_1 + \beta_3 + \beta_4 + \beta_5$). Over a 90 day period, relative spreads are predicted to decrease by approximately 0.08 (-0.00086* 90 = -0.0774). This

days prior to election. The actual increase in the yield on the Polish series FRB sovereign bond used in

our sample in the 90-day pre-election period was 30 basis points.[16] With Polish outstanding foreign debt

of approximately $63 billion at the end of 2000, the implied increase in the cost of funding such debt (30

basis points) is approximately $189 million annually. Small differences in the likelihood of re-election as

well as differences in the partisan preferences of the incumbent may, indeed, have substantial real effects

on the cost of capital for investment and economic growth.

6. Discussion and Conclusion

Our study contributes conceptually and empirically to PBC research by broadening the field of

actors and election-related outcomes that may be implicated by its behavioral predictions. PBC theories

typically characterize politicians, voters and their interaction around elections, restricting themselves to

particular characterizations of each group. Empirically, this is typically investigated using either partisan

or opportunistic PBC perspectives, but not both. In expanding the purview of PBC theory to include non-

voting private actors, we specifically allowed them to be cognizant of incentives for economic

(mis)behavior related both to distinct left- versus right-wing partisan orientations and to incumbent

opportunism that is non-partisan in nature.

We found support for hypotheses related to bondholders and the risk premia they demand for

holding sovereign debt from developing countries during election periods. We found that bondholders

acted conditional on the partisan orientation of the incumbent government and the likelihood of its

success on election-day. Bond spreads (and the implied risk perception they represent) declined faster

during pre-election periods when a right-wing incumbent was likely to be re-elected compared to when it

was in a close call election or in an election where it was likely to be ousted. Pre-election spreads for

sovereigns with left-wing governments also exhibited a hierarchy conditioned on the likelihood of victory

on election-day. The final run-up to polling saw increasingly steep declines in spreads as the likelihood

---

implies decrease in relative spreads from 1.99 to 1.91 or a decrease in the yield on the Argentine sovereign bond from 22.16% to 21.56%, assuming no change in the relevant US Treasury yield.

of left-wing incumbent re-election fell. In terms of our conceptual framework, this result evidenced the apparent domination of partisan over opportunistic PBC considerations for bondholders.

These findings raise several broader questions about election-related partisanship and opportunism, and their impact on the cost of capital for developing countries. Bonds issued by sovereign and sub-sovereign individuals are an increasingly important means of financing public and private investment and growth. If incumbent political leaders in developing countries are prone to creating PBCs—as a growing literature suggests they are—and if outside observers such as bondholders and other private financial actors are aware of that potential, then such behavior or even its perception might have dramatic and previously unconsidered effects on the cost of foreign capital. In an era of financial globalization, such costs (or benefits) may be substantial, particularly as competitive elections become increasingly frequent events among the nascent democracies of the developing world.

---

[16] See previous footnote. 90 days prior to the 2000 presidential election, Poland's Series PDIB sovereign bond, maturing in December 2017, yielded 8.18% while yields on U.S. Treasuries of comparable maturity stood at 6.20%. On election day, yield on this Polish sovereign bond had increased to 8.48%.

REFERENCES

Alesina, Alberto. 1987. "Macroeconomic policy in a two-party system as a repeated game." *Quarterly Journal of Economics* 102: 651-678.

Alesina, Alberto. 1988. "Macroeconomics and politics." NBER Macroeconomic Annual, Cambridge, MA: MIT Press.

Alesina, Alberto, and Howard Rosenthal. 1995. *Partisan Politics, Divided Government and the Economy.* Cambridge, UK: Cambridge University Press.

Alesina, Alberto and Nouriel Roubini. 1990. "Political cycles in OECD economies." *Review of Economic Studies* 59: 663-688.

Alesina, Alberto, Nouriel Roubini, and Gerald Cohen. 1997. *Political cycles and the macroeconomy.* Cambridge, MA: MIT Press.

Amadou, Sy. "Emerging market bond spreads and sovereign credit ratings: Reconciling market views with economic fundamentals." IMF Working Papers no. 01/165. Washington, DC: International Monetary Fund.

Bachman, Daniel. 1992. "The effect of political risk on the forward exchange bias: The case of elections." *Journal of International Money and Finance* 11: 208-19.

Beck, Thorsten, George Clarke, Alberto Groff, Philip Keefer and Patrick Walsh. 2001. "New tools and new tests in comparative political economy: The database of political institutions." *World Bank Economic Review* 15: 165-176.

Bernhard, William and David Leblang. 2002. "Democratic processes and political risk: Evidence from foreign exchange markets." *American Journal of Political Science* 46: 316-333.

Block, Steven A. 2002. "Political business cycles, democratization, and economic reform: The case of africa." *Journal of Development Economics* 67: 205-228.

Block, Steven, Smita Singh, and Karen Ferree. 2001. "Multiparty competition, founding elections and political business cycles in africa." Harvard University Center for International Development Working Paper no. 80. Cambridge, MA: Harvard Center for International Development.

Block, Steven A. and Paul M. Vaaler. 2004. "The price of democracy: Sovereign risk ratings, bond spreads and political business cycles in developing countries," *Journal of International Money and Finance*, forthcoming.

Block, Steven A., Burkhard N. Schrage and Paul M. Vaaler. 2003. Democratization's risk premium: Partisan and opportunistic political business cycle effects on sovereign ratings in developing countries." Michigan Business School William Davidson Institute Working Paper #546. Ann Arbor, MI: University of Michigan.

Bloomberg. 2002. International bond series. Bloomberg on-line data services. New York, NY: Bloomberg International.

Cantor, Richard and Frank Packer. 1996a. "Sovereign risk assessment and agency credit ratings." *European Financial Management* 2: 247-256.

Cantor, Richard and Frank Packer. 1996b. "Determinants and impacts of sovereign credit ratings." *Federal Reserve Bank of New York Economic Policy Review*. October Volume: 37-53.

CSPB. 2002. "Brazil: Risk aversion hits bonds." Credit Suisse Private Banking Investor Newsletter (Emerging Markets Research). June 26. Zurich, Switzerland: Credit Suisse Group.

Drazen, Allan. 2000. The political business cycle after 25 years. *NBER Macroeconomic Annual*, Cambridge, MA: MIT Press.

EMTA. 2001. EMTA 2001 annual report: 2001 Financial review & statements. New York, NY: Emerging Markets Traders Association.

Franzese, Robert J. 2002. "Electoral and partisan cycles in economic policies and outcomes," *Annual Review of Political Science* 5: 369-421.

Goldman, Sachs. 2002. "The lulameter." GS, Emerging Market Strategy, June 6, 2002, New York, NY: Goldman Sachs.

Hibbs, Douglas. 1977. "Political parties and macroeconomic policy." *American Political Science Review* 71: 467-87.

Hibbs, Douglas. 1987. *The american political economy*. Cambridge, MA: Harvard University Press. Horrigan, James. 1966. The determination of long-term credit sharing with financial ratios. *Journal of Accounting Research*, 4: 44-62.

IFES. 2002. "Election guide." International Foundation for Election Systems Web site, <www.ifes.org> (15 August 2002).

Imbeau, Louis M., François Pétry, and Moktar Lamari. 2001. "Left-right party ideology and government policies." *European Journal of Political Research* 40: 1-29.

J.P. Morgan. 2000. "Emerging markets versus high yield: Credit fundamentals revisited." J.P. Morgan Securities, Inc., Portfolio Research, October 13, New York, NY: J.P. Morgan.

Larraín, Guilllermo, Helmut Reisen, and Julia von Maltzan. 1997. "Emerging market risk and sovereign credit ratings." OECD Development Centre Technical Papers, No. 124, Paris, France: Organization for Economic Cooperation and Development.

Leblang, David. 2002. "The political economy of speculative attacks in the developing world." *International Studies Quarterly* 46: 69-91.

Lindbeck, Assar. 1976. "Stabilization Policies in Open Economies with Endogenous Politicians." *American Economic Review Papers and Proceedings,* 1-19.

Martinez, Juan, and Javier Santiso. 2003. "Financial markets and politics: the confidence game in Latin American emerging countries," *International Political Science Review*, forthcoming.

Nordhaus, William D. 1975. "The political business cycle." *Review of Economic Studies* 42: 169-90.

Nordhaus, William D. 1989. "Alternative approaches to political business cycles." *Brookings Papers on Economic Activity* 2: 1-49.

Polisci.com. 2002. "The political reference almanac's 2001-2002 edition." Polisci.com Web Site <www.polisci.com> (15 August 2002).

Santa-Clara, Pedro and Rossen Valkanov. 2003. "The presidential puzzle: Political cycles and the stock market." *Journal of Finance* forthcoming.

Schuknecht, Ludger. 1996. "Political business cycles and fiscal policies in developing countries." *Kyklos*, 49(2): 155-170.

Schuknecht, Ludger. 1999. "Fiscal policy cycles and exchange rate regime in developing countries." *European Journal of Political Economy*, 15: 569-580.

Schuknecht, Ludger. 2000. "Fiscal policy cycles and public expenditure in developing countries." *Public Choice*, 102(1/2): 113-128.

Schultz, Kenneth A. 1995. "The politics of the political business cycle." *British Journal of Political Science* 25: 79-99.

Stata Corp. 2001. *Stata statistical software: Release 7.0.* College Station, TX: Stata Corporation.

Tufte, Edward. 1978. *Political Control of the Economy.* Princeton: Princeton University Press.

World Bank. 2001. *Database of political institutions (version 3)*. Washington, DC: World Bank.

TABLE 1

Predicted Directions of Pre-Election Changes in Relative Bond Spreads Based on Partisan and Opportunistic PBC Considerations

Incumbent Partisan Orientation → Bondholder Electoral Expectation ↓	r (Right-Wing)	l (Left-Wing)
$\lambda \cong 1$ (Right-Wing Expected to Win)	(0,0) Right-Wing Base Case	(-,+) Compared to Left-Wing Base Case
$0 < \lambda < 1$ (Mixed Expectations)	(+,+) Compared to Right-Wing Base Case	(-,+) Compared to Left-Wing Base Case
$\lambda \cong 0$ (Left-Wing Expected to Win)	(+,+) Compared to Right-Wing Base Case	(0,0) Left-Wing Base Case

Predicted direction of change in spread based PBC considerations: (Partisan, Opportunistic).

TABLE 2

Regression Results, Dependent Variable: Sovereign Bond Spreads Relative to Comparable U.S. Treasuries 60 and 90 Days Before Election, 1994–2000 [a]

Period before Election →	60 days	90 days
Estimator → Coefficient ↓	(1) GEE [b]	(2) GEE [b]
Day [β_1]	-0.00758*** (0.00112)	-0.00872*** (0.00009)
GovRbegin [β_2]	1.21572*** (0.02750)	1.32841*** (0.00268)
*Day * GovRbegin [β_3]*	0.00663*** (0.00123)	0.00829*** (0.00010)
*Day * λD [β_4]*	-0.00713*** (0.00108)	-0.00938*** (0.00009)
*Day * GovRbegin * λD [β_5]*	0.00613*** (0.00120)	0.00895*** (0.00010)
Constant [β_0]	0.01746 (0.05517)	0.05528 (0.10134)
N	1140	1710
Wald χ^2	1.76e+07	4.29E+05

Standard errors in parentheses, * significant at 10%; ** significant at 5%; *** significant at 1%.

[a] Countries (year of election) in sample include: Argentina (1995, 1999), Brazil (1994, 1998), Bulgaria (1996), Chile (1999), Colombia (1994, 1998), Mexico (1994, 2000), Peru (2000), Philippines (1998), Poland (1995, 2000), Russia (1996, 2000), Uruguay (1999), and Venezuela (1998, 2000). These 19 presidential elections occurred over 1994-2000. Not reported are estimates for country and year dummies included in each specification. Results are robust to re-estimation with inclusion of controls for sovereign credit rating published by Moody's Investor Services on December 31 of the year before election (AAA = 16, Aa1 = 15, Aa2 = 14, …, B2 = 2, B3 = 1, C = 0), and for fixed versus floating (LIBOR +) rate (1 if floating rate, 0 otherwise). These additional results are available from the authors on request.

[b] Results in Columns 1 and 2 are based on a weighted population-averaged panel data model. Stata's (Stata Corp 2001) General Estimating Equations ("GEE") procedure provides general linear model estimates, allows for independent correlation structures for each of the 19 election groups, and provides semi-robust standard errors. The specifications reported above include country and year indicator variables, semi-robust standard errors adjusted for clustering and equation error terms adjusted for first through ninth-order auto-correlation (AR9). In order to account for gross outliers, a weighted GEE procedure was used, where the weight assigned to each observation is obtained from prior analysis using robust regression techniques. 310 of the 1710 observations in Column 2 (174 of the 1140 observations in Column 1) were identified as gross outliers and received a weight of zero in the weighted GEE procedure. These gross outliers were distributed in an approximately even manner among elections in Argentina (1995, 1999), Brazil (1994), Mexico (2000), Russia (2000), and Venezuela (1998). These additional results are available from the authors on request.

TABLE 3

Linear Combinations: Sovereign Bond Spreads Relative to Comparable U.S. Treasuries 60 and 90 Days Before Election, 1994–2000 [a]

Period before Election → Coefficient ↓	60 days	90 days
base case: left incumbent, λ^{lo} $[\beta_1 - \beta_4]$	-0.00044 (0.00036)	0.00065*** (0.00003)
close-call: left incumbent, λ^{med} $[\beta_1]$	-0.00758*** (0.00112)	-0.00872*** (0.00009)
right-victory: left incumbent, λ^{hi} $[\beta_1 + \beta_4]$	-0.01472*** (0.00217)	-0.01810*** (0.00019)
base-case: right incumbent, λ^{hi} $[\beta_1 + \beta_3 + \beta_4 + \beta_5]$	-0.00195*** (0.00026)	-0.00086*** (0.00002)
close-call: right incumbent, λ^{med} $[\beta_1 + \beta_3]$	-0.00095* (0.00052)	-0.00043*** (0.00003)
left-victory: right incumbent, λ^{lo} $[\beta_1 + \beta_3 - \beta_4 - \beta_5]$	0.00004 (0.00102)	-0.00000 (0.00006)

Standard errors in parentheses, * significant at 10%; ** significant at 5%; *** significant at 1%.

[a] Coefficients based on results reported in Table 1.

TABLE 4

Hypotheses Tests: Sovereign Bond Spreads Relative to Comparable U.S. Treasuries 60 and 90 Days Before Election, 1994–2000[a]

| Pre-election Window → Hypothesis ↓	Hypothesis Test	60 days	90 days
H1: Increasingly Positive Pre-election Spreads for Elections with Right-Wing Incumbents as Likelihood of Incumbent Victory Decreases ($\lambda^{hi} < \lambda^{med} < \lambda^{lo}$)	$\beta_4 + \beta_5 < 0$	-0.00100* (0.00053)	-0.00042*** (0.00003)
H2: No Change in Pre-election Spreads for Elections with Left-Wing Incumbents as Likelihood of Incumbent Victory Decreases ($\lambda^{lo} \cong \lambda^{med} \cong \lambda^{hi}$)	$\beta_4 = 0$	$\beta_4 = $ -0.00713*** (0.00180)	$\beta_4 = $ -0.00938*** (0.00009)

Standard errors in parentheses, * significant at 10%; ** significant at 5%; *** significant at 1%.
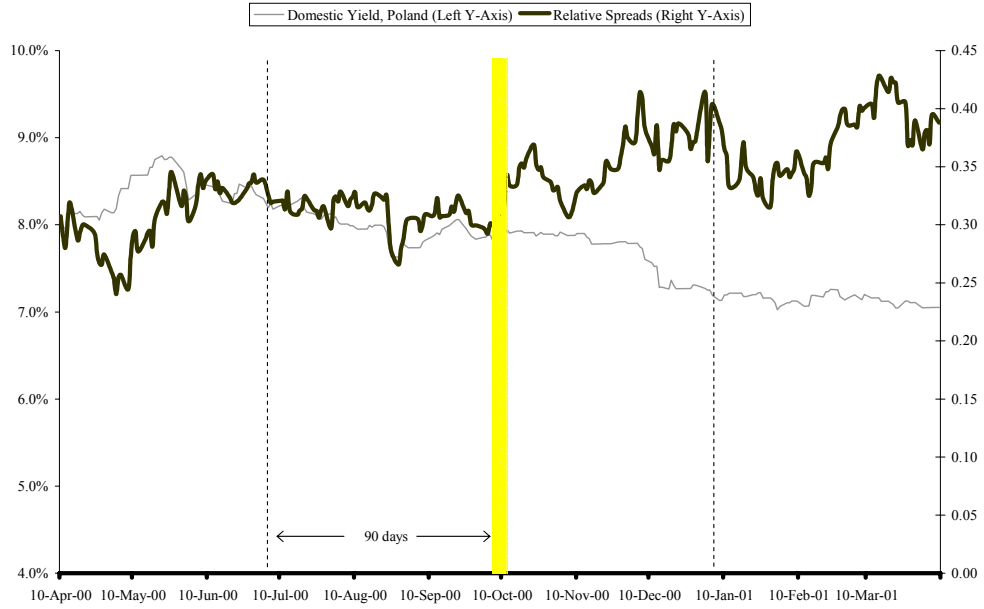
[a] Coefficients based on results reported in Table 1.

Figure 1

Argentina Presidential Election May 14, 1995: Sovereign Bond Yields and Relative Spreads

Domestic Yield, Argentina (Left Y-Axis) ▬ Relative Spreads (Right Y-Axis)

90 days
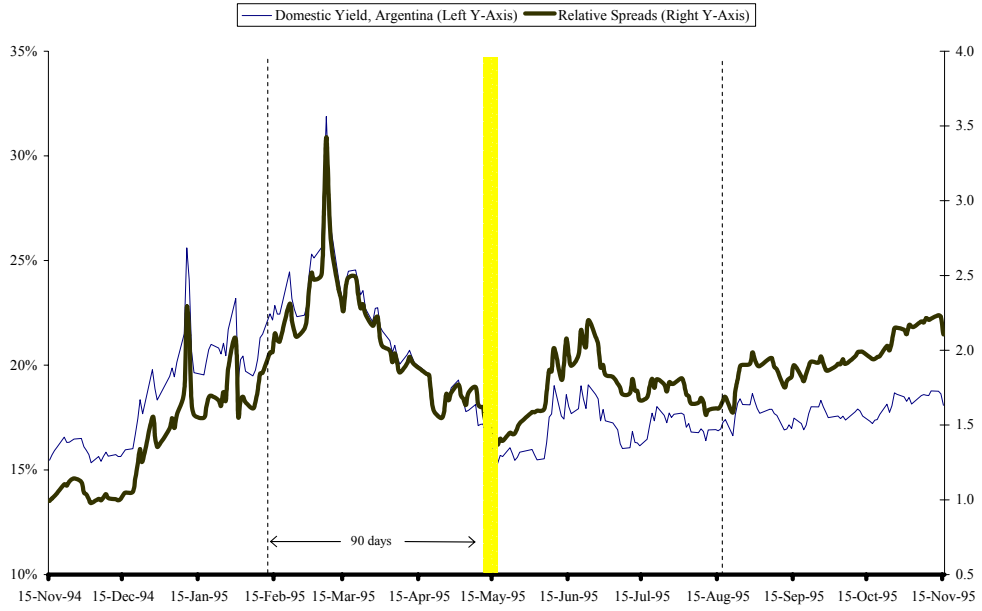
Figure 2

Poland Presidential Election October 8, 2000: Sovereign Bond Yields and Relative Spreads

DAVIDSON INSTITUTE WORKING PAPER SERIES - Most Recent Papers
The entire Working Paper Series may be downloaded free of charge at: www.wdi.bus.umich.edu

CURRENT AS OF 6/4/03

Publication	Authors	Date
No. 575: Democracy's Spread: Elections and Sovereign Debt in Developing Countries	Steven A. Block, Burkhard N. Schrage, and Paul M. Vaaler	June 2003
No. 574: Reintroducing Intergenerational Equilibrium: Key Concepts Behind the New Polish Pension System	Marek Góra	June 2003
No. 573: Why Does FDI Go Where It Goes? New Evidence From the Transition Economies	Yuko Kinoshita and Nauro F. Campos	June 2003
No. 572: Private Savings in Transition Economies: Are There Terms of Trade Shocks?	Abdur R. Chowdhury	May 2003
No. 571: On the long-run determinants of real exchange rates for developing countries: Evidence from Africa, Latin America and Asia	Imed Drine and Christophe Rault	May 2003
No. 570: A re-examination of the Purchasing Power Parity using non-stationary dynamic panel methods: a comparative approach for developing and developed countries	Imed Drine and Christophe Rault	May 2003
No. 569: How Important is Ownership in a Market with Level Playing Field? The Indian Banking Sector Revisited	Sumon Kumar Bhaumik and Ralitza Dimova	May 2003
No. 568: On Types of Trade, Adjustment of Labor and Welfare Gains During Asymmetric Liberalizations	Yener Kandogan	May 2003
No. 567: Technological Progress Through Trade Liberalization in Transition Countries	Yener Kandogan	May 2003
No. 566: Intra-industry Trade of Transition Countries: Trends and Determinants	Yener Kandogan	May 2003
No. 565: Local Protectionism and Regional Specialization: Evidence from China's Industries	Chong-En Bai, Yingjuan Du, Zhigang Tao, Sarah Y. Tong	May 2003
No. 564: Corporate Governance and Market Valuation in China	Chong-En Bai, Qiao Liu, Joe Lu, Frank M. Song, and Junxi Zhang	May 2003
No. 563: Revenue Sharing and Control Rights in Team Production: Theories and Evidence From Joint Ventures	Chong-En Bai, Zhigang Tao, and Changqi Wu	May 2003
No. 562: Financial Dependence, Stock Market Liberalizations and Growth	Nandini Gupta and Kathy Yuan	May 2003
No. 561: Growth and Regional Inequality in China During the Reform Era	Derek Jones, Cheng Li and Owen	May 2003
No. 560: Choice of Ownership Structure and Firm Performance: Evidence from Estonia	Derek Jones, Panu Kalmi, Niels Mygind	May 2003
No. 559: Explaining Postcommunist Economic Performance	Lawrence P. King	May 2003
No. 558: Tax Structure and the FDI: The Deterrent Effects of Complexity and Uncertainty	Kelly Edmiston, Shannon Mudd and Neven Valev	Apr. 2003
No. 557: Provincial Protectionism	Konstantin Sonin	Apr. 2003
No. 556: Nominal and Real Convergence in Estonia: The Balassa-Samuelson (dis)connection	Balázs Égert	Apr. 2003
No. 555: Banks-Firms Nexus under the Currency Board: Empirical Evidence from Bulgaria	Nikolay Nenovsky, Evgeni Peev and Todor Yalamov	Apr. 2003
No. 554: To Steal or Not to Steal: Firm Attributes, Legal Environment, and Valuation	Art Durnev and E. Han Kim	Apr. 2003
No. 553: Corporate Stability and Economic Growth	Kathy S. He, Randall Morck and Bernard Yeung	Apr. 2003
No. 552: So Many Rocket Scientists, So Few Marketing Clerks: Occupational Mobility in Times of Rapid Technological Change	Nauro F. Campos and Aurelijus Dabušinskas	Mar. 2003
No. 551: Determinants of Interregional Mobility in Russia: Evidence from Panel Data	Yuri Andrienko and Sergei Guriev	Feb. 2003
No. 550: Gross Job Flows in Ukraine: Size, Ownership and Trade Effects	Jozef Konings, Olga Kupets and Hartmut Lehmann	Mar. 2003