Counting the investor vote: political business cycle effects on sovereign bond spreads in developing countries

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Abstract
International business research has paid scant attention to whether and how electoral politics and economic policies affect foreign investment risk assessment, particularly in developing countries, where the last decade has seen both considerable foreign investment and domestic progress toward democratization and electoral competitiveness. We respond with development and testing of a framework using partisan and opportunistic political business cycle (PBC) theory to predict the investment risk perceived by investors holding sovereign bonds during 19 presidential elections in 12 developing countries from 1994 to 2000. Consistent with our framework, we find that bondholders perceive higher (lower) investment risk in the form of higher (lower) credit spreads on their sovereign bonds as right-wing (left-wing) political incumbents appear more likely to be replaced by left-wing (right-wing) challengers. For international business research, our findings illustrate the promise of PBC theory in explaining the election-period behavior of sovereign bondholders and, perhaps, other investors who also 'vote' in developing country elections and can substantially influence the price and availability of capital there. For developing country investors and states, our findings highlight the financial effects of democracy in action, and underscore the importance of state communication with investors during election periods.
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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 (bps) on Monday (June 17) to 1700 bps 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 polls… 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, 26 June 2002 (CSPB, 2002)

This study empirically investigates whether and how private, often foreign-based, investors react to risks associated with electoral

politics and economic policies in developing countries. International business (IB) research has long recognized the importance of understanding the divergent interests of foreign investors and host states, and the resulting risks that investors perceive over time, particularly in developing country contexts (Vernon, 1971; Fagre and Wells, 1982; Kobrin, 1987; Minor, 1994; Wells and Gleason, 1995; Eden and Appel-Molot, 2002). The last decade of IB research has re-examined these interests with greater emphasis on understanding what strategic actions host states can take to reduce perceived risks and attract international investment (Lenway and Murtha, 1994; Murtha and Lenway, 1994), and what legal and political institutions (Murtha, 1993; Henisz, 2000; Dixit, 2003) may constrain such state actions.

Curiously, these IB research streams have paid scant attention to analysis of investor risk in the specific context of electoral politics and economic policies. For example, obsolescing bargains between investing multinational corporations and host states (Vernon, 1971) and reversals of broader policies inducing investment (Murtha, 1993) are not necessarily tied to state electoral dynamics. Indeed, many developing countries with substantial attention from IB researchers examining investor risk from the 1960s through much of the 1980s had dominant one-party leadership (e.g., Indonesia, Mexico, Soviet Bloc States) or military governments (e.g., Brazil, Nigeria, South Korea) without competitive electoral systems. In this context, it is not surprising that previous IB research has paid less attention to election-related risk assessment in developing countries, rarely going beyond case studies (e.g., Vernon and Wells, 1986; Wells and Gleason, 1995).

The late 1980s and 1990s saw the transformation of many developing countries into democracies with competitive electoral systems including parties from across the political spectrum. As Goldsmith (1994) notes, democratization was thought by many to promote greater political freedom and stability and, in turn, enhanced attractiveness for lending and investment purposes. But as the quote above suggests, elections so important to the growth of democratic polities in developing countries may also generate a substantial increase in perceived risk among foreign investors. The Credit Suisse commercial bank linked increasing pre-election polling numbers for left-wing Brazilian presidential candidate Luís Inácio Lula da Silva ('Lula') to an increased probability of his victory over the right-wing incumbent candidate later in 2002, and then to post-election default on Brazil's foreign debt. Similarly, the Goldman Sachs investment bank used pre-election polling data to create a 'Lulameter' tracking the negative relationship between Lula's popularity and the value of the Brazilian real in currency markets during the 2002 campaign (Goldman Sachs, 2002; Martinez and Santiso, 2003). These anecdotes suggest that commercial and investment banks outside Brazil, as well as the foreign investors they represent and advise, perceive greater risks when elections may lead to less 'investor-friendly' left-wing economic policies. As competitive elections and election-related risks become more common in the developing world, IB research should respond with theory and empirical tests tailored specifically to understanding whether and how risk perceptions and behaviors change among these IB actors.

That response might benefit from review of theory in the political economy field, particularly political business cycle (PBC) theory, to develop testable hypotheses about the impact of elections on investment risk in developing countries. Since the seminal work of Nordhaus (1975, 1989) and others (e.g., MacRae, 1977), 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 and their descendants (e.g., Rogoff, 1990) 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. PBC models developed by Hibbs (1977, 1987) and others (e.g., Alesina *et al.*, 1997a, 1988) also suggested that candidates champion economic policies for electoral purposes; however, unlike 'opportunistic' incumbents, their policies differ markedly, with right-wing candidates characteristically emphasizing lower inflation and the interests of investors, and left-wing candidates preferring lower unemployment and the interests of workers.

We propose that PBCs of either type may also have important implications for various non-voting, often foreign-based IB actors crucial to developing country investment and economic growth. Investors in developing country sovereign bonds are representative. 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). Their assessments of risk associated with continued investment in sovereign debt have a direct and increasingly influential impact on the cost and availability of capital in developing countries. Interestingly, PBC research to date has done little to examine whether these IB actors or others react to electoral politics and economic policies with changed investment risk assessment. Our study responds to this limitation in PBC research even as it responds to the IB research challenge by extending the application of PBC theory to election-period behavior of such IB actors. We propose that their 'votes' on investment risk associated with electoral politics and economic policies matter for developing countries, and that PBC theory promises new insight into this behavior relevant to both IB and political economy researchers.

To investigate this proposition, we focus on sovereign bondholders and develop a conceptual framework for understanding how risk assessments measured by the market-determined spreads that bondholders demand may be shaped by both partisan and opportunistic PBC considerations. Using a country's cost of debt to assess perceived investment risk follows other recent IB research. Lee (1993), for example, uses the cost and availability of developing country debt to explain the impact of political instability on perceived country creditworthiness. McNamara and Vaaler (2000, 2002) examine whether and how developing country sovereign risk-ratings published by major credit rating agencies are influenced by rivalry among the agencies themselves, noting that agency ratings are closely correlated with the cost of developing country debt, and the attractiveness of countries for foreign direct investment. Most recently, Block and Vaaler (2004) compare pre- with post-election bond spreads from developing countries to show that bondholders anticipate opportunistic politicians, the prospect of pre-election spending sprees, and the deterioration of sovereign creditworthiness in the post-election period.

Use of bond spreads to gauge investment risk during elections in developing countries since the 1990s may have advantages compared with other indicators that IB researchers might use, such as FDI or trade flows. First, like FDI and trade data, bond spreads data are available for a wide variety of developing countries since the 1990s, thus facilitating cross-sectional study of investment risks in those countries. Second, bond spreads data are available on a more frequent daily (rather than, say, monthly, quarterly or annual) basis, thus permitting more fine-grained assessment of investment risk, say, during each day of an election campaign. Third, daily bond spreads provide direct measures of investment risk in the form of changing daily returns (yields), whereas most FDI, trade and other typical IB measures permit only indirect risk assessment in the form of changing FDI quantities or trade-flow composition. Research by Cantor and Packer (1996a, b), Larraín *et al.* (1997) and others (e.g., Min, 1998) rates that bond spreads in developing countries vary with capital and trade flows, and other macroeconomic factors more familiar to IB empirical research.

Using the bond spreads measure of investment risk, we derive a framework and test two hypotheses linking the partisan orientation of the incumbent facing election and her likelihood of re-election to trends in pre-election bond spreads demanded by investors. Linking pre-election bond spreads to the partisan orientation of the incumbent invokes partisan PBC considerations, while linking the same to likelihood of re-election invokes opportunistic PBC considerations. No previous study using PBC considerations has developed a conceptual framework predicting the simultaneous strength and direction of both effects, nor has any previous study then simultaneously tested for both effects, including Block and Vaaler (2004), who used opportunistic PBC considerations alone to explain changes in pre- *vs* post-election bond spreads.

Statistical analyses of daily bond spreads for sovereign bonds issued by 12 developing country sovereigns holding 19 presidential elections from 1994 to 2000 yield results consistent with our two hypotheses and the broader framework linking investment risk to both opportunistic and partisan PBC considerations. We find that bondholders in the run-up to elections perceive greater investment risk in the form of larger bond spreads as the likelihood increases of a right-wing incumbent being defeated by a left-wing challenger. We also observe that these investors perceive less investment risk in the form of smaller bond spreads as the likelihood increases of a left-wing incumbent being defeated by a right-wing challenger.

Overall, these results suggest that at least one group of IB actors – developing country sovereign bondholders – perceive investment risks associated with electoral politics and economic policies in a manner consistent with PBC considerations, particularly partisan PBC considerations. Where they

perceive greater investment risk – for instance, where right-wing incumbents are likely to be defeated by left-wing challengers – developing countries seeking greater political openness may suffer in the form of temporarily more costly capital for economic growth and investment. Because the cost and availability of debt in developing countries closely track other flows linked to FDI, trade, and risk-rating services, support for PBC considerations in this study also promises a rich stream of follow-on research about how and why investment risk in developing countries for these other flows may be sensitive, perhaps overly sensitive, to electoral factors.

Research background

Relevant IB theory and evidence
IB research on investment risk associated with host state policies is often formulated in the context of Vernon's (1971) bargaining hypothesis or, more recently, in the context of transaction cost arguments about policy uncertainty (Henisz, 2000; Dixit, 2003). These perspectives are relevant to electoral contexts. Vernon and Wells's (1986) study of tension between private mining interests and state policies after founding elections in Papua New Guinea in the late 1960s and early 1970s, and Wells's (1997) case study of Enron's Dabhol Project in India during state elections in the 1990s, represent two applications of the bargaining hypothesis where electoral factors substantially influenced interactions between foreign investors and the host state.

Yet, the bargaining hypothesis and transaction cost perspectives may yield only limited insight into election-related investment risk. The bargaining hypothesis suggests that investors with substantially fixed assets in developing countries may be more vulnerable to opportunistic renegotiation of investment terms by political incumbents courting voter support. From a transaction cost perspective, elections may raise investment risk by increasing uncertainty about who will occupy legislative, executive and/or judicial positions relevant to the continuation of current state policies influencing the investment climate. These IB perspectives, however, say little about the politician's situation at election time, including her incentives to use economic policies to raise voter support, and/or serve her partisan interests.

Relevant PBC theory and evidence
For a better understanding of election-related investment risks, we resort to PBC theory, which

historically has been the province of researchers in macroeconomics and political science. In these fields, PBC theory is typically analyzed in terms of its opportunistic and partisan branches. Opportunistic PBC theory originated with Nordhaus (1975, 1989) and MacRae (1977), and was refined by others (e.g., Rogoff, 1990). They contended that pre-election economic policy choices were motivated by the general support they would generate from voters with largely homogeneous preferences. Incumbents have incentives to engage in expansionary monetary and/or fiscal policies in the pre-election period intended to increase votes on election day, even though such policies may require post-election contractions. Whereas early models (e.g., Nordhaus, 1975) assumed naïve voters with adaptive expectations, and thus limited capabilities to anticipate incumbent policies during election periods, later models (e.g., Rogoff, 1990) assumed rational voters with the ability to anticipate many instances of electioneering.

Traditional partisan PBC models originated with Hibbs (1977, 1987) and were refined by others (e.g., Alesina *et al.*, 1997a, 1988). They argued that politicians seeking election tended to adopt economic policies according to ideological preferences. According to traditional partisan PBC models, incumbents may still use economic policy to garner voter support, but their policy decisions are based on their partisan political orientation, which can lead to very different emphases. Partisan PBC research often articulates these differences in terms of a simple Phillips curve approach, with left-wing post-election policies tending to favor employment at the expense of inflation and right-wing post-election policies favoring 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. Again, earlier models (e.g., Hibbs, 1977) assumed that these policy differences could generate long-term macroeconomic effects, whereas more recent rational partisan models (Alesina *et al.*, 1997a) assumed that only unexpected partisan shifts in policy could have real effects, and then only temporarily.

Left–right partisan differences in policy preferences are most commonly articulated in terms of the inflation–employment tradeoff, but they proxy

for a more comprehensive range of right-wing policy preferences generally favoring the interests of the investors *vs* left-wing policies generally favoring the interests of workers. Hibbs (1977), for example, argued that the major supporters of right-wing parties are typically middle- and upper-class individuals with higher incomes and investment wealth, a considerable part of which is typically in nominally fixed assets. Left-wing supporters typically have lower incomes and wealth, aside from human capital tied closely to the employment relationship.[1] Based on this distinction, it is easy to expand the list of partisan distinctions to a range of right-wing fiscal, monetary and related policies, including but not limited to lower inflation, favoring investor interests, and a range of left-wing policies, including but not limited to higher employment, favoring worker interests.

Recent reviews of the PBC research by Drazen (2000), Franzese (2002) and Block and Vaaler (2004) chronicle a growing empirical literature, but with more growth in the opportunistic rather than partisan PBC branches, and with much more work in both branches in industrialized country rather than developing country contexts. Evidence supporting opportunistic PBCs in industrialized countries is, to date, mixed, but empirical studies in developing countries consistently find support for the proposition that incumbents may employ expansionary monetary, fiscal and related policies during election periods to gain voter support on the final election day.[2] Schuknecht (1999), for example, finds evidence of electioneering in the form of expansionary fiscal policies during electoral campaigns for several developing countries with fixed exchange rate regimes from the 1970s to the early 1990s. Block (2002) also finds evidence of opportunistic behavior in the fiscal and monetary policies in a sample of African countries covering the 1980s and 1990s.

Aside from Leblang's (2002) recent study, there is only sparse application of partisan PBC theory in non-industrialized democracies, and practically nothing applying to interactions between politicians and IB actors. Leblang examined the possibility that foreign currency traders might engage in 'speculative attacks' on developing country currencies based on PBC considerations. Consistent with partisan PBC perspectives, he finds that the likelihood of speculative attacks during election periods is greater with left-wing rather than right-wing incumbents. The attacks are also more likely in the post-election rather than pre-election period. Leblang's results suggest that PBC perspectives may

have relevance for more than just currency traders. Political trends in developing countries fostering democratization and PBCs on the one hand, and economic trends increasing investment risk among various IB actors on the other, no doubt implicate a much broader group, including the sovereign bond-holders and bond spreads we analyze below.

Empirical setting, conceptual framework and hypotheses

Empirical setting
A brief explanation of institutional practices in the developing country sovereign bond market provides helpful context for developing a conceptual framework to predict changes in bondholder risk assessment linked to partisan and opportunistic PBC considerations. The origins of developing country sovereign bonds and bondholders 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, often in overseas markets. For example, from 1994 to 2000 the stock of outstanding debt securities issued abroad for the Philippines rose from $2.1 billion to $14 billion. For Mexico, it rose from $24 billion to $58 billion. For Argentina, it rose from $13 billion to $76 billion (OECD, 2004).[3] 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 constitute this secondary market, which is linked electronically and capable of connecting buyers and sellers, executing and clearing their trades in 'round lots' of at least $2 million (EMTA, 2001).

Risks associated with investment in sovereign bonds are typically gauged by the market-determined spreads that bondholders are able to command. Expressed either absolutely (e.g., Larraín *et al.*, 1997; CSPB, 2002), or in relative terms (e.g., Block and Vaaler, 2004),[4] sovereign bond spreads vary with the likelihood of default by the sovereign issuer. Empirical studies by Cantor and Packer (1996a, b) as well as numerous industry analyses

(e.g., 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

With this institutional context, we develop a conceptual framework integrating both partisan and opportunistic PBC considerations into investor risks related to elections in developing countries. The framework rests on four basic assumptions. Consistent with our description of institutions and practices associated with developing country sovereign bonds and bondholders, we assume first that there is a well-functioning market for sovereign bonds from developing countries with astute institutional and individual bondholders revising on a daily basis their subjective expectations of risk that the issuing sovereign will default on its obligations. Second, we assume that primary vetting of candidates has concluded, and a general election campaign with competitors from right-wing and left-wing parties is in full swing. Third, we draw on partisan PBC theory going back to Hibbs (1977) and running through Berlemann and Markwardt (2003), and assume that 'investor-friendly' right-wing policy preferences favor bondholders, lower the risk of default and lead to lower bond spreads; left-wing policy preferences do not favor bondholders, raise the risk of default and lead to higher bond spreads. Fourth, we draw on opportunistic PBC theory to assume that incumbents are identical, regardless of party, in their motivation to retain office. Their incentives to use expansionary monetary, fiscal and/or related policies as means to retain office are detrimental to post-election bondholder interests, raise the risk of default, and lead to higher bond spreads.[5] Franzese (2002) and others suggest that opportunistic incentives may be modified by the incumbent's likelihood of victory as election day approaches. Incumbents certain of victory will have fewer incentives to resort to opportunistic policies compared with incumbents with their backs against the wall.[6] 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 election run-up, as well as with Block *et al*. (2003), who make a similar point in the African context.

With these four assumptions, we define the PBC framework in Table 1. The two columns define the partisan orientation of a right-wing or left-wing incumbent seeking to retain office in the general election. The three rows define different levels of bondholder expectation (λ) regarding the likelihood that a right-wing candidate will prevail on election day. This expectation ranges from $0 \leqslant \lambda \leqslant 1$, where $\lambda \cong 1$ indicates the bondholder expectation of a right-wing candidate victory, $\lambda \cong 0$ indicates bondholder expectation of a right-wing defeat, and $\lambda \cong 0.5$ indicates closely balanced bondholder expectations. The resulting six cells (I–VI) in this 2×3 matrix (I–VI) represent the predicted effects that incumbent partisan orientation and incumbent re-election likelihood will have on bondholder risk as measured by increasing ($+$) spreads indicative of greater risk, or decreasing ($-$) spreads indicative of less risk.

There are two 'base-case' scenarios in Table 1 (I, VI). In the right-wing base-case scenario (I), a right-wing incumbent faces re-election and is expected to win ($\lambda \cong 1$). In this base case, there is likely to be no change in bond spreads (0, 0) related either to partisan or to opportunistic PBC considerations. From a partisan PBC perspective, current right-wing policies favorable to investors are likely to continue after the election. From an opportunistic PBC perspective, the expectation of easy incumbent electoral victory eases bondholder concern about the possibility of pre-election spending sprees meant to buy votes at the expense of post-election investor interests. The left-wing incumbent base-case scenario (VI) of expected re-election ($\lambda \cong 0$) leads to a similarly null impact on bond spreads (0, 0). If bondholders expect a left-wing incumbent to win easily, then current economic policies less friendly to investors are expected to continue into the future. From an opportunistic PBC perspective, the expectation of easy incumbent electoral victory again eases bondholder concern about the possibility of pre-election spending sprees meant to buy votes at the expense of post-election investor interests.

The remaining four cells in Table 1 (II–V) show how partisan and opportunistic PBC considerations can generate changes in bondholder risk assessment during elections. Pre-election bond spreads differ from the two base cases once bondholder expectations vary from certain incumbent re-election. With a right-wing incumbent, bondholders

Table 1 PBC framework: predicted pre-election trends in sovereign bond spreads if bondholders consider partisan and opportunistic PBC factors

Bondholder electoral expectation	Incumbent partisan orientation	
	Right wing	Left wing
Right wing expected to win ($\lambda \cong 1$)	(0,0) I Right-wing 'base-case' scenario	(− −, ++) II Left-wing 'switch' scenario
Closely balanced expectations ($\lambda \cong 0.5$)	(+, +) III Right-wing 'close call' scenario	(−, +) IV Left-wing 'close call' scenario
Left wing expected to win ($\lambda \cong 0$)	(++, ++) V Right-wing 'switch' scenario	(0,0) VI Left-wing 'base-case' scenario

Predicted direction of change in spread based on PBC considerations: (partisan, opportunistic).

may have closely balanced expectations ($\lambda \cong 0.5$) or expect the right-wing incumbent's defeat ($\lambda \cong 0$). These two alternative scenarios (III, V) lead to partisan and opportunistic PBC pressures to increase pre-election spreads relative to the right-wing base-case. From a partisan PBC perspective, the prospect of a partisan shift from right-wing investor-friendly economic policies to left-wing policies will prompt an increase in pre-election spreads. From an opportunistic PBC perspective the prospect of victory by the challenger will prompt the (right-wing) incumbent to engage in electioneering spending sprees meant to buy votes and stave off electoral defeat, a prospect that also troubles bondholders and increases pre-election bond spreads. If the election is a close call (III), then the increase in spreads is smaller $(+, +)$ compared with the situation when the right wing is likely to be turned out of office (V) $(+ +, + +)$.

With left-wing incumbents, pre-election bond spreads do not differ from the base case with any *a priori* determinism. When bondholder expectations of left-wing incumbent victory are closely balanced (IV) ($\lambda \cong 0.5$), or if easy ousting by a right-wing challenger is expected (II) ($\lambda \cong 1$), then PBC effects on pre-election bond spreads are both negative and positive compared with the base case. From a partisan PBC perspective, the prospect of a partisan switch to investor-friendly right-wing policies eases bondholder concerns and lowers spreads. From an opportunistic PBC perspective, however, the prospect of defeat by a (right-wing) challenger prompts the (left-wing) incumbent to engage in electioneering spending sprees to 'buy' votes, a prospect that again troubles bondholders and increases spreads. If the election is a close call (IV), then the countervailing effects on spreads are

individually smaller $(-, +)$ compared with the situation when the left wing is likely to be turned out of office (II) $(--, + +)$.

Note that, for right-wing incumbents, our framework suggests that partisan and opportunistic PBC considerations are mutually reinforcing. For left-wing incumbents, however, these two PBC considerations work in opposition to one another. Where, in the case of right-wing incumbents, the pair of PBC considerations are both positive (III, V), we can predict a positive trend in bond spreads compared with the base-case scenario of certain right-wing re-election (I). 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, *a priori*. Compared with the base case of certain left-wing incumbent retention (VI), the overall change in spreads, if any, will depend empirically on whether bondholder decisions are systematically dominated by partisan or opportunistic PBC considerations for left-wing close calls (IV) $(-, +)$ and switch scenarios (II) $(--, + +)$.

Hypotheses
For right-wing incumbents, our PBC framework in Table 1 predicts a clear link between bondholder expectations of election-day victory and pre-election spreads on developing country sovereign bonds. Compared with the base-case scenario of certain right-wing incumbent retention (I), 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 spreads compared with the base case will be

positive and increasing as the likelihood of re-election decreases.

For left-wing incumbents, our PBC framework predicts contradicting partisan and opportunistic effects on pre-election spreads as we move from the base case of certain left-wing incumbent victory to mixed bondholder expectations or even certainty of victory by the right-wing challenger. Increasing likelihood of a partisan switch from left- to right-wing investor-friendly economic policies 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 *a priori* basis for determining that either partisan or opportunistic PBC effects will systematically dominate the other. Accordingly, Hypothesis 2 can be restated in alternative terms. If partisan PBC effects predominate, then we expect pre-election bond spreads to deviate negatively from the base-case scenario (VI) as the likelihood of incumbent re-election decreases:

H2a: Given a left-wing incumbent, pre-election bond spreads compared with the base case will be negative and decreasing as the likelihood of re-election decreases.

On the other hand, if opportunistic PBC effects predominate, then we expect pre-election bond spreads to deviate positively from the base-case scenario (IV) as the likelihood of incumbent re-election decreases:

H2b: Given a left-wing incumbent, pre-election bond spreads compared with the base case will be positive and increasing as the likelihood of re-election decreases.

Methodology

Spreads model and hypothesis tests
To test these two hypotheses, we define the following regression equation:

$$Spread_{cte} = \beta_0 + \beta_1 Day_{te} + \beta_2 GovRbegin_{ce}$$
$$+ \beta_3 (Day \times GovRbegin)_{cte} + \beta_4 (Day \times \lambda D)_{cte}$$
$$+ \beta_5 (Day \times GovRbegin \times \lambda D)_{cte} + C\alpha + u_{cte}$$
$$(1)$$

Dependent variable
The dependent variable, $Spread_{cte}$, is the market-determined credit spread relative to a comparable

US Treasury security on day t of election event e for a sovereign bond issued by developing country c. This relative measure of spreads follows Lamy and Thompson (1988) and others (e.g., Cantor and Packer, 1996a, b) and permits a more parsimonious model specification.[7] Bond spreads in the run-up to election day are assumed to incorporate investment risks associated with elections, and provide the basis for testing our hypotheses using PBC considerations.

Control variables
C is a vector of additional control variables, including country and year dummies, (log) bond face amount, years to bond maturity, a dummy to distinguish fixed *vs* floating rate bonds, a dummy to distinguish countries with investment grade ratings for their sovereign bonds, the JP Morgan Emerging-Market Bond Index Global (EMBI) for the relevant day and a dummy variable to distinguish countries that experienced financial crises in the previous year. The rationale for each of these controls follows below.

First, the US dollar face amount of the bond proxies for bond liquidity. Bonds with a larger face amount have greater liquidity and pose less risk to investors. Thus, we expect bond face amount to have a negative effect on spreads. Second, the number of years left before a bond reaches maturity is another dimension of investor risk, as longer maturity bonds expose investors to greater risk from adverse changes in interest rates. We therefore expect time to maturity to have a positive effect on spreads. Third, if a bond's coupon rate is 'floating' (1) rather than fixed (0), then the coupon rate adjusts periodically – often annually or semi-annually – to changes in the benchmark rate, typically the London Interbank Offered Rate (LIBOR). Floating rate bonds are therefore less risky to investors, and are expected to be negatively related to spreads.

We also observe the long-term foreign currency denominated sovereign credit rating on 31 December of the year prior to an election to see whether the rating was 'investment grade' or non-investment 'junk grade'.[8] We use sovereign ratings published by a leading credit rating agency, Moody's Investor Services. Previous empirical research (e.g., Cantor and Packer, 1996a, b) shows that these ratings are significantly related both to sovereign bond spreads and to several macroeconomic and related factors important to the government's ability and willingness to honor ongoing obligations to bondholders: GDP per capita, GDP growth,

inflation, fiscal balance, trade balance, external debt and previous default history. Sovereigns with investment-grade ratings enjoy more favorable macroeconomic and related conditions, and are considered to have a lower background risk of default. Accordingly, investors should perceive less risk in holding their bonds during elections, which should have a negative effect on spreads. We include the daily observation on the EMBI index (a value index based on returns for bonds issued by 27 different developing countries) (Morgan, 1999), because higher daily values of the EMBI indicate greater overall confidence in the creditworthiness of developing countries generally, and thus lower bond spreads. We also control for recent past financial crises, which may also change perceived risks among bondholders. In the midst of some crisis, spreads are expected to increase. In the aftermath of crisis, as we measure such phenomena, temporarily heightened bondholder risk may have decreased, leading to lower spreads.[9]

Variables of central interest
Our hypotheses test for pre-election bond spread trends consistent with partisan and opportunistic PBC considerations and the conceptual framework in Table 1. Accordingly, the central variables of interest in our regression equation track pre-election spread observations with terms accounting for incumbent partisan orientation and bondholder expectations of right-wing victory on election day. Day_t is a numeric counter for each day t in a 90-day span comprising the 90 trading days before the election date. As a check on the robustness of our results, we also re-estimate the equation with a 60-day window. We choose these two pre-election windows primarily because they approximate the time-length of general election campaigns when voters and others are more likely to pay attention to the candidates and their platforms and form expectations of likely outcomes on election day. The $GovRbegin_{cy}$ term is a 0–1 indicator distinguishing right-wing (1) pre-election incumbent government partisan orientation from left wing (0).

λD is a dummy variable accounting for bondholders' expectation of a right-wing victory. It takes values corresponding roughly to the values of λ in Table 1 where right-wing incumbent victory is expected ($\lambda \cong 1$), or uncertain owing to closely balanced expectations ($\lambda \cong 0.5$), or not expected ($\lambda \cong 0$). In practice, bondholder pre-election expectations are unlikely to be at either extreme value, but will tend toward them except

in a very close race. Following that idea, we permit λD to take one of three values in the equation: $\lambda D^{hi}=1$, where bondholders expect a right-wing candidate victory (I–II); $\lambda D^{lo}=-1$, where bondholders expect the right-wing candidate to lose (V–VI); and $\lambda D^{med}=0$, where bondholder expectations are closely balanced in the 'close call' election (III–IV).[10]

Ideally, we would measure these bondholder expectations, λD, with data from reliable pre-election polls of bondholders for country c on pre-election day t of year y. Unfortunately, no such data exist. A second approach would review data from reliable pre-election polls of likely voters whom bondholders are watching. Again, reliable pre-election polling data in developing countries are not widely available on a comparable basis. Indeed, aside from Schultz's (1995) analysis of UK elections, we know of only one other published academic study on PBCs using pre-election polling data: Alesina *et al*.'s (1997b) study of partisan preferences, electoral expectations and unemployment in the US.[11]

An alternative to using pre-election polling data is using actual final election results retrospectively. Table 2 summarizes the two different approaches we take to measuring λD based on actual final election results. A critical but, we think, reasonable assumption in using the actual election-day voting results to measure λD is that the actual election-day results correspond to pre-election bondholder views. Put another way, our assumption is that pre-election bondholder views are not systematically upset by actual election-day results. The example of bondholder reactions to Lula's increase in popularity approximately 3 months prior to Brazilian presidential elections in October–November 2002 illustrates our point. Substantial increase in spreads on Brazilian sovereign debt in mid-June 2002 coincided with a substantial increase in Lula's pre-election polling numbers, and foretold victory by substantial margins over right-wing competitors in the October–November elections (Martinez and Santiso, 2003).

Yet, the evolution of bondholders' expectations regarding the end result of a given election period remains unknown. One possibility is that bondholders form their expectations at the beginning of the election period, and hold to those expectations throughout. Alternatively, bondholders may condition their expectations on the incumbent party and gradually converge towards their final expectation as the election nears.

Table 2 Sovereign bondholder pre-election expectations (λD): constant and convergent variable measurement

Bondholder electoral expectation	Incumbent partisan orientation	
	Right wing (GovRbegin=1)	*Left wing (GovRbegin=0)*
Right wing expected to win (λD^{hi}=1)	I Right-wing base-case scenario *Constant λD^{hi}* Takes value of 1 from day −90 (−60) to election day (0)	II Left-wing switch scenario *Constant λD^{hi}* Takes value of 1 from day −90 (−60) to election day (0)
	I Right-wing base-case scenario *Convergent λD^{hi}* Takes value of 0.75 on day −90 (−60) before election, and then increases linearly to 1 on election day (0)	II Left-wing switch scenario *Convergent λD^{hi}* Takes value of 0.50 on day −90 (−60) before election, and then increases linearly to 1 on election day (0)
Closely balanced expectations (λD^{med}=0)	III Right-wing close-call scenario *Constant λD^{med}* Takes value of 0 from day −90 (−60) to election day (0)	IV Left-wing close-call scenario *Constant λD^{med}* Takes value of 0 from day −90 (−60) to election day (0)
	III Right-wing close-call scenario *Convergent λD^{med}* Takes value of 0.25 on day −90 (−60) before election, and then decreases linearly to 0 on election day (0)	IV Left-wing close-call scenario *Convergent λD^{med}* Takes value of −0.25 on day −90 (−60) before election, and then increases linearly to 0 on election day (0)
Left wing expected to win (λD^{lo}=−1)	V Right-wing switch scenario *Constant λD^{lo}* Takes value of −1 from day −90 (−60) to election day (0)	VI Left-wing base-case scenario *Constant λD^{lo}* Takes value of −1 from day −90 (−60) to election day (0)
	V Right-wing switch scenario *Convergent λD^{lo}* Takes value of −0.50 on day −90 (−60) before election, and then decreases linearly to −1 on election day (0)	VI Left-wing base-case scenario *Convergent λD^{lo}* Takes value of −0.75 on day −90 (−60) before election, and then decreases linearly to −1 on election day (0)

To account for both possibilities we first construct a 'constant' λD by noting the election-day victor, the victor's partisan orientation, and the victor's final margin of victory for each election in our sample. The victory margin was defined as the difference in percentage points between the winning and second-place (runner-up) candidates. Thus, a right-wing victor winning by a substantial margin on election-day results in a λD value of 1 (λD^{hi}), whereas a left-wing victor by a substantial margin on election day results in a λD value of −1 (λD^{lo}). We classify an election as a close call resulting in a λD value of 0 (λD^{med}) where, regardless of the victor and the victor's partisan orientation, the victory margin was less than 3%.

As illustrated in Table 2, our alternative 'convergent' λD takes an initial value based on the incumbent party and final expectation regarding the victorious party, and then converges linearly over time towards 1, 0, or −1 as described above. We posit that bondholders' expectations are initially anchored closer to their final values when they expect no change in party. For instance, when

bondholders expect the retention of a right-wing incumbent (I), λD begins at 0.75 90 (or 60) days prior to the election and converges to 1. Conversely, when bondholders expect a left-wing contender to prevail over a right-wing incumbent (V), λD begins at -0.5 and converges to -1. Faced with a close call for a right-wing incumbent (III), λD begins at 0.25 and converges to 0. This structure is symmetrically opposite for left-wing incumbents (II, IV, VI). Thus we allow bondholders to condition the evolution of their expectations on both the incumbent and the expected victor. These expectations must converge over a longer range when bondholders expect a change of party, as there is a presumption in favor of the incumbent.

Using the Day_t, $GovRbegin_{cy}$ and λD terms individually and as interactions, we can estimate pre-election bond spread slopes for six different scenarios corresponding to the scenarios described in our conceptual framework. We describe these slopes based on a constant λD:

$$\left.\frac{\partial Spread}{\partial Day}\right|_{\substack{GovRbegin=0\\\lambda D=-1}} = \beta_1 - \beta_4$$

$$\text{(Left-wing 'base case' (VI))}$$

$$\left.\frac{\partial Spread}{\partial Day}\right|_{\substack{GovRbegin=0\\\lambda D=0}} = \beta_1$$

$$\text{(Left-wing 'close call' (IV))}$$

$$\left.\frac{\partial Spread}{\partial Day}\right|_{\substack{GovRbegin=0\\\lambda D=1}} = \beta_1 + \beta_4$$

$$\text{(Left-wing 'switch' (II))}$$

$$\left.\frac{\partial Spread}{\partial Day}\right|_{\substack{GovRbegin=1\\\lambda D=1}} = \beta_1 + \beta_3 + \beta_4 + \beta_5$$

$$\text{(Right-wing 'base case' (I))}$$

$$\left.\frac{\partial Spread}{\partial Day}\right|_{\substack{GovRbegin=1\\\lambda D=0}} = \beta_1 + \beta_3$$

$$\text{(Right-wing 'close call' (III))}$$

$$\left.\frac{\partial Spread}{\partial Day}\right|_{\substack{GovRbegin=1\\\lambda D=-1}} = \beta_1 + \beta_3 - \beta_4 - \beta_5$$

$$\text{(Right-wing 'switch' (V))}$$

$$(2)$$

Slopes for these six scenarios provide the basis for testing Hypotheses 1 and 2. In the case of Hypothesis 1, we predict that both partisan and opportunistic PBC considerations will increase bondholder risk, and consequently spreads, as the likelihood of right-wing incumbent re-election decreases. The 90-day or 60-day slopes in pre-election bond spreads for the base case of a right-wing incumbent likely to win on election day (I) will be lower than slopes for a close call (III), which will be lower than slopes for a likely left-wing victory (V). In terms of the three right-wing incumbent scenarios above (I, III, V), this prediction reduces to

H1: $\beta_4 + \beta_5 < 0$[12]

Hypothesis 2 concerns bondholder risk and spreads in the run-up to elections with left-wing incumbents. This case leads to conflicting partisan and opportunistic PBC considerations. If, as Hypothesis 2a predicts, partisan PBC effects are dominant, then increasing bondholder expectations of right-wing victory on election day should decrease bondholder risk, and consequently, spreads. The 90-day or 60-day slopes in pre-election bond spreads for the base case of a left-wing incumbent likely to win on election day (VI) will be higher than slopes for a close call (IV), which will be higher than slopes for a likely right-wing victory (II). In terms of the three left-wing incumbent scenarios above (II, IV, VI), this prediction reduces to

H2a: $\beta_4 < 0$

Hypothesis 2b predicts that opportunistic PBC considerations will dominate. If so, then bondholder risk, and consequently spreads, will increase as the likelihood of victory for a left-wing incumbent decreases; they are more likely to engage in pre-election spending sprees useful in rallying voter support but detrimental to the post-election economy. The 90-day or 60-day slopes in pre-election bond spreads for the base case of a left-wing incumbent likely to win on election day (VI) will be lower than slopes for a close call (IV), which will be lower than slopes for a likely right-wing victory (II). In terms of the three left-wing incumbent scenarios above (II, IV, VI), this prediction reduces to

H2b: $\beta_4 > 0$[13]

Data sources and sampling

To test these hypotheses we collect several types of data. First, we collect data on presidential elections held during the 1987–2000 period using the World Bank's Database of Political Institutions (DPI, 2001) (version 3, described in Beck *et al.*, 2001), a database providing comprehensive information through 1997 on election dates, electoral systems including their competitiveness, and candidate partisan

orientation. Where the DPI database proved to be incomplete for certain elections held between 1998 and 2000, we turn to two alternative sources: The International Foundation for Election Systems (IFES, 2003); and the on-line version of the *Political Reference Almanac* 2001–2002 Edition (Polisci.com, 2003). Election-related information from these alternative sources is sampled using the same criteria as the DPI unless otherwise noted below. From the DPI, IFES and Polisci.com databases, we extract 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, follows 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 PBC 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 in our sample score 6 or 7 on this scale, indicating that they are 'real' elections. DPI classifications of competitive elections in 1997 were judged to continue through 2000. The DPI, IFES and Polisci.com sources also provide final election results used to construct λD.

Our empirical analysis relies on identification of the partisan (left wing *vs* right wing) orientation of electoral candidates, particularly incumbent (government) candidates. The DPI, IFES and Polisci.com databases provide information on the partisan orientation of candidates, including characterization of their parties as left wing, right wing, or centrist-oriented. Beck *et al.* (2001) explain the decision rules used for these DPI categorizations, which are widely used in recent academic research for purposes of assessing the partisan orientation of political parties in industrialized and developing country contexts (e.g., Stasavage and Keefer, 2003). Two types of classification criteria are used. First, they examine the content of party names. Second,

they refer to judgments by academic and professional commentators. In terms of content, parties are defined as 'right-wing' based on whether terms such as 'conservative' or 'Christian democratic' are included in their names. A 'left-wing' definition follows from party names with terms such as 'communist', 'Marxist', 'socialist' or 'social democratic'. Failing a clear indication based on content, academic and professional commentator judgments are used. The 'centrist' classification follows from no clear criteria based on party name: thus academic and professional judgment is the primary source. Centrist parties advocate the strengthening of private enterprise but also support some redistributive role for government. We apply the same criteria to ascertain preliminary classifications for post-1997 elections not covered by DPI.

Increased subjectivity associated with the centrist classification, the bilateral rather than multilateral nature of partisan PBC theory, and the small number of elections involving centrist parties together caused us to aggregate the centrist parties in our sample. Criteria used by Beck *et al.* (2001) to locate parties on the political spectrum suggest that only right-wing and centrist parties explicitly advocate policies upholding investor interests, a commitment distinguishing them from parties classified as left-wing. Important distinctions in partisan PBC theory between investor-friendly and worker-friendly parties and policies also suggest a more natural aggregation of centrist parties with the right wing rather than left wing. Our particular empirical context of developing country sovereign bondholders investing under the threat of default also indicates similar preference for the policies of centrist and right-wing parties compared with left-wing party policies. Accordingly, we aggregate centrist parties into the right wing. Thus our final classifications are limited to two: left wing and right wing (including centrist). The possibility that these centrist parties might combine more naturally with left-wing rather than right-wing parties is discussed in our results section below.[14] These data are summarized in Table 3.

Using Bloomberg (2003) on-line data sources, we collect EMBI, sovereign risk-rating and exchange rate (crisis) data, as well as data on bond yields for large-size, dollar-denominated bonds issued by developing country sovereigns in foreign markets and/or trading there from 1994 to 2000. Where possible, we choose Brady bonds with the longest trading history available to us for each sovereign in our sample. Key data on the bonds included in our

Table 3   Developing country election data, 1994–2000

Election results: location, date, votes cast, and incumbent party				*Election results: winning candidate and party*				*Election results: runner-up candidate, party and votes*		
Country	Date	Number of votes cast	Incumbent party (partisan orientation)	Winning party (partisan orientation)	Winning candidate	Winner's votes (%)	Winner's margin of victory (%)	Runner-up party (partisan orientation)	Runner-up candidate	Runner-up's votes (%)
Argentina	14 May 95	17,939,156	Peronist Party (R)	Peronist Party (R)	Carlos Saul Menem	47.49	19.66	FREPASO (L)	Jose Octavio Bordón	27.83
Argentina	24 Oct 99	19,415,960	Peronist Party (R)	Union Civica Radical (C)	Fernando de la Rua	48.50	10.41	Peronist Party (R)	Eduardo Duhalde	38.09
Brazil	3 Oct 94	77,971,676	Independent (R)	PSDB (R)	Fernando Henrique Cardoso	54.28	27.24	Workers' Party (L)	Luís Inácio Lula da Silva	27.00
Brazil	4 Oct 98	83,296,067	PSDB (R)	PSDB (R)	Fernando Henrique Cardoso	53.06	21.35	Workers' Party (L)	Luís Inácio Lula da Silva	31.71
Bulgaria	4 Nov 96	4,215,145	Independent (L)	United Democratic Forces (R)	Petar Stoyanov	59.73	19.46	Coalition 'Together for Bulgaria' (L)	Ivan Marazov	40.27
Chile	16 Jan 00	7,316,310	Party for Democracy (R)	Party for Democracy (R)	Ricardo Lagos	51.31	2.62	Alliance for Chile (R)	Joaquín Lavin	48.69
Colombia	19 Jun 94	7,427,742	Liberal Party (C)	Liberal Party (C)	Ernesto Samper	50.26	2.11	Andrés Presidente-Social Conservative Party (R)	Andrés Pastrana	48.15
Colombia	21 Jun 98	11,244,288	Liberal Party (C)	Great Alliance for Change (R)	Andrés Pastrana	50.39	9.86	Liberal Party (C)	Horacio Serpa	46.53
Mexico	21 Aug 94	35,545,831	PRI (L)	PRI (L)	Ernesto Zedillo	50.34	3.76	PAN (R)	Diego Fernandez	46.58
Mexico	2 Jul 00	37,603,923	PRI (L)	PAN (R)	Vicente Fox Quesada	50.18	23.49	PRI (L)	Francisco Labastida	26.69
Peru	28 May 00	11,800,310	Change 90 (R)	Change 90 (R)	Alberto Fujimori	43.43	6.55	Peru Possible (C)	Alberto Toledo	36.88
Philippines	11 May 98	10,722,295	Lakas-NUCD (C)	LAMMP (L)	Joseph Marcelo Ejercito Estrada	74.33	48.66	Lakas-NUCD (C)	Jose de Venecia	25.67
Poland	19 Nov 95	18,203,218	Independent (L)	SLD (L)	Aleksander Kwasniewski	51.72	9.44	Independent (L)	Lech Walesa	48.28
Poland	8 Oct 00	17,789,231	SLD (L)	SLD (L)	Aleksander Kwasniewski	53.90	36.60	Independent (C)	Andrzej Olechowski	17.30
Russia	3 Jul 96	74,815,898	Independent (R)	Independent (R)	Boris Yeltsin	53.70	13.29	KPRF (L)	Gennadii A. Zyuganov	40.41
Russia	26 Mar 00	75,070,776	Independent (R)	Independent (R)	Vladimir Putin	53.44	23.95	KPRF (L)	Gennadii A. Zyuganov	29.49
Uruguay	23 Nov 99	2,206,112	Colorado Party(R)	Colorado Party (R)	Jorge Battle	51.59	7.52	Progressive Encounter (L)	Tabare Vazquez	44.07
Venezuela	6 Dec 98	6,988,291	National Convergence (R)	Movement for the Fifth Republic (L)	Hugo Chavez	56.20	16.23	Proyecto Venezuela (R)	Henrique Salas	39.97
Venezuela	30 Jul 00	11,681,645	Movement for the Fifth Republic (L)	Movement for the Fifth Republic (L)	Hugo Chavez	56.93	21.18	Independent (C)	Francisco Arias	35.75

sample are summarized in Table 4. We also note the comparable US Treasury bond yield, either actual or synthetic from a constructed yield curve. With these data sources, we calculate the spread for each sovereign bond relative to comparable US Treasury bonds during the 60 and 90 days before a presidential election. We choose these two periods of observation to approximate the length of the general (post-primary) campaigns in sampled countries. The resulting 60-day (90-day) sample comprises a balanced panel of 1140 (1710) daily bond spread observations for 19 elections held in 12 countries from 1994 to 2000.

Estimation strategy

Our estimation strategy follows from the non-standard structure of our data set. As noted above, we have 1140 daily observations spread evenly across 19 separate 60-day election events (and 1710 observations when we extend the election events to 90 days). There is serial correlation within each election event (though no *a priori* reason to assume that the persistence of the error terms is identical across elections). In addition, the data-generating process is such that, although the data are clearly independent *across* election events, they are just as clearly not independent *within* election events. If uncorrected, this problem results in inappropriately narrow confidence intervals, suggesting statistical significance where there may be none. We are able to address these problems simultaneously through our use of a panel general estimating equation (GEE) estimator (Hardin and Hilbe, 2002). This estimator applies the appropriate clustering of non-independent observations to produce correct standard errors (which are also robust to heteroskedasticity across election events), and also allows us to impose first- through ninth-order autoregressive processes that vary in parameterization across election events.

An additional estimation issue concerns the probable influence of outlier bond spread observations resulting from unknown idiosyncratic short-duration events, which could confound estimation of broader trends in the sample. Emerging-market bond spreads exhibit a mean reversion tendency similar to mean reversion tendencies in other indexes of country credit quality (Erb *et al.*, 1995; Gendreau and Heckman, 2001). Nevertheless, spreads are vulnerable to short-duration deviations following unexpected shocks – financial crises or natural disasters – and the uncertainty among investors they briefly generate. These shocks can

Table 4 Developing country sovereign bonds, 1994–2000

Country	Bond series	Bond issuer	Bond issue date	Bond maturity date	Bond issue face amount (US$ 000's)	Bond coupon	Foreign exchange listing
Argentina	Series FRB	Republic of Argentina	31 March 1993	29 March 2005	$8,466,548	LIBOR+0.8725%	Dusseldorf
Brazil	Series 20Y	Federal Republic of Brazil	15 April 1994	15 April 2014	$7,387,519	8%	Luxembourg
Bulgaria	Series A	Bulgaria	28 July 1994	28 July 2024	$1,685,595	LIBOR+0.8725%	Luxembourg
Chile	None	Republic of Chile	28 April 1999	28 April 2009	$500,000	6.875%	Luxembourg
Colombia	None	Republic of Colombia	23 February1994	23 February 2004	$250,000	7.25%	No Foreign Exchange Listing, US OTC[a]
Mexico	Series A	United Mexican States	28 March 1990	31 December 2019	$6,211,456	6.25%	Luxembourg
Peru	Series B	Republic of Peru	7 March 1997	7 March 2007	$1,150,331	LIBOR+0.8125%	Luxembourg
Philippines	Series B	Republic of Philippines	1 December 1992	1 December 2017	$1,740,600	6.50%	Luxembourg
Poland	Series PDIB	Republic of Poland	27 October 1994	27 October 2014	$2,673,600	6%	Luxembourg
Russia	Series IV	Ministry of Finance, Russia	14 May 1993	14 May 2003	$3,462,000	3%	No Foreign Exchange Listing, US OTC
Uruguay	Series B$	Banco Central del Uruguay	19 February 1991	19 February 2007	$447,600	LIBOR+0.875%	Luxembourg
Venezuela	Series DL	Republic of Venezuela	18 December 1990	18 December 2007	$5,153,173	LIBOR+0.875%	Luxembourg

[a]US OTC means that the bond is traded in the US 'over the counter' by US brokers/market makers.

lead to brief but sharp widening in spreads. One common approach to dealing with such spread observations econometrically is to exclude them all, but such an exclusion criterion is necessarily *ad hoc* and implies a loss of information. A preferable approach is to include all but the most extreme outliers, but to 'down-weight' those retained. A three-step robust regression approach described by Rousseeuw and Leroy (1987) and used by Hamilton (1991) to write the current version of the *rreg* procedure in Stata (2003) accomplishes this. This procedure combines an examination for gross outliers using Cook's (1977) *D* influence values from initial OLS estimation, followed by an iterative process of weighting the remaining observations using approaches suggested by Huber (1964) and Beaton and Tukey (1974). The resulting observation weights are used in our GEEs.[15]

Results

Table 5 presents descriptive information about our sample of elections, and Tables 6–8 present weighted GEE results related to our two hypotheses about partisan and opportunistic PBC considerations shaping election-period bond spreads in developing countries. Table 6 reports descriptive statistics for the independent variables used in our model of bond spreads. It also reports point estimates from 60-day and 90-day weighted GEE estimations using constant and convergent λD measures. Table 7 draws on the results in Table 6 to construct slope estimates corresponding to each of the six PBC framework pre-election scenarios and related trends in sovereign bond spreads. Table 8 uses the slope estimates in Table 7 to test formally for support of Hypotheses 1 and 2a–2b.

Descriptive election and bond spread information

Table 5 exhibits descriptive information regarding our sample. We note first the dispersion of the 19 elections constituting the sample across the cells (I–VI) of our PBC-motivated framework for predicting sovereign bondholder risk perceptions and trends in pre-election bond spreads. Not surprisingly, approximately two-thirds of our elections (13) fall into either of the two base-case scenarios where bondholders expect the incumbent party to be re-elected by comfortable margins (I, VI). Nine elections involve the right-wing base-case scenario (I), and four involve the left-wing base case (VI). The remaining six elections, however, are dispersed across all but one of the cells in the PBC framework

(II–III, V), thereby providing substantial variance on key variables (*GovRbegin* and λD) with which we derive and compare alternative pre-election bond spread slopes corresponding to each PBC pre-election scenario.[16]

We also note in Table 5 descriptive statistics for US Treasury and domestic sovereign bond yields as well as changes in absolute spreads between the two bond yields at various stages in the pre-election period of observation. Descriptive statistics for change in absolute spreads do not always correspond to intuition about sovereign bondholders and their partisan and opportunistic PBC considerations. The October 1998 Brazilian presidential election saw the re-election of a right-wing incumbent by a comfortable margin, thus corresponding to the right-wing base scenario of our PBC framework (I). We might guess that absolute spreads on the Brazilian sovereign bond during the pre-election period would decrease with this favorable outcome. Yet absolute spreads actually increased during the 60-day (90-day) pre-election period by 4.40% (4.54%). This increase, however, might be explained by the fact that Brazil was also in the midst of a financial crisis afflicting several developing countries in Latin America and elsewhere. This example suggests the importance of initially using multivariate analyses and controls to uncover PBC-driven trends in sovereign bond spreads.

Weighted GEE results

With this in mind, we next note the sign and significance for our six explicit controls included in the weighted GEEs. Consistent with our intuition, bond spreads tend to be lower for developing country sovereign bonds with larger face amounts, shorter maturities, floating rate coupons, sovereign issuers with investment grade ratings, trading when investor confidence in emerging-market creditworthiness is higher, and trading in the aftermath of a financial crisis. Turning next to our variables of central interest, we see that the coefficients on *GovRbegin* and λD terms exhibit consistent signs and significance across all columns. While providing only limited insight on their own, these coefficients yield interesting insights when combined with *Day* and viewed together in Table 7. Results there suggest a clear hierarchy of investment risk among bondholders linked to expectations of incumbent re-election for both right-wing and left-wing incumbents. Against the base-case scenario of likely right-wing incumbent re-election (I), we see increasing pre-election

Table 5 Developing country election and sovereign bond data, 1994–2000

Election results: location, date		PBC framework pre-election scenarios (related variable measures)	US Treasury (domestic) bond yields (%)[a]			Change in absolute spreads[b]	
Country	Date		On election day	60 days before election day	90 days before election day	Over 60-day pre-election period	Over 90-day pre-election period
Argentina	14 May 1995	I, Right-wing base-case scenario ($GovRbegin$=1, λD^{hi}=1)[c]	6.57 (16.66)	7.01 (22.85)	7.41 (22.16)	−5.75	−4.65
Argentina	24 October 1999	I, Right-wing base-case scenario ($GovRbegin$=1, λD^{hi}=1)	5.20 (13.12)	4.88 (11.53)	4.80 (10.60)	1.28	2.12
Brazil	3 October 1994	I, Right-wing base-case scenario ($GovRbegin$=1, λD^{hi}=1)	7.89 (14.60)	7.27 (17.12)	7.52 (18.62)	−3.14	−4.38
Brazil	4 October 1998	I, Right-wing base-case scenario ($GovRbegin$=1, λD^{hi}=1)	4.53 (15.72)	5.55 (12.35)	5.56 (12.22)	4.40	4.54
Bulgaria	4 November 1996	VI, Left-wing base-case scenario ($GovRbegin$=0, λD^{lo}=−1)[d]	6.55 (15.01)	7.05 (16.82)	6.67 (14.90)	−1.32	0.23
Chile	16 January 2000	III, Right-wing close-call scenario ($GovRbegin$=1, λD^{med}=0)[e]	6.81 (8.23)	6.19 (7.52)	6.43 (7.75)	0.09	0.10
Colombia	19 June 1994	III, Right-wing close-call scenario ($GovRbegin$=1, λD^{med}=0)	7.17 (8.91)	7.17 (8.83)	6.59 (7.99)	0.08	0.34
Colombia	21 June 1998	I, Right-wing base-case scenario ($GovRbegin$=1, λD^{hi}=1)	5.56 (8.78)	5.61 (8.09)	5.59 (7.96)	0.75	0.86
Mexico	21 August 1994	VI, Left-wing base-case scenario ($GovRbegin$=0, λD^{lo}=−1)	7.66 (9.58)	7.58 (10.33)	7.44 (9.49)	−0.84	−0.14
Mexico	2 July 2000	II, Left-wing switch scenario ($GovRbegin$=0, λD^{hi}=1)	6.24 (7.87)	6.36 (7.98)	6.19 (7.75)	0.01	0.07
Peru	28 May 2000	I, Right-wing base-case scenario ($GovRbegin$=1, λD^{hi}=1)	6.50 (13.01)	6.39 (10.76)	6.61 (10.77)	2.14	2.34
Philippines	11 May 1998	V, Right-wing switch scenario ($GovRbegin$=1, λD^{lo}=−1)	6.11 (7.69)	6.01 (7.66)	5.90 (7.59)	−0.07	−0.10
Poland	19 November 1995	VI, Left-wing base-case scenario ($GovRbegin$=0, λD^{lo}=−1)	6.15 (7.82)	6.45 (7.99)	6.85 (8.18)	0.13	0.34
Poland	8 October 2000	VI, Left-wing base-case scenario ($GovRbegin$=0, λD^{lo}=−1)	6.01 (8.48)	6.04 (7.99)	6.20 (8.18)	0.52	0.48
Russia	3 July 1996	I, Right-wing base-case scenario ($GovRbegin$=1, λD^{hi}=1)	6.65 (17.14)	6.81 (18.59)	6.25 (18.07)	−1.29	−1.33
Russia	26 March 2000	I, Right-wing base-case scenario ($GovRbegin$=1, λD^{hi}=1)	6.61 (27.35)	6.48 (37.13)	6.32 (43.71)	−9.90	−16.65
Uruguay	23 November 1999	I, Right-wing base-case scenario ($GovRbegin$=1, λD^{hi}=1)	6.09 (12.84)	5.80 (12.75)	5.91 (12.84)	−0.20	−0.19
Venezuela	6 December 1998	V, Right-wing switch scenario ($GovRbegin$=1, λD^{lo}=−1)	4.62 (22.42)	4.23 (22.40)	5.01 (39.37)	−0.38	−16.57
Venezuela	30 July 2000	VI, Left-wing base-case scenario ($GovRbegin$=0, λD^{lo}=−1)	6.25 (14.21)	6.68 (16.95)	6.57 (16.58)	−2.30	−2.05

[a]US Treasury yields are actual or artificial from a constructed yield curve. Domestic yields are actual.
[b]Change in absolute spreads=$(Yield_{Foreign}-Yield_{U.S})_{Election\ Day}-(Yield_{Foreign}-Yield_{U.S})_{60\ or\ 90\ Days\ Before\ Election}$.
[c]λD^{hi}=1 implies a right-wing election victory margin > 3%.
[d]λD^{lo}=−1 implies a left-wing election victory margin > 3%.
[e]λD^{med}=0 implies a right- or left-wing victory margin < 3%.

Table 6 Weighted GEE results: sovereign bond spreads relative to comparable US treasuries 60 and 90 days before election, 1994–2000

Independent variables	Pre-election period				
	90 days	60 days	90 days	60 days	90 days
	Estimator				
	Mean (s.d.) (1)	Weighted GEE Constant λD (2)	Weighted GEE Constant λD (3)	Weighted GEE Convergent λD (4)	Weighted GEE Convergent λD (5)
Constant (α_0)		−0.00243	−0.00307	−0.00986	−0.03387**
		(0.00467)	(0.00725)	(0.00631)	(0.00079)
Log(face amount) (α_1)	7.7383	−0.22631***	−0.19984***	−0.19592***	−0.10849***
	(1.1200)	(0.01531)	(0.02145)	(0.01925)	(0.04157)
Time to maturity (α_2)	13.5263	0.23479***	0.22151***	0.22457***	0.19904***
	(7.0086)	(0.00741)	(0.01064)	(0.00947)	(0.02104)
Floating rate (α_3)	0.3684	−3.62355***	−3.82913***	−3.57577***	−2.57767***
	(0.4825)	(0.05744)	(0.08456)	(0.07382)	(0.16496)
Investment grade (α_4)	0.2105	−1.17460***	−1.13570***	−1.05811***	−0.78712***
	(0.4078)	(0.05855)	(0.08150)	(0.07324)	(0.15675)
EMBI (α_5)	140.3268	−0.00280***	−0.00228***	−0.00345***	−0.00946***
	(40.5616)	(0.00032)	(0.00033)	(0.00038)	(0.00053)
Crisis (α_6)	0.0526	−0.71602***	−0.80752***	−0.68250***	−0.16792**
	(0.2233)	(0.02666)	(0.03872)	(0.03387)	(0.07554)
Day (β_1)	−45.5000	−0.02006***	−0.01070***	−0.01368***	−0.00701***
	(25.9868)	(0.00050)	(0.00041)	(0.00050)	(0.00079)
GovRbegin (β_2)	0.6842	5.86620***	5.88052***	5.70569***	5.08358***
	(0.4645)	(0.06450)	(0.08804)	(0.08079)	(0.17002)
Day* GovRbegin (β_3)	−31.1316	0.01916***	0.01003***	0.01273***	0.00716***
	(30.1601)	(0.00056)	(0.00046)	(0.00060)	(0.00097)
Day* λD (β_4)	−7.1842	−0.02031***	−0.01099***	−0.02168***	−0.01682***
	(49.0510)	(0.00043)	(0.00031)	(0.00064)	(0.00117)
Day* GovRbegin* λD (β_5)	−19.1579	0.01948***	0.01027***	0.02058***	0.01497***
	(32.8350)	(0.00045)	(0.00035)	(0.00072)	(0.00141)
N	1710	1140	1710	1140	1710
Wald χ^2		691 886.69***	486 357.72***	461 654.62***	143 249.12***

This table reports results from weighted GEEs of pre-election daily sovereign bond spreads relative to comparable US Treasuries using several macroeconomic and financial controls and variables related to previous empirical research on opportunistic and partisan PBCs. Column 1 presents means and standard deviations for the 90-day sample of bond spreads from 12 developing countries holding 19 presidential elections from 1994 to 2000. Columns 2–5 present results from weighted GEE on 60-day and 90-day samples of bond spreads. GEE results include semi-robust standard errors (in parentheses) to control for heteroskedasticity across election cross-sections as well as individualized adjustment for first through ninth order autocorrelation (AR9) in each time-series of pre-election bond spreads. Country and year dummies are also included but not reported. These additional results are available from the authors. Countries (elections) in the sample include Argentina (1995, 1999), Brazil (1994, 1998), Bulgaria (1996), Chile (2000), Colombia (1994, 1998), Mexico (1994, 2000), Peru (2000), Philippines (1998), Poland (1995, 2000), Russia (1996, 2000), Uruguay (1999), Venezuela (1998, 2000). Columns 2–3 present results from weighted GEE estimation using constant bondholder election expectations for the 60-day and 90-day pre-election periods. Columns 4–5 present results from weighted GEE estimation using convergent bondholder elections for the 60-day and 90-day pre-election periods. Measurement of constant and convergent bondholder expectations is summarized in Table 2 above.
*Significant at 10%; **significant at 5%; ***significant at 1%.

spreads indicating greater investment risk as bondholder expectations shift to a close call (III) or to an expected left-wing victory (V) on election day. This hierarchy is consistent with our PBC framework in Table 1, where, for right-wing incumbents, both partisan and opportunistic PBC considerations trend positively as the prospects of incumbent re-election dim. This observed hierarchy in Table 7 is confirmed in the results from formal testing of Hypothesis 1 in Table 8. The predicted negative sign

is consistent across all four specifications. Significance is at the 1% level with the exception of Column 5, where the sign on the test statistic using the 90-day sample and convergent λD is significant only at the 10% level.[17]

What about the magnitude of these hierarchical differences? As we answer this question, recall that we made no specific prediction about the sign and significance for our two base-case scenarios. In that context, we review the point estimates for the

Table 7 PBC framework pre-election scenarios and related sovereign bond spread trends

PBC framework pre-election scenario (related variable measures) (related linear combination or coefficient estimates)	Pre-election period			
	60 Days Weighted GEE Constant λD (2)	90 Days Weighted GEE Constant λD (3)	60 Days Weighted GEE Convergent λD (4)	90 Days Weighted GEE Convergent λD (5)
VI, Left-wing base-case scenario: left-wing incumbent expected to win by bondholders ($GovRbegin=0$, $\lambda D^{lo}=-1$) ($\beta_1-\beta_4$)	0.00026 (0.00027)	0.00029 (0.00026)	0.00780*** (0.00042)	0.00981*** (0.00074)
IV, Left-wing close-call scenario: left-wing incumbent and closely balanced bondholder expectations ($GovRbegin=0$, $\lambda D^{med}=0$) (β_1)	−0.02006*** (0.00050)	−0.01070*** (0.00041)	−0.01368*** (0.00050)	−0.00701*** (0.00079)
II, Left-wing switch scenario: left-wing incumbent expected to lose by bondholders ($GovRbegin=0$, $\lambda D^{hi}=1$) ($\beta_1+\beta_4$)	−0.04037*** (0.00090)	−0.02169*** (0.00068)	−0.03536*** (0.00107)	−0.02383*** (0.00186)
I, Right-wing base-case scenario: right-wing incumbent expected to win by bondholders ($GovRbegin=1$, $\lambda D^{hi}=1$) ($\beta_1+\beta_3+\beta_4+\beta_5$)	−0.00172*** (0.00017)	−0.00139*** (0.00018)	−0.00209*** (0.00033)	−0.00170*** (0.00069)
III, Right-wing close-call scenario: right-wing incumbent and closely balanced bondholder expectations ($GovRbegin=1$, $\lambda D^{med}=0$) ($\beta_1+\beta_3$)	−0.00090*** (0.00020)	−0.00067*** (0.00018)	−0.00095*** (0.00028)	0.00015 (0.00047)
V, Right-wing switch scenario: right-wing incumbent expected to lose by bondholders ($GovRbegin=1$, $\lambda D^{lo}=-1$) ($\beta_1+\beta_3-\beta_4-\beta_5$)	−0.00066 (0.00038)	0.00005 (0.00034)	0.00018 (0.00071)	0.00200 (0.00140)

This table reports results from calculation of linear combinations of coefficients estimated in Table 6 above and corresponding to six different pre-election scenarios summarized in Tables 1–2 above. Robust standard errors in parentheses in Columns 2–5.
*Significant at 10%; **significant at 5%; ***significant at 1%.

60- and 90-day samples analyzed with the constant λD measure (Columns 2–3). With 60-day and 90-day pre-election windows, the base-case bond spread slopes for right-wing incumbents are negative and significant at the 1% level.[18] The 60-day (90-day) base-case scenario slope of −0.00172 (−0.00139) for right-wing incumbents likely to be re-elected (I) is cut in half to −0.00090 (−0.00067) when right-wing re-election expectations becomes a close call (III). The significant negative trend in pre-election spreads disappears when bondholder expectations shift from close call to likely right-wing incumbent defeat by a left-wing challenger (V).

We also find a clear hierarchy of slopes in pre-election bond spreads corresponding to left-wing incumbents with differing electoral expectations. The hierarchy of slopes against the base-case scenario of expected left-wing re-election (VI) is increasingly negative, which suggests support for Hypothesis 2a and the dominance of partisan over opportunistic PBC considerations. A flat 60-day (90-day) base-case slope shifts to a negative slope of −0.02006 (−0.01070), significant at the 1% level, when left-wing re-election expectations go from likely to a close call (IV). That negative slope roughly doubles to −0.04037 (−0.02169), significant at the 1% level, when bondholder expectations of

Table 8 Hypothesis test results

Hypothesis	Hypothesis test	Pre-election period			
		60 Days Weighted GEE Constant λD (2)	90 Days Weighted GEE Constant λD (3)	60 Days Weighted GEE Convergent λD (4)	90 Days Weighted GEE Convergent λD (5)
H1: Increasingly positive pre-election spreads for elections with right-wing incumbents as likelihood of incumbent victory decreases (I<III<V)	$\beta_4+\beta_5<0$	−0.00083*** (0.00021)	−0.00072*** (0.00020)	−0.00113*** (0.00047)	−0.00185* (0.00100)
H2a: Increasingly negative pre-election spreads for elections with left-wing incumbents as likelihood of incumbent victory decreases (VI>IV>II)	$\beta_4<0$	−0.02031*** (0.00043)	−0.01099*** (0.00031)	−0.02168*** (0.00064)	−0.01682*** (0.00117)
H2b: Increasingly positive pre-election spreads for elections with left-wing incumbents as likelihood of incumbent victory decreases (VI<IV<II)	$\beta_4>0$				

This table reports test results for Hypotheses 1 and 2 based on the six linear combinations of coefficients or coefficient estimate reported in Table 7 above. Robust standard errors in parentheses in Columns 2–5.
*Significant at 10%; **significant at 5%; ***significant at 1%.

left-wing incumbent re-election fall from close call to unlikely (II). In this context, it comes as no surprise that a formal test for hierarchy in Table 8 yields the negative sign predicted by Hypothesis 2a and significant at the 1% level.

Robustness tests

These results prove surprisingly robust to several reasonable model variations. Specifically, we test our model against changes in:

(1) election window;
(2) the dynamics of bondholder expectations;
(3) additional control variables;
(4) redefinition of a 'close call' election; and
(5) changes in our treatment of centrist-oriented governments.

We further re-estimate our model using an unweighted GEE estimator and an alternative estimator known as 'least absolute deviation' or 'median' regression (Buchinsky, 1998).

Results reported in Tables 6–8 are consistent in terms of signs and significance across different specifications of the pre-election period (60 or 90 days) and different specifications of bondholder expectations (constant or convergent λD) over the pre-election period. Though not reported here, results are also consistent across model specifica-tions that include additional macroeconomic controls, such as recent GDP growth rates or levels of external debt. Similarly, they are consistent when we redefine a close-call election as victory margins less than 5% or less than 10%, rather than 3%.

Including outliers and re-estimating an unweighted GEE yields results with consistent signs, though lower statistical significance owing to the outliers and the larger standard errors they generate. However, unweighted estimation using median regression – an alternative approach that is robust to outliers – produces results that are consistent in sign and significance with our weighted GEE results.[19]

Our test results no longer exhibit consistent signs and significance when centrist parties are re-speci-fied as part of the left-wing rather than right-wing classification. To explain this deviation from the overall trend in results, consider first our earlier point that the centrist party definition used by Beck *et al.* (2001) shows closer correspondence with their right-wing rather than left-wing party definitions. If parties labeled as centrist share with the right wing a similar commitment to investor (bondholder) inter-ests distinct from the left wing, then re-aggregation of the centrist parties into the left wing amounts to a misclassification, which could lead to the different signs and significance we observe.

Closer review of the four elections in our sample with centrist parties supports this explanation. The centrist Lakas-NUCD party unsuccessfully sought to retain the Philippines presidency in 1998. Their presidential nominee was Jose de Venecia only because constitutional term limitations barred the Lakas-NUCD party leader and incumbent president, Fidel V Ramos, from seeking re-election. Ramos was a former General and Chief of Staff of the Philippines Army. His 1992–1998 administration saw a marked reduction in inflation, and economic policies promoting industry privatization, deregulation and foreign investment (Dyck *et al.*, 1996; Hedland and Sidel, 2001). Such characteristics almost certainly place this centrist party more easily in the right-wing rather than left-wing parties on the political spectrum.

The 'centrist' Liberal Party in Colombia exhibited little difference in economic policy priorities from its right-wing rival, the Social Conservative Party, during the 1994 and 1998 presidential elections represented in our sample. Indeed, historical distinctions between the two parties were based largely on grounds of no direct interest to investors. Social Conservatives preferred strong central government and close relations with the Roman Catholic church, whereas Liberals favored stronger local government control and separation of church and state. Both parties were historically led by individuals from a small, well-educated and propertied ruling class (Coppedge, 1998). The victorious Liberal presidential candidate in 1994, Ernesto Samper, came from this ruling class; he continued during his administration an economic reform policy of industry deregulation and economic decentralization. These policies were stifled and the Liberal Party's prospects at retaining office in 1998 were shattered by widespread accusations that Samper had accepted money from the Cali cocaine cartel. Economic policies of interest to investors were basically the same between the two Colombian parties.

Our last election involving a centrist party, the 'centrist' Union Civica Radical (UCR) and the Argentine presidential election of 1999, involves a slightly more complex analysis. The UCR and the Peronists, also known as the Partido Justicialista, have dominated Argentine national politics since the 1940s. The UCR was founded in 1890 and has historically enjoyed greater urban middle- and professional class support than the Peronist Party, founded by Juan Peron in the 1940s and relying largely on support from organized labor and the

military (Weyland, 2004). Until the late 1980s, Peronist economic policies favoring organized labor and protectionism placed them to the partisan left of the UCR. In the late 1980s, however, the bulk of the Peronist Party led by Carlos Saul Menem made a dramatic change, and embraced a range of arguably rightist policies including privatization, industry deregulation, international trade liberalization and anti-inflationary monetary policies. When the UCR mounted a challenge to this revamped Peronist Party in 1999, it did so based on an anti-corruption platform rather than on any substantial differences in economic policy. Though winning in 1999 with support from many left-leaning parties, the UCR's Fernando de la Rua did not change any of the economic policy initiatives of the previous Peronist administrations, including privatization, deregulation, fewer import barriers and anti-inflationary monetary policies. Centrist and right-wing party policies again show close correspondence from a partisan PBC perspective, and justify their aggregation into a single rightist bloc in our empirical analyses.

Even with this justification, it is helpful to ascertain the robustness of our results when centrist parties are aggregated with neither the right wing nor the left wing. In yet another re-estimation, we accomplish this by disaggregating centrist parties from either bloc, and by controlling for any distinct pre-election bond spread trends that elections with centrist parties might generate relative to left-wing and now more sharply defined right-wing trends. The issue of proper centrist party aggregation becomes irrelevant. This re-estimation again yields results consistent in sign and significance levels with those reported in Tables 6–8. In sum, our results prove robust to disaggregation and separate control of centrist parties or to aggregation of centrist parties with the right wing.[20]

Illustrative results
Having uncovered trends in the pre-election bond spreads consistent with our PBC-driven framework and hypotheses using multivariate analyses, we can now contribute additional insight through examination of two within-sample cases. Figure 1 graphs the relative spreads and absolute yields for Argentine sovereign bonds 180 days before and after the 15 May 1995 presidential election. Carlos Menem was re-elected to office by a large margin at the final poll, which in terms of Table 7, Column 3, implies a right-wing base-case scenario (I). Relative bond spreads and absolute yields during the 90 days before elections exhibit a negative trend, which is
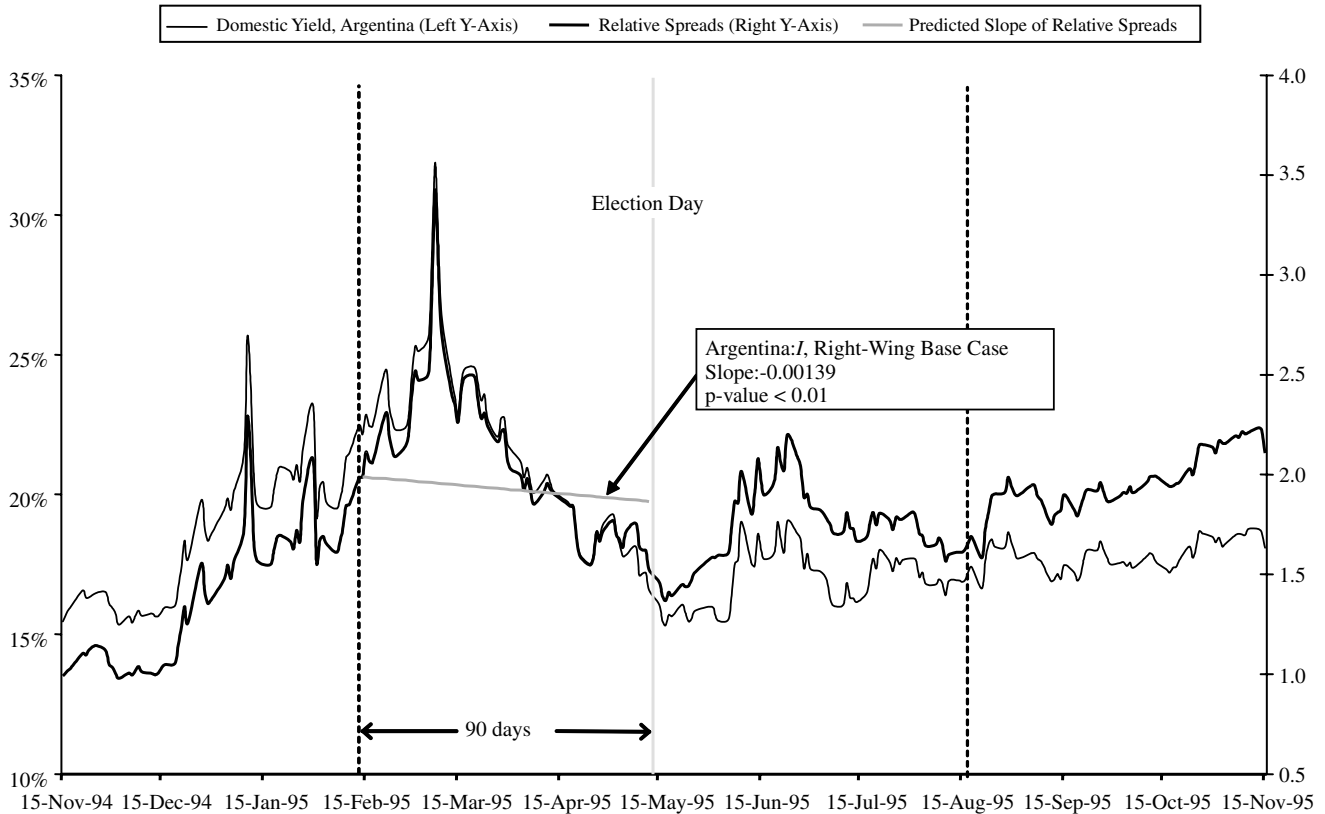
Figure 1 Argentina presidential election 14 May 1995: sovereign bond yields and relative spreads.

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 using a 90-day sample and a constant λD measure predict a decrease of approximately 171 basis points in the final 90 days prior to election, whereas actual yields came down by 550 basis points in the last 90 days.[21] Given the Argentine FRB Series bond with a face amount of $8.467 billion, a 171 basis points decrease in the coupon rate would save approximately $145 million in annual interest expense.

Contrast the Argentine case of right-wing incumbency and the expectation of re-election with the case of the Polish presidential elections on 8 October 2000. 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.[22] In terms of Table 7, Column 3, this implies the left-wing base-case scenario (VI). Our results using a 90-day sample and a constant λD measure predict no significant trends, thus implying flat pre-election bond spreads. The actual

results illustrated in Figure 2 generally resemble the flat trend our model suggests. But closer examination of the daily yields indicates a very slight increase in the pre-election yields on the Polish series FRB sovereign bond. In the 90-day pre-election period bond spreads increase by only 30 basis points.[23] Even so, we also note that small changes can have large implications. Given the Polish PDIB series bond with a face amount of $2.674 billion, a 30 basis point decrease in the coupon rate implies annual savings of $8.02 million in interest expense. These examples again confirm that bondholder expectations and perceived risks are partially explained by PBC considerations, and that these considerations may have substantial economic implications for issuing countries and private investors, but that they do not provide an exhaustive explanation of bond spread dynamics during election periods.

Discussion and conclusion

Key findings
We set out to understand how investment risk in developing countries may be related to electoral
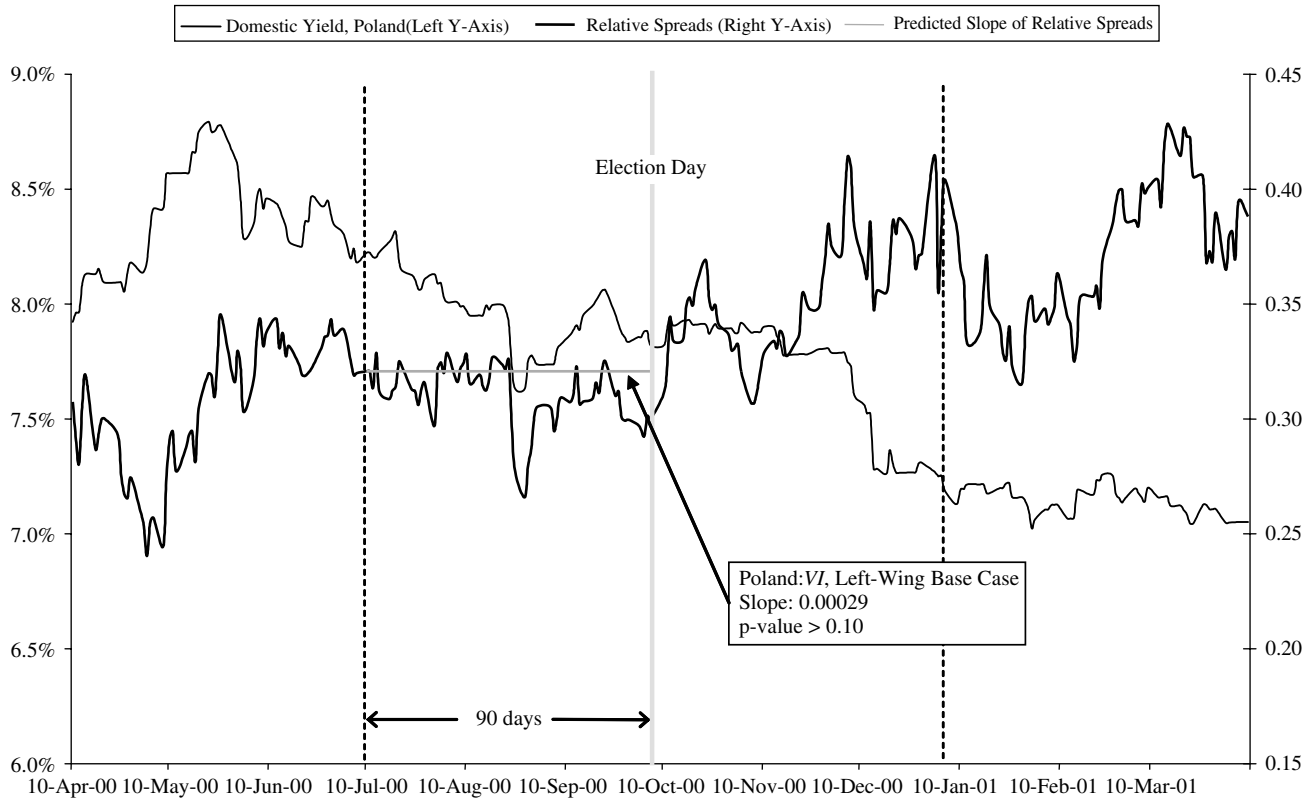
Figure 2 Poland presidential election 8 October 2000: sovereign bond yields and relative spreads.

politics and economic policies largely ignored by IB researchers to date. In expanding the purview of PBC theory to include IB actors, we specifically allow them to be cognizant of incentives for economic (mis)behavior related both to distinct left- *vs* right-wing partisan orientations and to incumbent opportunism that is non-partisan in nature. We find clear support for hypotheses related to bondholders and the risk premiums they demand for holding sovereign debt from developing countries during election periods. Bondholder risk perceptions are 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) decline faster during pre-election periods when a right-wing incumbent is likely to be re-elected compared with when expectations are closely balanced or when ousting from office is likely. Pre-election bond spreads for sovereigns with left-wing governments also exhibit a hierarchy conditioned on the likelihood of victory on election day. The final run-up to voting sees increasingly steep declines in bond spreads as the likelihood of left-wing incumbent re-election falls.

In terms of our conceptual framework, this result evidences an apparent dominance of partisan over opportunistic PBC considerations for bondholders.

Implications, limitations and future research
These findings raise several broader questions about elections and their economic implications for developing countries. As our examples from Argentina and Poland illustrate, even small changes in spreads during elections can imply substantial change in the cost of external debt for developing countries. If incumbent political leaders in developing countries are prone to creating PBCs – as a growing literature suggests they are – and if IB actors such as bondholders are aware of that potential, then elections in these nascent democracies have the potential for much greater national cost or benefit than IB research has previously noted.

This conclusion is also a call for future empirical research examining the election-period behaviors of other IB actors with 'votes' that count for developing country investment and growth. Uhlmann's (2002) study of bank lending to developing countries from 1985 to 1999 represents one

response to this call. His findings suggest that there may also be 'political banking cycles' where bankers concerned with incumbent opportunism cut back on lending, particularly to non-governmental borrowers, prior to national executive elections.

Other future research might examine flows and the composition of FDI and portfolio flows during elections where partisan and/or opportunistic PBC factors change investment risk perceptions. Yet another stream could examine the propensity of MNCs to use different FDI modes (e.g., wholly owned subsidiary, joint venture) to enter or expand in developing country markets in response to PBC considerations. MNC subsidiary managers may also choose between local and overseas sources of capital during election periods. IB work dating from Jacque and Lorange (1984) has modeled this choice in developing countries based largely on expected changes in local inflation. If PBC factors also have a substantial impact on inflation expectations, then MNC subsidiary management choices about where, when and how much capital to source during election periods may also be explained with greater clarity under PBC lenses.

The partisan PBC lens seems particularly promising. Sovereign bondholder risk perceptions evince a keen awareness of ideological distinctions between left-wing and right-wing candidates. This finding contradicts a 'conventional wisdom' about the domestic political effects of economic internationalization in the 1980s and 1990s. As Garrett (1995) notes, greater exposure to trade and capital mobility has not necessarily resulted in the complete convergence of economic policies pursued by democratizing and developing countries. Sovereign bondholders would appear to endorse this view when they demand higher spreads in anticipation of left-wing electoral victories and post-election economic policies. Future PBC research might examine whether and how such economic policy distinctions and related risk perceptions have increased, decreased or remained relatively stable since the 1990s.

To the extent that risk perceptions are explained by PBC factors, these perceptions may be merely 'presumptive' and, at times, rebutted by sustained policies contrary to right-wing and left-wing political stereotypes. Brazil and its election of the left-wing Lula as president in November 2002 are again illustrative. Increasing bondholder spreads in the run-up to his election did not anticipate what the *Economist* (2004) later reported as a 'credibility shock' following Lula's election. In 2003, his new government announced, and then achieved, targets on fiscal and trade balances and other macroeconomic indicators more conservative than those suggested by the IMF. The result has been a precipitous drop in the cost of sovereign debt since Lula's election. This reversal from pre-election trends suggests to us interesting future research on the means by which developing country state actors, including political candidates, communicate credibly with IB actors either to confirm or to reject and revise initial risk assessments. Such follow-on work would complement previous IB research streams on the credibility of developing country state strategies for inducing investment (Lenway and Murtha, 1994; Murtha and Lenway, 1994).

We showed that investment risk in developing countries was related to electoral politics and economic policies largely ignored by IB researchers. Yet it would be a mistake to conclude that PBC theory provides on its own a comprehensive response to questions about investment risk during elections in developing countries. It may be more constructive to consider PBC theory as an important complement to existing IB perspectives. Work on the bargaining hypothesis in developing countries will benefit from more explicit modeling of host government vulnerability to demands of domestic voting blocs. Work on transaction costs and policy uncertainty will benefit from more explicit modeling of the likelihood of host government partisan shifts over time. There and elsewhere, PBC theory promises greater theoretical rigor and richness for IB researchers investigating investment risk in countries dealing with political democratization and economic development.

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Notes

[1]Descriptions of right-wing *vs* left-wing supporters in Hibbs (1977) and others (e.g., Berlemann and Markwardt, 2003) include a progressive tax system and, thus, the possibility that right-wing supporters with considerable assets of a nominally fixed value will suffer from faster progression through higher tax brackets as inflation increases. This description of right-wing supporters seems particularly well suited to the empirical context of this study and also to agencies and their assessments of developing country economic policies for their impact on the interests of investors holding sovereign bonds with nominally fixed coupon amounts.

[2]By 'final election day' we mean the polling date or dates of the general election or, in the case of multiple electoral rounds, the polling date or dates of the run-off general election. For the remainder of this study, we use the term 'election day' to refer to this final general election-day concept.

[3]Trends in the stock of debt securities issued abroad roughly mirror trends in cumulative FDI flows into these countries over the same period. Cumulative FDI inflows to the Philippines from 1994 to 2000 were approximately $9.9 billion. Cumulative FDI inflows to Mexico from 1994 to 2000 were approximately $81.1 billion. Cumulative FDI inflows to Argentina from 1994 to 2000 were approximately $68.3 billion.

[4]Lamy and Thompson (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: ($Yield_{Foreign}-Yield_{US})/Yield_{US}$.

[5]We thus integrate prior PBC theories, which in their original formulations make contradictory characterizations of incumbents (e.g., they are identical and non-ideological in opportunistic PBC theory, and have distinct policy preferences in partisan PBC theory).

[6]Alternatively, one could conceive of a situation in which an incumbent, certain of defeat, would deem it futile to engage in pre-election spending sprees to buy votes. This scenario, however, contradicts both theoretical and empirical work on opportunistic political business cycles (e.g., Schultz, 1995; Alesina *et al.*, 1997b). This remains an interesting question for future research, and the authors thank an anonymous referee for the suggestion.

[7]Other researchers estimate absolute spreads (e.g., Larraín *et al.*, 1997, which then requires the addition of a right-hand side control, usually measured as the daily observed yield on actual or synthetic US Treasuries of similar maturity.

[8]Moody's Investor Service and other major credit rating agencies (e.g., Standard & Poor's Rating Services) typically use 17 ordinal levels to assess the risk of default by sovereigns: Aaa=16; Aa1=15; Aa2=14; Aa3=13; A1=12; A2=11; A3=10; Baa1=9; Baa2=8; Baa3=7; Ba1=6; Ba2=5; Ba3=4; B1=3; B2=2; B3=1; and C=0. Ratings below Baa3 are considered to be non-investment 'junk' grade. The value of maintaining an investment grade sovereign rating is discussed in White (2001).

[9]A financial crisis is defined using a measure developed by Frankel and Rose (1996), who define one type of financial crisis in a country – a currency crisis – as a depreciation of 20% or more in the nominal exchange rate of a country's currency against the US dollar in a given year. Where there are consecutive years of such depreciation, they impose the additional condition that each additional consecutive year of depreciation be at least 10% more than the previous year's depreciation.

[10]This specification of the expectations dummy imposes symmetry on the magnitude of positive and negative effects resulting from elections. This approach is consistent with previous PBC empirical research (Alesina *et al.*, 1997b). As an additional check, we implement an *F*-test comparing our spreads model with this symmetry restriction to an alternative spreads model without this restriction – that is, separate dummies for high and low expectations of right-wing victory. At any commonly acceptable significance levels, we fail to reject the null hypothesis of symmetry in the restricted model, a result consistent with our more parsimonious model choice.

[11]A recent working paper by Berlemann and Markwardt (2003) illustrates, again, the paucity of comparable pre-election polling data. They find cross-country polling data based on comparable sampling procedures, polling questions and statistical analyses for post-World War II elections in only six OECD countries.

[12]H1 above is the reduced form of the following inequality:
$$\beta_1 + \beta_3 + \beta_4 + \beta_5 < \beta_1 + \beta_3 < \beta_1 + \beta_3 - \beta_4 - \beta_5.$$
[13]H2a above is the reduced form of the following inequality: $\beta_1 - \beta_4 < \beta_1 < \beta_1 + \beta_4$, whereas H2b is the reduced form of the opposite inequality: $\beta_1 - \beta_4 > \beta_1 > \beta_1 + \beta_4$.

[14]Parties are placed in a fourth classification as 'other' if both name-based and commentator-based

criteria cannot clearly classify them into left wing, right wing, or centrist. Where an incumbent party in our sample is 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- vs right-wing party orientation.

[15]We also checked for the stationarity of bond spread observations for the 12 different bond series from which the sample was drawn. Using Dickey–Fuller (1979) and Phillips–Perron (1988) tests, we were able to reject the null hypothesis of non-stationarity for five of 12 bond series at the 1% level, for eight of 12 bond series at the 5% level and for 10 of 12 bond series at approximately the 10% level. We could not reject the null hypothesis for the Polish PDIB series and the Russian IV series bonds at commonly acceptable levels of significance. Results excluding these last two bonds are consistent in signs and significance with those reported below, and are available from the authors.

[16]One cell in the PBC framework, IV, left-wing incumbents in close-call elections ($GovRbegin=0$, $\lambda D^{med}=0$), is empty when using a victory margin less than 3% to define a close call. Pre-election bond spread trends are therefore simulated for this scenario. When we redefine a close call more to include elections with victory margins less than 5% or less than 10%, this cell of the PBC framework is no longer empty. Using these alternative definitions of close call, we obtain completely consistent slope estimates. These results are available from the authors.

[17]Gross outliers excluded from GEEs leading to these test results varied from approximately 5% of the sample with the 60-day sample and convergent bondholder expectations to nearly 23% of the sample with the 90-day sample and constant bondholder expectations. In all four weighted GEEs, excluded gross outliers were distributed across six elections: Argentina 1995, 1999; Brazil, 1994; Mexico, 2000; Russia, 2000; and Venezuela, 1998.

[18]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 that 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 is 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.

[19]Specifically, median regression fits medians to a linear function of covariates (in contrast to OLS, which fits means). This estimator '…is potentially attractive for the same reason that the median may be a better measure of location than the mean' (Buchinsky, 1998: 89). The median estimator of θ solves

$$\min_{\theta} N^{-1} \sum_{i=1}^{N} |y_i - m(x_i, \theta)|$$

where $m(x_i, \theta)$ is the conditional median of y given x. Median estimates include all observations without explicit weighting, yet median estimates are not sensitive to dependent variable outliers. We still prefer the weighted GEE approach to the median regression approach because of flexibility. Median regression does not provide the flexibility to deal with other panel data estimation adjustments related to clustering, cross-sectional heteroskedasticity, or serial correlation. The weighted GEE does, and thus remains our preferred estimator for our data.

[20]Results from these alternative model specifications and estimations are available from the authors.

[21]At 90 days before the election, the yield on Argentina's series FRB sovereign bond maturing in March 2003 stood at 22.16%, whereas 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 (Table 3, Column 2), we predict for elections with a right-wing incumbent and a high constant likelihood of re-election (λD^{hi}) a slope coefficient of -0.00139 ($\beta_1 + \beta_3 + \beta_4 + \beta_5$). Over a 90-day period, relative spreads are predicted to decrease by approximately -0.1251 ($-0.00139 \times 90 = -0.1251$). This implies a decrease in relative spreads from 1.99 to 1.76, or a decrease in the yield on the Argentine sovereign bond from 22.16 to 20.45%, assuming no change in the relevant US Treasury yield.

[22]Interestingly, spreads on the Polish bond are lower on average than on the Argentine bond, even though the Polish government is left wing and the Argentine government is right wing, and both are expected to be re-elected. This oddity reminds us that credit risk is a function of many different factors including, but not limited to, PBC considerations.

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

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