The Price of Democracy: Sovereign Risk Ratings, Bond Spreads and Political Business Cycles in Developing Countries

Steven Block and Paul M. Vaaler

CID Working Paper No. 82
December 2001

© Copyright 2001 Steven Block, Paul M. Vaaler and the President
and Fellows of Harvard College

Working Papers

Center for International Development
at Harvard University

**THE PRICE OF DEMOCRACY: SOVEREIGN RISK RATINGS, BOND SPREADS
AND POLITICAL BUSINESS CYCLES IN DEVELOPING COUNTRIES***

Working Paper

Last Revised: December 2001

Steven Block

and

Paul M. Vaaler

The Fletcher School of Law and Diplomacy

Tufts University

Medford, MA 02155

Tel (617) 627-6024

Fax (617) 627-3712

Email steven.block@tufts.edu

Email paul.vaaler@tufts.edu

*Please direct all correspondence regarding this paper to Steven Block using the contact information listed above. The authors gratefully acknowledge comments and suggestions from Laurent Jacque, Michael Klein, Gerry McNamara, and Phil Uhlmann as well as outstanding research assistance from Burkhard Schrage. This research was supported financially by the Fletcher School's Academic Dean's Office and the Fletcher School's Hitachi Center for Technology and International Affairs.

THE PRICE OF DEMOCRACY: SOVEREIGN RISK RATINGS, BOND SPREADS AND POLITICAL BUSINESS CYCLES IN DEVELOPING COUNTRIES

ABSTRACT

In developing countries, political business cycles may have implications not only for incumbent governments and their electorates but also for foreign actors involved in allocating credit and pricing it appropriately for investment. We examine this proposition with data on major credit rating agency sovereign risk ratings and market-determined credit spreads on bond yields for developing countries holding presidential elections in the 1980s and 1990s. We find that agency sovereign risk ratings decrease and bond spreads increase for developing countries during election periods. Both agencies and bondholders appear to view elections in developing countries negatively, and impose additional credit costs.

Keywords: political business cycles; elections; developing countries; credit ratings; bond spreads; development.

JEL codes: D72, F30, F34, G12, G14, G15, G29

1. INTRODUCTION

This empirical study examines links between the possibility of political business cycles in developing countries and the behavior of actors involved in allocating and pricing credit for investment and economic development. Political business cycle (“PBC”) theory suggests that incumbent government officials have incentives to pursue economic policies calculated to increase voter support in an election year. Evidence of PBCs in industrialized countries is mixed, but a more recent stream of empirical work focusing on non-industrialized countries suggests that the onset and aftermath of elections is correlated with fiscal, monetary and or related policies consistent with incumbent aims of retaining office even if such policies are contrary to concurrent economic reform programs and potentially prejudicial to post-election economic growth and development.

This mounting evidence may have important implications for foreign investment and lending, and the private, often foreign-based actors facilitating such transactions. For example, major credit rating agencies (“agencies”) from the US, UK and other industrialized countries provide advice to and certify the creditworthiness of borrowers from developing countries. Indeed, agencies facilitate credit transactions for developing country borrowers by publishing letter-grade sovereign risk ratings, typically on a 6- or 16-point ordinal scale commonly understood and relied on by capital market participants. Recent studies by Cantor and Packer (1996a-b), Larrian *et al.* (1997), and Kaminsky and Schmukler (2001) suggest that changes in these ratings have significant short-term effects on market determined credit spreads for developing country sovereign bonds. The implication is that information on the creditworthiness of sovereigns and related country risks is less transparent for developing country borrowers, and investors rely more on the expert assessments by agencies.

Investor interest in developing countries and the importance of agencies in facilitating such interest appears to have increased markedly in the 1990s. The number of developing country sovereign risk ratings from agencies jumped from 12 in 1987 to 51 in 1997. Also by 1997, annual financing (loans, bonds and equity) issued by governmental and private individuals from developing countries had reached

\$274.8 billion, up from less than \$60 billion only five years earlier (IMF, 2001). Anywhere from two (in the early 1990s) to six (in the mid 1990s) to three (at the end of the 1990s) agencies vied for business in this growing market during the 1990s, including Moody's Investor Services ("Moody's"), Standard & Poor's Ratings Services "S&P"), Duff & Phelps Credit Rating Company ("DCR"), Fitch Investors Services ("Fitch"), International Bank Credit Analysis ("IBCA"), and Thomson Bank Watch ("Thomson").¹

In this context, it is interesting that the PBC lens has hardly ever been applied to investigate links in and around election periods between governmental officials on the one hand, and investors and expert advisors like agencies on the other hand.² Typically, PBC theory has been limited to incumbents' incentives to implement fiscal, monetary and related policies geared to assure their re-election by domestic constituencies. Arguably, competitive democratic elections constitute some of the most "traumatic" events that might affect the cost and availability of credit in the developing world in the 1980s and 1990s. The exercise of the franchise in genuinely competitive national elections marks a stark departure in many developing countries formerly characterized by one-party political systems, or by multi-party political systems experiencing substantial unrest, extra-constitutional changes in government, and or military coups. As Goldsmith (1995) notes, these democratization efforts were thought by many to promote greater political freedom and stability and, in turn, enhanced attractiveness for lending and investment purposes.

The fundamental proposition of our study is that the incumbent behaviors predicted by PBC theory during election periods matter not only to domestic constituencies but also to foreign actors including agencies and investors. Both are assessing the creditworthiness of developing countries in and around elections. Agencies do so with letter rankings while investor assessments are reflected in the market-

¹ For more on the sovereign lending and the industrial organization of agency sovereign risk-rating, see, *e.g.*, White (2001).

² Discussions with Phil Uhlmann highlighted this point for us and we are especially grateful for his comments and suggestions.

determined credit spreads on developing country sovereign bond yields. Whether these assessments are significantly affected by the occurrence of elections, and if so, how, are the questions we address.

We examine empirical support for this proposition with data on long-term foreign currency denominated sovereign risk ratings from the major agencies, and with data on representative fixed-rate dollar-denominated sovereign bond yields for developing countries holding presidential elections between 1987 and 1999. We find consistent support for our fundamental research proposition that elections in developing countries are associated both with significant effects on their agency sovereign risk ratings and market spreads. On average, elections in developing countries are associated with a decline of approximately one rating level on a 17 (0-16) -point scale. Similarly, we find that spreads on developing country sovereign debt relative to comparable US Treasuries increase 21 percentage points 60 days after an election compared to the same period without an election. Together, these results suggest that at least two key actors in international credit transactions, agencies and bondholders, view elections in developing countries negatively and exact a substantial premium on developing sovereigns and sub-sovereign individuals seeking capital (e.g., local municipalities and firms). In addition to extending PBC theory to interactions involving foreign actors, our results provoke additional research questions about short- and long-term trade-offs between political and economic development and the private actors actually assessing that trade-off.

The remainder of this study is structured as follows. Section 2 describes the relevant theory and empirical predictions for political business cycles applied to traditional incumbent government-domestic voter interactions and to interactions with the private actors of interest in this research. Section 3 summarizes our data set and methodology for addressing the impact of elections on developing sovereign risk ratings and bond yield spreads. Section 4 presents our findings, and Section 5 discusses the findings' implications for PBC research and policy. The paper concludes with suggestions for future research extending PBC theory to other relationships linking developing country political factors to the broader international financial system.

2. RESEARCH BACKGROUND

Prior PBC Theory and Evidence

Since the seminal papers of Nordhaus (1975), Lindbeck (1976) and Tufte (1978), PBC theory has been debated by economists, political scientists and other academicians largely in the context of industrialized democracies and exclusively in the context of interactions among domestic political stakeholders, such as between elected incumbents and voters. These original models, which posited identical “opportunistic” (*i.e.*, office-seeking) politicians and “naïve” (*e.g.*, with adaptive expectations) voters have been challenged by alternative characterizations of both politicians and voters. Hibbs (1977, 1987) asserted that politicians are distinguished by partisan preferences over policy outcomes, yet retained the characterizations of voters as having adaptive expectations, as a consequence of which, voters can be “fooled” repeatedly by politicians. More recently, both opportunistic (*e.g.*, Rogoff & Siebert, 1988; Rogoff, 1990) and partisan (*e.g.*, Alesina, 1987) branches of PBC theory have been refined to endow voters with rational expectations. These theoretical refinements are thoroughly reviewed in Alesina and Roubini (1997) and Drazen (2000).

While it is difficult to generalize across the range of developing countries, recent studies of such countries have favored the opportunistic branch (*e.g.*, Schuknecht, 1996; Shi & Svensson, 2000; Block, 2002). The clear left-right ideological divide apparent in most industrialized democracies is not as clearly apparent in many developing countries, where elections are more often referenda on specific rulers and recent economic conditions. As Ka and van de Walle (1994: 290) note, for example, about elected officialdom in African states, “[S]tate elites in Africa are rarely motivated by specific policies. Rather, they seek to maximize their chances of political survival and therefore base their policy decisions on perceptions of political risk.” Application of opportunistic rather than partisan PBC models to other developing country settings would appear appropriate, especially given results from recent empirical studies in this context.

The interaction of opportunistic governments and naïve voters leads to the prediction that governments will systematically intervene to create regular multi-year cycles of growth and

unemployment in which growth is above normal and unemployment below normal just prior to elections; this is followed by a post-election period of economic contraction, slow growth and increasing unemployment, all of which may persist longer than the pre-election trends. Traditional PBC theory also predicts that monetary and fiscal policies will be expansionary just prior to elections and contractionary afterwards. PBC theory emphasizing incumbent opportunism further predicts that pre-election inflation may decrease only to return with greater post-election force. More recent theoretical refinements of opportunistic PBC theory assume rational rather than adaptive voters, but generate similar empirical predictions with greater emphasis on the manipulation of policy tools rather than on economic outcomes. In these models, opportunistic governments are still shown to have incentives to manipulate macroeconomic policy variables just prior to elections in order to appear competent to their electorate.

Empirical testing of different PBC models to date has relied largely on data from the industrialized democracies, where results have been mixed. The small but growing body of empirical work on developing countries, however, consistently finds evidence of behavior by incumbents consistent with opportunistic PBC theory. This empirical work in industrialized and developing country contexts is summarized below in Table 1:

(Insert Table 1 Approximately Here)

PBC Hypotheses for Agencies, Bondholders and Developing Countries

As this summary of theoretical and empirical work indicates, opportunistic PBC theory shows great promise in explaining incumbent government behavior in and around election periods in developing countries. Yet, behavior examined to date has focused on interactions between elected incumbents and voters; rarely has research broadened the probe to include others outside government, much less outside the country itself. Goldsmith's (1995) examination of links between developing country democratization and business climate is an exception that helps to lay the foundation for our investigation. He found that democratization efforts in the 1980s were *not* correlated with increased developing country attractiveness for business and investment among foreign executives.

Our research elaborates on this work by anchoring the investigation of links between political and economic development in PBC theory and its specific empirical context of electoral politics. To date there is little previous research in this vein. Bachman (1992), for example, found that elections between 1973 and 1985 leading to a change in the governing party in Canada, France, the UK and the US led to significant changes in forward exchange bias. By contrast, this study examines private financial actors in a developing country electoral context. Pantzalis *et al.* (2000) found that share market prices in a sample of 33 industrialized and developing countries reacted negatively to uncertainty in the outcome of elections held in those countries between 1974 and 1995. Again by contrast, this study focuses less on the impact of electoral uncertainty than on the anticipatory negative reaction of private financial actors to elections in developing countries no matter the election outcome.

Specifically, we consider how private, often foreign-based actors represented by agencies and bondholders react to the possibility of PBCs in developing countries. We propose that these actors will look negatively on the election-motivated behavior of opportunistic incumbents. Consistent with this proposal, we first hypothesize for agencies assessing developing country sovereigns that:

H₁: Elections periods will be associated with lower sovereign risk ratings published by agencies.

Similarly, with respect to developing country sovereign bondholders and spreads, we next hypothesize that:

H₂: Election periods will be associated with higher market determined credit spreads between developing country and comparable US Treasury bond yields.

3. METHODOLOGY

Empirical Models and Variable Measures

We define two empirical models to test these hypotheses. The first empirical model below is used to examine the impact of elections on sovereign risk ratings and, therefore, test Hypothesis 1:

$$RATING_{rit} = \beta_0 + \beta_1 RATING_{rit-1} + \sum_{r=1}^4 \alpha_r AGENCY_r + \sum_{i=1}^{16} \gamma_i COUNTRY_i + \sum_{t=1988}^{1998} \xi_t YEAR_t + \sum_{j=1}^7 \psi_j MACRO_{jt} + \eta ELECT_{it} + u_{rit} \quad (1)$$

where the subscripts r indicate rating agency, i country and t year. In (1) the dependent variable, $RATING$, is the 17-level sovereign risk-rating from agency r for country i on December 31 of each year t from 1987 to 1998.

On the right-hand side of (1) we include a lagged dependent variable, $RATING_{t-1}$, and dummy variables to control for unobserved and possibly idiosyncratic effects related to $AGENCY$, $COUNTRY$, and $YEAR$. As additional controls, we include seven macroeconomic and financial variables, $MACRO$, for country i in year t . The seven macroeconomic control variables, for which ψ are parameter estimates, include: 1) Per capita income (“ PCI ”) measured in the current year, in thousands of constant US dollars and expected to be positively related to $RATING$; 2) Economic growth (“ $GDPG$ ”) measured as the average annual real GDP growth rate in the current and previous two years, and expected to be positively related to $RATING$; 3) Inflation (“ INF ”) measured as the average annual consumer price inflation in the current and previous two years, and expected to be negatively related to $RATING$; 4) Fiscal balance (“ $FISCBAL$ ”) measured as the average annual overall budget balance relative to GDP for the current and previous two years, and expected to be positively related to $RATING$; 5) External balance (“ $EXBAL$ ”) measured as the average current account balance relative to GDP for the current and previous two years, and expected to be positively related to $RATING$; 6) External debt (“ $EXDEBT$ ”) measured as the present value of debt relative to exports of goods and services for the current year, and expected to be negatively related to $RATING$; and 7) Recent default indicator (“ DEF ”) measured as a 0-1 indicator (1 if default; 0 if no default), indicating that the sovereign has defaulted on its long-term foreign currency denominated debt in the last five years, and expected to be negatively related to $RATING$. These macroeconomic controls are intended to isolate the impact of elections as distinct from potentially election-motivated fluctuations in those control variables.³ Previous research by Cantor and Packer (1996a-b), Larrian *et al.*

³ Note from the subscripts in equation (1) that, in some cases, the data set provides several agencies’ ratings for a given country-year, in which cases all right-hand side data are identical across observations. If uncorrected, this type of clustering may result in biased standard errors that could exaggerate statistical significance. We correct for this problem in each of the estimators described above.

(1997) and McNamara and Vaaler (2000) show that these seven variables explain substantial variation in agency sovereign risk ratings for industrialized and developing countries in the 1980s and 1990s.

In the context of these sovereign risk-rating controls, we then add the independent variable of central interest to our study, whether the developing country sovereign experienced a presidential election in a current year (“*ELECT*”). This is measured as a 0-1 indicator (1 if there was an election; 0 if there was no election) and is expected to be negatively related to *RATING*. Accordingly, Hypothesis 1 above predicts that the parameter estimate for *ELECT* (η) in (1) will be:

$$H_1: \eta < 0.$$

A second empirical model below is used to examine the impact of elections on market determined credit spreads for sovereign bond yields compared to bond yields on comparable US Treasuries. The empirical model used to test Hypothesis 2 is:

$$RELSPREAD_{it} = \beta_0 + \sum_{i=1}^{11} \gamma_i COUNTRY_i + \sum_{t=1993}^{1999} \xi_t YEAR_t + \sum_{t=-60}^{+60} \beta_1 DAY_{it} + \sum_{t=-60}^{+60} \beta_2 (DAY * POSTDAY)_{it} + u_{it} \quad (2)$$

where the subscripts i and t again indicate country and year respectively.

In (2) the dependent variable, *RELSPREAD*, is defined as:

$$RELSPREAD_{it} = (YIELD_{it} - YIELD_{US,t}) / YIELD_{US,t}$$

where $YIELD_{it}$ is the total yield measured in basis points on a sovereign bond issued by country i and trading on day t relative to the total yield, $YIELD_{US,t}$, for the comparable US Treasury. Lamy and Thomson (1988) suggest that this relative spread measure is a more stable risk measure than absolute spreads, especially over longer periods of observation where the general level of interest rates may fluctuate substantially.⁴

In addition to inclusion of dummies to control for fixed *COUNTRY* and *YEAR* effects, we include two time variables to assess pre- and post-election effects on spreads. The first time variable, *DAY*, is a day counter running from 60 days before to 60 days after election day. The second time variable,

POSTDAY, is a 0-1 indicator variable, which takes a value of 1 if the day is after election day, and 0 otherwise. In this piece-wise specification, the parameter estimate for β_1 represents the pre-election spreads slope, while the post-election spreads slope is represented by the sum of the two parameter estimates, $\beta_1 + \beta_2$. We found no previous research in PBC or related fields to guide our choice of length for the pre- and post-election periods. We examined the length of the general election (post-primary or other preliminary election) campaigning period in our data to establish a pre-election period, which we then mirrored for the post-election period. A 60-day pre-election window approximated the average length for our developing country sample, as it also approximates the length of the general election campaign in many industrial democracies such as the US. Hypothesis 2 above predicts that spreads will increase during election periods. Given the spreads model (2), this hypothesis implies that spreads in both the pre- and post-election periods will exhibit positive trends as PBC-related risks to bondholders increase. The hypothesis also implies that post-election spreads slopes more positive than pre-election spreads slopes. It is in the post-election period when the detrimental effects of PBC-related policies become more evident. Given the terms in spreads model (2), this difference between pre- and post-election slopes implies that $\beta_1 + \beta_2 > \beta_1$. This inequality reduces to:

$$H_2: \beta_2 > 0$$

Estimation Strategy

Previous empirical research on sovereign risk-rating estimation suggests many different approaches for estimating models described above. For the sovereign risk-rating model (1), ordinary least squares regression provided the earliest approach (*e.g.*, Horrigan, 1966; Cantor & Packer, 1996a-b), but n-level ordered logit or probit approaches are more appropriate given the ordinal nature of risk-rating measures (Zavoina & McElvey, 1975; Maddala, 1983; Ederington, 1985). In practice, these different estimation approaches yield very similar results when there are observations at several of the defined ordinal levels. The risk-rating data in our sample cover 13 of the possible 17 ordinal levels commonly

⁴ Unless otherwise stated, we use the term “spreads” throughout the rest of the paper to mean relative spreads

used by agency professionals and in previous research (*e.g.*, McNamara & Vaaler, 2000). We estimate risk-rating model (1) using ordered probit regression.⁵

Given that estimation of (1) may involve analysis of multiple agency risk ratings for the same country in the same year, we adjust the standard errors in each estimation for clustering on multiple agency announcements for the same country-year combination.

Equation (1)'s inclusion of a lagged dependent variable complicates estimation of fixed effects models, as Hsiao (1986) demonstrates that such specifications are inconsistent (with finite T) due to a correlation of the order $(1/T)$ between the lagged variables and the residuals. Thus, we leave it to our final (albeit linear) estimator to address the potential effects of lagged dependent variables in our fixed effects specification.

Arellano and Bond (1991) propose a dynamic generalized method of moments ("GMM") estimator intended to yield consistent parameter estimates in the presence of both fixed effects and lagged dependent variables. Arellano and Bond's estimation strategy, employed here, is to first-difference the equations to eliminate unobserved country effects, and to fix the resulting inconsistency by applying instrumental variables consisting of appropriately lagged levels of the variables. The set of valid instruments grows incrementally as the year in question approaches T . Arellano and Bond's (1991) GMM estimator builds on this foundation and fixes the remaining problem of autocorrelated errors in the resulting model.

To estimate the spread model (2), the high (daily) frequency of the time series and multi-dimensional cross-sections (national elections, agencies) in the panel requires us to resort to a flexible general estimating equation ("GEE") approach. The GEE procedure provides general linear model estimates, with independent correlation structures and semi-robust standard errors for defined groups in the sample. This permits us first to define groups in each sample – 14 election groups in model (2). The GEE procedure also allows for first through tenth-order autocorrelation adjustment of error terms for

(*RELSPREAD*) rather than absolute spreads.

observations in each group, with standard errors reflecting between-group heteroskedasticity in the cross-section. As with the estimators in (1), we adjust the standard errors in (2) for clustering on multiple agency announcements for the same country-year combination.

Data Sources and Samples

Data for estimation in risk rating model (1) and spreads model (2) are of four types. First, we collected annual data for macroeconomic characteristics linked to developing countries from 1987 to 1999 using World Bank World Development Indicators (“WDI”) (World Bank, 2001) and agency sources (Standard & Poor’s Ratings Services, 1999). These data provide measures of the *MACRO* variables in risk rating model (1).

Second, we collected data on the dates and types of presidential elections held from 1987 to 1999 using the World Bank’s recently published Database of Political Institutions (“WBDPI”) (version 2, described in Beck *et al.*, 2000). From these WDI data, we extracted dates of presidential elections in developing countries classified as either “Presidential” or “Assembly-Elected Presidential.” Presidential elections from the countries we selected are based either on a direct popular vote or indirect vote of legislators or specialized electors. The presidential systems chosen by these means were also judged to accord substantial executive governmental powers rather than mere state ceremonial duties as presidential heads of state tend to have in parliamentary systems. Other factors motivated our decision to focus on presidential rather than parliamentary system elections. Elections in countries with presidential systems tend to follow fixed schedules. By contrast, parliamentary system election dates are often chosen by the executive. This can lead to endogeneity problems in empirical models of PBC-related election effects. The WDI data also include 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 we sampled scored 6 or

⁵ Results using ordered logit and OLS estimators are consistent with the results reported in this study, and are available from the authors on request.

7 on this scale, indicating that they were “real” elections.⁶ The year and location of these presidential elections are summarized in Table 2. These data provide measures of the *ELECT* variable in risk rating model (1) and provide anchoring points for definition of the pre- and post-election spreads trends in spreads model (2).

(Insert Table 2 Approximately Here)

Third, using Bloomberg International (2001) on-line sources, we collected data on developing country sovereign risk ratings published by Nationally Recognized Statistical Rating Organizations (“NRSRO”) agencies from 1987 to 1999. We limited our data collection to NRSRO agencies since US Securities and Exchange Commission rules as well as previous US legislation and regulations require at least one and usually two NRSRO agency ratings debt offerings (SEC, 1994). For each year, we noted the published agency sovereign risk-rating on December 31 measured on a 17-point (0-16) scale. The month and year that these agencies first published sovereign risk ratings for a given country in our sample are noted in Table 2. Table 3 provides a brief explanation of this rating scale agencies commonly use. The important breakpoint on this ordinal scale is at 7 (BBB-). Below this level, ratings move from investment- to junk-grade, which increases bond yields considerably and may constrain the availability of bond offerings to US institutional investors.). These data provide measures of the *AGENCY* and *RATING* variables used in risk rating model (1).

(Insert Table 3 Approximately Here)

Fourth and finally, we again turned to Bloomberg International (2001) on-line sources, to collect data on large-issue, dollar-denominated, fixed-rate bonds issued by developing sovereigns from 1987 to 1999. We chose one representative bond for each sovereign based on its initial offering size and liquidity. We noted its daily yield paired to a comparable US Treasury, either actually published that same day or synthetically derived from a constructed yield curve for that same day.

⁶ Our sample of annual sovereign risk ratings does contain observations for Indonesia and Tunisia where the respective electoral systems prior to 1998 (in Indonesia) and 1999 (in Tunisia) were rated less than competitive (7 or 8) in the WDI rankings. Election year observations for Indonesia and Tunisia were not included in our final sample.

For analysis of annual sovereign risk ratings during election periods, we ended up with a sample of 236 observations with data covering the 1987-1998. This covered annually observed sovereign risk-rating levels for 17 developing countries holding 39 presidential elections. For analysis of changes in spreads during election periods, we ended up with 1,694 observations with data covering the 1994-1999 period. This covered daily spread observations for 11 developing countries holding 14 presidential elections.

4. RESULTS

Overview of Results

This section presents results from our analyses, which are summarized in Tables 4 and 5 below. Overall, our results indicate strong support for Hypothesis 1 concerning sovereign risk ratings during election periods. Across different model specifications and sub-sample analyses, we consistently find that election years are significantly correlated with lower (less creditworthy) sovereign risk ratings from the agencies. Generally speaking, agency ratings are one rating level lower than would otherwise be appropriate given all other relevant rating factors. Our results also indicate moderate support for Hypothesis 2 concerning trends in spreads during election periods. Spreads increase significantly after elections compared to the pre-election trend, although this finding is significant at the $p < .10$ level and this finding is sensitive to the length of the pre- and post-election period used. On average, relative spreads increase approximately 21.6 percentage points above trend 60 days after an election. These and related results are discussed in greater detail below.

Risk Rating Model Results

The mean sovereign risk rating in our sample is 5.8, which is approximately equal to a BB+ (S&P) rating. This mean value is important because BB+ is at the breakpoint between the lowest “investment-grade rating (BBB-) and the first “junk” rating (BB+). In effect, small changes – even one rating level change — can move a sovereign from junk to investment grade status, which greatly facilitates the placement of its debt with institutional investors. Columns 1 and 2 in Table 4 present descriptive statistics from the sample. The means and standard deviations for various macroeconomic

control variables in the regression exhibit characteristics typical of emerging-market countries, including mid-range per capita income levels (\$3,981), and higher GDP growth (4.36%) and inflation rates (138%).

(Insert Table 4 Approximately Here)

Table 4, Columns 3-5, present results from ordered probit estimation of equation (1) using three specifications. The specification in Column 3 is our base case, and includes only the seven macroeconomic control variables (described above), demonstrated by Cantor and Packer (1996) as well as McNamara and Vaaler (2000), closely to approximate the algorithm commonly employed by the agencies. Six of these seven macroeconomic controls are statistically significant at the $p < .05$ level; among those six, all but per capita income (*PCI*) are of the expected sign. GDP growth (*GDPG*) is not significantly different from zero. In general, the baseline model's results are intuitively plausible. Agencies accord higher ratings to countries with smaller fiscal deficits and lower inflation, with lower inflation, and no recent history of default on sovereign debt. The anomalous results for the level and growth of income may be an artifact, unaccounted for by year and country dummies, of certain years of financial crisis (*e.g.*, 1994, 1997 and 1998), which disproportionately affected the developing world's richest and fastest growing economies. The remaining Columns (4-6) test the effect of elections on developing country sovereign risk ratings, holding constant this set of baseline macroeconomic, year and country factors.

Column 4 introduces the election year dummy into the baseline equation, with virtually no impact on the previously included coefficient estimates. The election dummy itself enters negatively, as expected from hypothesis 1 ($\hat{\eta} = -0.817$; $p < .001$). The lack of impact of elections' inclusion on other regressors suggests that elections' negative effect on sovereign ratings is not merely a proxy for election-motivated changes in those macroeconomic controls. The ordered probit estimator readily enables simulations based on estimated coefficients. The practical impact of this election effect is substantial. Evaluating explanatory variables at their respective means, the estimates in Column 3 suggest that the occurrence of an election results in a reduction in the predicted rating by one rating level.

Given that the mean rating for this sample of sovereigns lies very close to the junk versus investment grade cut-off, an election-related negative change of one rating level could be a decisive factor in forcing developing country issuers to offer substantially higher coupon rates, and constraining issue placement with certain investors. These results survive the inclusion of a lagged dependent variable – as shown in Column 5. In this case, the negative effect of elections on risk ratings appears even stronger ($\hat{\eta} = -1.20$; $p < .001$).

Column 6's results provide further validation of the election effect on developing country sovereign risk using the dynamic panel GMM estimator proposed by Arellano and Bond (1991). Recall that this estimation approach allows us to control for potential bias arising from the inclusion of both a lagged dependent variable and year and country dummies. Applying this GMM estimator to a sub-sample of ratings from the most active agency in developing countries over the 1987-1998 period, Moody's,⁷ we again observe negative election-related effects that are statistically significant ($\hat{\eta} = -1.49$; $p < 0.01$). The overall model results are remarkably consistent in finding that elections are associated with average decreases in sovereign risk ratings of at least one rating level, *ceteris paribus*. Our support for Hypothesis 1 is, thus, robust to alternative estimators, specifications and sub-sampling. Agencies perceive elections in developing countries as risky events and react by downgrading (or refraining to upgrade otherwise less risky) countries during election years.

Spreads Model Results

Table 5 reports results from analysis of spreads over the 60 days before and after elections. For our sample of 11 developing countries holding 14 presidential elections between 1994 and 1999, the mean relative spread is 0.4189. This mean implies that, on average, if US Treasuries of a given maturity yield 500 basis points (5.0%) on a given day during the 60 days prior to or after an election, the comparable sovereign bond yield that day will be approximately 42% greater, that is, about 710 basis points (7.1%).

⁷ Multiple observations for the same country-year are not permitted in the GMM estimator. Thus, it was necessary to limit the sample to ratings from a single agency. Similar results in terms of signs (though not significance due to power restrictions) are obtained using other agency ratings (*e.g.*, S&P). These results are available from the authors on request.

As with sovereign risk ratings, small differences in spreads can have substantial implications for developing countries and their cost of funds. For example, in January 1998 Venezuela's consolidated sovereign debt stood at approximately \$30 *billion* (World Bank, 1999). US Treasuries of an average maturity on January 1, 1998 were yielding 233 basis points (2.33%), due, perhaps, to a drop in interest rates associated with the Asian financial crisis and subsequent economic slowdown. The relative spread for Venezuela's representative sovereign bond on January 1, 1998 was 0.698, implying that Venezuelan sovereign debt traded, on average, at a 70% premium or about 396 basis points (3.96%). A difference between US and Venezuelan yields of only 163 basis points (1.63%) on January 1, 1998, however, implies approximately \$489 million in additional annual costs on Venezuela's \$30 billion sovereign debt.⁸

(Insert Table 5 Approximately Here)

Table 5, Column 1's results provide moderate support for Hypothesis 2 that election periods are associated with substantial change in spreads. Consistent with Hypothesis 2, we find that the GEE estimate for the post-election spreads slope is more positive by $\hat{\beta}_2 = 0.0036$ ($p < .10$) compared to the pre-election spreads trend. This implies a difference of 21.6 percentage points in spreads 60 days after an election, relative to the pre-election trend.

While consistent with Hypothesis 2's prediction that post-election slope in bond spreads would be more positive than the pre-election slope, our intuition was that relative to zero, the pre-election trend in spreads would also be slightly positive. Bondholders would, we thought, anticipate post-election PBC effects and or simply react to pre-election uncertainty. Both factors would explain increases in pre-election spreads. In addition, we thought the spreads trend would be significantly greater than zero post-election. In fact, the results in Table 5, Column 1 indicate a significant negative trend pre-election followed by a slightly positive post-election absolute slope point estimate ($\hat{\beta}_1 + \hat{\beta}_2 = 0.0011$) that is not

⁸ Indeed, Venezuela saw spreads on its outstanding sovereign debt increase even more in 1998. After downgrades in July and August 1998, spreads for Venezuelan sovereign debt in November 1998 ranged as high as 7.08 and representative sovereign bonds were yielding more than 3,000 basis points. This change implied approximately \$2.02 billion in additional expense on its outstanding sovereign debt.

statistically different from zero ($p < 0.57$). This pattern of negative pre-election followed by flat post-election slopes in spreads on developing country sovereign bonds persists in regressions with longer observation windows (*e.g.*, 90-90, 180-180) although the statistical significance of the coefficient estimates understandably declines.⁹

Potential explanations for this consistent trend in pre- and post-election slopes might relate to other PBC-related factors, such as an expansionary monetary policy implemented by incumbents just prior to an election in order to garner public support and votes. If such strategies are at work, then bondholders appear to “go along” by accepting lower spreads on sovereign bonds just prior to an election.¹⁰ The resolution of political uncertainty in the post-election period, however, is not associated with the continued narrowing of spreads. This post-election result seems inconsistent with the uncertainty information hypothesis Pantzalis et al. (2000) use to explain pre- and post-election fluctuations in share prices. Perhaps, a more involved explanation based on PBC theory is required to understand both the pre- and post-election behaviors of sovereign bondholders.

5. CONCLUSION

This study of election-related changes in developing country sovereign risk ratings and spreads adds to the PBC literature by looking at it from the “outside.” While PBC theories characterize politicians and voters and their interaction around elections, we addressed the possibility that third parties may be cognizant of the incentives for economic misbehavior described in the PBC literature. Specifically, we posited that agencies rating sovereign risk in developing countries and bondholders holding sovereign debt will act as if they are aware of the potential for incumbent politicians to create

⁹ We also re-ran our analyses with pre-and post-election windows for every day between 50-50 days and 70-70 days in length inclusive (20 different window lengths from the 60-60 days results reported above). The signs on all coefficient estimates for pre- and post-election spreads slopes were consistent with the signs and estimate levels for the 60-60 day results discussed here. Levels of statistical significance on the positive post-election coefficient estimates ranged from $p < 0.37$ to $p < 0.07$ with p-values on seven of the 20 coefficients at the $p < 0.10$ level. The average p-value for all 20 coefficients was 0.16. These results are available from the authors on request.

¹⁰ Quantitatively, the change in spreads pre-elections appears substantial. Compared to 60 days prior, spreads on the eve of an election, are approximately 15 percentage points lower.

political business cycles. We found firm support for Hypothesis 1 that average agency ratings for developing countries will decline during election years.

Holding constant a set of macroeconomic control variables thought to explain sovereign risk, we found that sovereign risk ratings decline by approximately one level during election years in our sample of developing countries. This result is robust to the inclusion of year, country, agency and lagged dependent variable effects, as well as changes in the sample, specification and estimators used.

Similarly, we hypothesized that spreads would tend to rise more steeply in the aftermath of elections than before them. We found in this change support for Hypothesis 2, though the change is from negative to flat trends rather than from flat to positive trends, as we originally thought.

These findings raise several broader questions about elections and the apparent price they entail for developing countries. Risk ratings are of central concern to countries seeking to finance their growth strategies by attracting mobile investment capital in a highly competitive global economy. Downgrades portend substantial increases in the cost of capital, and perhaps other negative reactions such as reduced capital inflows, and in extreme cases, even capital outflows (*see, e.g., Larrain et al., 1997*). If incumbent political leaders in developing countries are prone to creating political business cycles (as a growing literature suggests they are), and if outside observers such as agencies and bondholders are aware of that potential, then elections may be costly events.

Developing country sovereign risk ratings decline by approximately one level during election years, and spreads increase above the pre-election trend by an average of 21 percentage points by 60 days after elections. Together, these findings suggest that democratization is accompanied by more skittish investors and more costly capital in the short- to medium-term. These costs have previously been ignored in the PBC literature. Yet, in an era of globalization, such costs may be substantial, particularly as competitive elections become increasingly frequent events among the nascent democracies of the developing world.

This research invites further exploration of related PBC issues. For example, are there negative spillover effects on ratings and or spreads for one developing country when a neighboring country holds

an election? Kaminsky and Schmukler (2001) suggest that there may be such spillovers during severe financial crises. Perhaps the “crisis” elections represent in democratizing countries will spark similar negative spillovers for a region, particularly if democratic reform in one country increases pressure for similar reform in neighbors.

Another PBC-related issue for future inquiry concerns other relevant third parties and their perceptions of increased risk surrounding competitive elections. Goldsmith’s (1994) findings are validated in this study with respect to two key players in international capital markets: agencies and bondholders. Other key individuals may be similarly affected by elections, including banks making loans, individuals engaged in portfolio investments and firms engaged in foreign direct investment in developing countries. Pantzalis *et al.* (2000), for example, have already shown that share prices in both industrialized and developing country stock markets react negatively to pre-election outcome uncertainty. Perhaps PBC theory can be used to examine post-election variation in share prices linked to the detrimental impact of policies incumbents enacted in the pre-election period to assure their re-election. Uhlmann’s (2002) study of bank lending to developing countries from 1985 to 1999 suggests that there may also be “political banking cycles” during which bankers cut back on lending, particularly to non-governmental borrowers, prior to executive elections in both parliamentary and presidential political systems. Deeper understanding of the composition of such fluctuations before and after elections will also contribute to future PBC research.

Such related issues are relevant, not only to the PBC literature as it is increasingly extended to developing countries, but also to broader issues of the relationship between democracy and growth. While in the long run democracy undoubtedly is a good in itself, its long-term benefit may be offset by the short- to medium-term perception that competitive elections induce costly economic misbehavior by political incumbents. To the extent that this perception may increase the cost and reduce the supply of capital to developing countries, it adds to the price of democracy even if that cost is still worth paying.

REFERENCES

- Alesina, A. 1987. Macroeconomic policy in a two-party system as a repeated game. *Quarterly Journal of Economics*, 102: 651-78.
- Alesina, A. 1988. Macroeconomics and politics. *NBER Macroeconomic Annual*, Cambridge, MA: MIT Press.
- Alesina, A. & Roubini, N. 1990. Political cycles in OECD economies,” *Review of Economic Studies*, 59: 663-88.
- Alesina, A. & Roubini, N. with Cohen, G. 1997. *Political cycles and the macroeconomy*. Cambridge, MA: MIT Press.
- Ames, B. 1987. *Political survival: Politicians and public policy in latin america*. Berkeley, CA: University of California Press.
- Arellano, M. & Bond, S. 1991. Some tests of specifications for panel data: Monte carlo evidence and an application to employment equations. *Review of Economic Studies*, 58:277-97.
- Bachman, D. 1992. The effect of political risk on the forward exchange bias: The case of elections. *Journal of International Money and Finance*, 11: 208-219.
- Beck, N. 1987. Elections and the fed: Is there a political monetary cycle? *American Journal of Political Science*, 31: 194-216.
- Beck, T. 2000. New tools and new tests in comparative political economy: The database of political institutions. Working Paper, Development Economics Research Group, World Bank, Washington, DC.
- Ben-Porath, Y. 1975. The years of plenty and the years of famine – a political business. *Kyklos*, 28.
- Block, S. 2002. Political business cycles, democratization, and economic reform: The case of africa. *Journal of Development Economics*, Vol. 67:205-228.
- Bloomberg. 2001. Bloomberg on-line data services. New York, NY: Bloomberg International.
- Brender, A. 1998. The effect of fiscal performance on local government election results in Israel: 1989-1998. Bank of Israel Research Department Discussion Paper 99.04, Tel Aviv, Israel.
- Cantor, R. & Packer, F. 1996a. Sovereign risk assessment and agency credit ratings. *European Financial Management*, 2: 247-256.
- Cantor, R., & Packer, F. 1996b. Determinants and impacts of sovereign credit ratings. *Federal Reserve Bank of New York Economic Policy Review*, October Volume: 37-53.
- Carlsen, F. 1999. Inflation and elections: Theory and evidence for six oecd economies. *Economic Inquiry*, 37: 120-135.
- Carlsen, F. & Pedersen, F. 1999. Rational partisan theory: Evidence for seven oecd economies. *Economics and Politics*, 11: 13-32.

- Cukierman, A. & Meltzer, A. 1986. A positive theory of discretionary policy, the cost of democratic government and the benefits of a constitution. *Economic Inquiry*, 24: 367-388.
- Drazen, A. 2000a. *Political Economy in Macroeconomics*. Princeton, NJ: Princeton University Press.
- Drazen, A. 2000b. The political business cycle after 25 years. *NBER Macroeconomic Annual*, Cambridge, MA: MIT Press.
- Ederington, L. 1985. Why split ratings occur. *Financial Management*, 15: 37-47.
- Ellis, C. & Thoma, M. 1995. The implications for an open economy of partisan political business cycles: Theory and evidence. *European Journal of Political Economy*, 11: 635-651.
- Faust, J. & Irons J. S. 1999. Money, politics and the post-war business cycle. *Journal of Monetary Economics*, 43(1): 61-89.
- Ferree, K. & Singh, S. 1999. Institutional change and economic performance in africa, 1970-1995. Paper Presented at the 1999 meetings of the American Political Science Association, Atlanta, Georgia.
- Ferri, G., Liu, L. & Stiglitz, J. 1999. The procyclical role of rating agencies: Evidence from the east asian crisis. *Economic Notes* 28: 335-355.
- Foudra, S. 1997. Political monetary cycles and independence of the central bank in a monetary union: An empirical test for a beac franc zone member. *Journal of African Economies*, 6(1): 112-131.
- Gartner, M. 1999. The election cycle in inflation bias. *European Journal of Political Economy*, 15: 705-725.
- Goldsmith, A. 1994. Political freedom and the business climate: Outlook for development in newly democratizing states. *Social Science Quarterly*, 75: 115-124.
- Gonzales, M. 1999. Political budget cycles and democracy: A multi-country analysis. Working Paper, Department of Economics, Princeton University, Princeton, NJ.
- Grier, K. 1989. On the existence of a political monetary cycle. *American Journal of Political Science*, 33: 376-89.
- Haynes, S. & Stone, J. 1989. An integrated test for electoral cycles in the US economy. *The Review of Economics and Statistics*, 71(3): 426-434.
- Haynes, S. & Stone, J. 1990. Political models of the business cycle should be revived. *Economic Inquiry*, 28: 442-465.
- Haynes, S. & Stone, J. 1994. Political parties and the variable duration of business cycles. *Southern Economic Journal*, 60: 869-885.
- Hibbs, D. 1977. Political parties and macroeconomic policy. *American Political Science Review*, 71:467-87.
- Hibbs, D. 1987. *The american political economy*. Cambridge, MA: Harvard University Press.

- Horrigan, J. 1966. The determination of long-term credit sharing with financial ratios. *Journal of Accounting Research*, 4: 44-62.
- Hsiao, C. 1986. *Analysis of panel data*, Cambridge, UK: Cambridge University Press.
- IFC. 2000. *Emerging stock markets factbook 2000*. Washington, DC: International Finance Corporation (World Bank).
- IMF. 2001. Emerging market financing. *Quarterly Report on Developments and Prospects*. August 8 Issue. Washington, DC: International Monetary Fund.
- Ka, S. & van de Walle, N. 1994. Senegal: Stalled reform in a dominant party system. In Haggard, S. & Webb, S. (eds.). 1994. *Democracy, Political Liberalization and Economic Adjustment*, Oxford, UK: Oxford University Press for the World Bank, 290-359.
- Kaminsky, G. & Schmukler, S. 2001. Emerging market instability: Do sovereign ratings affect country risk and stock returns? Paper Presented at World Bank Group Conference on The Role of Credit Reporting Systems in the International Economy, March 1-2, Washington, DC.: World Bank.
- Klein, M. 1996. Timing is all: Elections and the duration of united states business cycles. *Journal of Money, Credit and Banking*, 28(1): 84-101.
- Krueger, A. & Turan, I. 1993. The politics and economics of turkish policy reform in the 1980's. In R. Bates, R. and Krueger, A. (eds). 1993. *Political and economic interactions in economic policy reform: Evidence from eight countries*, Oxford, UK: Basil Blackwell.
- Lamy, R. & Thompson, G. 1988. Risk premia and the pricing of primary issue bonds. *Journal of Banking and Finance*, 12(4): 585-601.
- Larrian, G., Reisen, H. & von Maltzen, J. 1997. Emerging market risk and sovereign credit ratings. *OECD Development Centre Technical Papers*, No. 124, Paris, France: Organization for Economic Cooperation and Development.
- Lewis-Beck, M. 1988. *Economics and elections*, Ann Arbor, MI: University of Michigan Press.
- Lindbeck, A. 1976. Stabilization policies in open economies with endogenous politicians. *American Economic Review Papers and Proceedings*, 1-19.
- Lohman, S. 1998. Rationalizing the political business cycle model. *Economics and Politics*, 10(1).
- Maddala, G. 1983. *Limited dependent variables and qualitative variables in econometrics*. Cambridge, England: Cambridge University Press.
- McCallum, B. 1978. The political business cycle: An empirical test. *Southern Economic Journal*, 42: 5034-515.
- McNamara, G. & Vaaler, P. 2000. Competitive positioning and rivalry in emerging market risk assessment. *Journal of International Business Studies*, 31: 337-347.

- Moyo, D. 1999. The determinants of public savings in developing countries. Working Paper, Oxford University, Oxford, UK.
- Nordhaus, W. 1975. The political business cycle. *Review of Economic Studies*, 42:169-90.
- Nordhaus, W. 1989. Alternative approaches to political business cycles. *Brookings Papers on Economic Activity*, 2: 1-49.
- OECD. 1998. Developing countries. *Financial Market Trends*, 69: 53-58. Paris, France: Organization for Economic Cooperation and Development.
- Paldam, M. 1997. Is there an electoral cycle? A comparative study of national accounts. *Scandinavian Journal of Economics*, 81: 323-342.
- Pantazis, C., Stangeland, D. & Turtle, H. 2000. Political elections and the resolution of uncertainty: The international evidence. *Journal of Banking & Finance*, 24: 1575-1604.
- Remmer, K. 1993. The political economy of elections in latin america. *American Political Science Review*, 87(2): 393-407.
- Reinhart, C. 2001. Sovereign credit ratings before and after financial crises. Paper Presented at World Bank Group Conference on The Role of Credit Reporting Systems in the International Economy, March 1-2, Washington, DC: World Bank.
- Rogoff, K. 1990. Equilibrium political budget cycles. *American Economic Review*, 80: 21-36.
- Rogoff, K. & Siebert, A. 1988. Elections and macroeconomic policy cycles. *Review of Economic Studies*, 55: 1-16.
- Schuknecht, L. 1996. Political business cycles and fiscal policies in developing countries. *Kyklos*, 49(2): 155-170.
- Schuknecht, L. 1999. Fiscal policy cycles and exchange rate regime in developing countries. *European Journal of Political Economy*, 15: 569-580.
- Schuknecht, L. 2000. Fiscal policy cycles and public expenditure in developing countries. *Public Choice*, 102(1/2): 113-128.
- Schultz, K. 1995. The politics of the political business cycle. *British Journal of Political Science*, 25: 79-99.
- Sheffrin, S. 1989. Evaluating rational partisan business cycles theory. *Economics and Politics*, 1: 239-259.
- SEC. 1994. Nationally recognized statistical rating organizations. *US Securities and Exchange Commission Release No. 33-7085*, August 31, Washington, DC: US Securities and Exchange Commission.
- StataCorp. 2001. *Stata statistical software: Release 7.0*. College Station, TX: Stata Corporation.

S&P. 1999. Sovereign defaults: Hiatus in 2000? *Standard & Poor's Ratings Services Credit Week*, December 22.

Stein, E. & Streb, J. 1998. Political stabilization cycles in high-inflation economies. *Journal of Development Economics*, 56: 159-180.

Svensson, J. & Shi, M. 2000. Political business cycles in developed and developing countries. Research Paper, Development Research Group, World Bank, Washington, DC.

Tufte, E. 1978. *Political control of the economy*. Princeton, NJ: Princeton University Press.

Uhlmann, P. 2002 (forthcoming). *See how they run: Political business cycles and bank lending in developing countries*. Unpublished doctoral dissertation. Boston, MA: The Fletcher School of Law & Diplomacy, Tufts University.

White, L. 2001. The credit rating industry: An industrial organization analysis. Paper Presented at World Bank Group Conference on The Role of Credit Reporting Systems in the International Economy, March 1-2, Washington, DC: World Bank.

World Bank. 1999. *World debt tables*. Washington, DC: World Bank.

World Bank. 1999-2001. *World development indicators*. Washington, DC: World Bank.

World Bank 2000. *Database of political institutions (version 2)*. Washington, DC: World Bank.

Zavoina, R. & McElvey, W. 1975. A statistical model for the analysis of ordinal level dependent variables. *Journal of Mathematical Sociology*. Summer Volume: 103-120.

TABLE 1

Selected Empirical Tests of PBC Theory: Industrialized and Developing Country Samples^a

Author	Variables Tested	Country Coverage	General Finding
<i>Industrialized Country Samples</i>			
Tufte (1978)	Transfers	US	Positive, <i>i.e.</i> , Support for PBC Theory
McCallum (1978)	Unemployment	US	Negative, <i>i.e.</i> , Contrary to PBC Theory
Beck (1987)	Money Growth	US	Positive
Alesina (1988)	Transfers	US	Weak Positive
Lewis-Beck (1988)	Output, Unemployment	OECD (non-US)	Negative
Keech <i>et al.</i> (1989)	Veterans' Benefits	US	Weak Positive
Grier (1989)	Money Growth	US	Positive
Sheffrin (1989)	Monetary Policy	US	Weak Positive
Haynes <i>et al.</i> (1989, 1990, 1994)	Output, Unemployment, Inflation	US	Positive
Alesina <i>et al.</i> (1990, 1997)	Output, Unemployment, Inflation, M1 Growth	US and OECD	Negative for Opportunistic Models Generally; Positive for Partisan Effects, and for Inflation and Money Supply Effects in OECD Countries
Ellis <i>et al.</i> , (1995)	Current Account, Terms of Trade	OECD (14 Countries)	Positive
Klein (1996)	Output	US	Positive
Paldam (1997)	Output, Unemployment	OECD (non-US)	Negative
Faust <i>et al.</i> (1999)	Monetary Policy, Output, Unemployment	US	Mixed
Gartner (1999)	Inflation	G-7	Weak Positive
Carlsen (1999) Carlsen <i>et al.</i> (1999)	Output, Inflation	US OECD	Positive for Rational Partisan PBC Theory
<i>Developing Country Samples</i>			
Ben-Porath (1975)	Taxes	Israel	Positive
Ames (1987)	Total Govt. Expenditures	Latin America (17)	Positive
Edwards (1993)	Inflation	Chile	Positive
Krueger <i>et al.</i> (1993)	Fiscal Aggregates	Turkey	Positive
Remmer (1993)	Inflation	Latin America (8)	Mixed
Schuknecht (1996, 1999, 2000)	Output, Fiscal Deficit	Non-Industrialized Countries (35)	Positive
Fouda (1997)	Money Growth	Cameroon	Positive
Brender (1999)	Fiscal Policy	Israel	Positive
Gonzales (1999)	Total Govt. Expenditures	Mexico	Positive
Moyo (1999)	Public Savings	Industrialized and Non-Industrialized Countries	Positive
Khemani (2000)	Commodity Taxes, Capital Spending, Road Construction	India	Positive
Pantzalis <i>et al.</i> (2000)	Stock Market Returns	Industrialized and Non-Industrialized Countries	Positive
Svenssen & Shi (2001)	Govt. Consumption, Fiscal Surplus, Tax Revenues	Industrialized and Non-Industrialized Countries	Positive
Block (2002)	Fiscal and Monetary Aggregates	Sub-Saharan Africa	Positive

a. Based on reviews given in Drazen (2000) and Block (2002)

TABLE 2

Developing Country Rating History and Presidential Elections^a, 1987-1999

Country	Month/Year First Rated by NRSRO Agency ^b	87	88	89	90	91	92	93	94	95	96	97	98	99
Argentina	M: 11/86; S: 8/93; D: 12/93; T: 1/94; I: 5/97			X						X				X
Bolivia	T: 4/96; M: 5/98; S: 7/98			X				X				X		
Brazil	M: 11/86; T: 1/94; I: 12/94; S: 12/94; D: 2/95			X				X					X	
Bulgaria	M: 9/96; T: 12/97; I: 4/98; S: 10/98						X				X			
Chile	S: 8/92; M2/94; T: 6/94; D: 6/94; F: 6/94; I: 8/94			X				X						X
Colombia	S: 6/93; M: 8/93; D: 12/93; T: 10/94				X				X				X	
Ecuador	T: 5/94; M: 7/97		X				X				X		X	
Indonesia	S: 7/92; T: 12/93; M: 3/94; I: 12/97; D: 10/98	X							X				X	
Mexico	M: 12/90; S: 11/91; D: 5/93; T: 1/94; I: 8/95		X						X					
Paraguay	S: 10/95; M: 7/98	X					X					X		
Peru	T: 11/95; M: 2/96; S: 12/97; D: 3/98				X					X				
Philippines	M: 7/93; S: 7/93; T: 12/93; D: 5/95; I: 7/99						X						X	
Poland	I: 5/95; M: 6/95; S: 6/95; D: 9/97				X					X				
Russia	T: 7/96; S: 10/96; M: 10/96; D: 10/96; I: 10/96				X	X					X			
South Africa	I: 9/94; S: 10/94; M: 10/94; T: 5/95; D: 6/97			X					X					

South Korea	M: 1/86; S: 10/88; T: 12/93; I: 6/96; D: 12/97	X					X					X		
Tunisia	M: 4/95; I: 9/95; S: 4/97; T: 6/99			X					X					X
Uruguay	M: 10/93; S: 2/94; I: 1/95; D: 1/97; T: 5/97			X					X					X
Venezuela	S: 10/77; M: 6/87; T: 7/94; I: 9/97; D: 3/98		X					X					X	

- a. Presidential elections sampled from countries with presidential systems only. The definition of a presidential system relies on Beck *et al.* (2000) and World Bank (1999-2001). Countries with “Direct Presidential” and “Indirect Presidential” regime classifications in these sources are included, while countries classified under a third “Parliamentary” regime classification are excluded from the sample.
- b. Agency symbols are: M (Moody’s); S (S&P); I (IBCA); F (Fitch); D (DCR); and T (Thompson). In December 1997, Fitch and IBCA announced their merger. In December 1998, Fitch-IBCA and Duff merged. Most recently, in December 2000, Fitch-IBCA-Duff, now doing business under the name Fitch alone, absorbed Thompson. Thus, there are currently (Fall 2001) only three NRSRO agencies publishing sovereign risk ratings, down from six only four years earlier. For additional detail on these changes in the number of agencies see, *e.g.*, White (2001). The month and year of first long-term foreign currency sovereign risk-rating published follows the agency symbol.

TABLE 3

Agency Letter Ratings, Grades, Numerical Equivalents, and Interpretations

<i>Moody's</i>	<i>S&P and Other NRSROs</i>	<i>Grade</i>	<i>Numerical Equivalent on 0- 16 Scale</i>	<i>Common Interpretation</i>
<i>Aaa</i>	<i>AAA</i>	<i>Investment</i>	<i>16</i>	<i>Extremely strong capacity to meet its financial commitments.</i>
<i>Aa1</i> <i>Aa2</i> <i>Aa3</i>	<i>AA+</i> <i>AA</i> <i>AA-</i>	<i>Investment</i>	<i>15</i> <i>14</i> <i>13</i>	<i>Very strong capacity to meet its financial commitments.</i>
<i>A1</i> <i>A2</i> <i>A3</i>	<i>A+</i> <i>A</i> <i>A-</i>	<i>Investment</i>	<i>12</i> <i>11</i> <i>10</i>	<i>Adequate capacity to meet its financial commitments.</i>
<i>Baa1</i> <i>Baa2</i> <i>Baa3</i>	<i>BBB+</i> <i>BBB</i> <i>BBB-</i>	<i>Investment</i>	<i>9</i> <i>8</i> <i>7</i>	<i>Less vulnerable than lower rated obligors but facing adverse conditions which could lead to obligor's inadequate capacity to meet its financial commitments.</i>
<i>Ba1</i> <i>Ba2</i> <i>Ba3</i>	<i>BB+</i> <i>BB</i> <i>BB-</i>	<i>Speculative (Junk)</i>	<i>6</i> <i>5</i> <i>4</i>	<i>More vulnerable than the obligors rated above. Obligor currently has the capacity to meet its financial commitments but adverse conditions will likely impair this capacity.</i>
<i>B1</i> <i>B2</i> <i>B3</i> <i>C</i>	<i>B+</i> <i>B</i> <i>B-</i> <i>C</i>	<i>Speculative (Junk)</i>	<i>3</i> <i>2</i> <i>1</i> <i>0</i>	<i>Currently vulnerable and dependent on favorable conditions to meet its financial commitments.</i>

TABLE 4

Ordered Probit and GMM Regression Results

Dependent Variable: Agency Long Term Foreign Currency Sovereign Risk Ratings, 1987–1998

Coefficient Estimator	(1) Mean	(2) Std. Dev.	(3) Ordered Probit ^c	(4) Ordered Probit	(5) Ordered Probit	(6) GMM ^e
Constant (β_0)						-1.6708*** (0.2948)
$RATING_{t-1}$ (β_1)	5.835	2.977			.4449* (0.1739)	0.5717*** (0.1324)
PCI (ψ_1)	3,981.55	2,427.27	-0.0004* (0.0002)	-0.0004* (0.0002)	-0.0004** (0.0001)	-0.0006*** (0.0002)
$GGDP$ (ψ_2)	4.361	3.349	-0.0263 (0.0418)	-0.0141 (0.0403)	-0.0942*** (0.0161)	-0.0052 (0.0832)
$INFL$ (ψ_3)	136.667	363.579	-0.0009** (0.0004)	-0.0012** (0.0004)	-0.0011* (0.0005)	-0.0067† (0.0004)
$FISBAL$ (ψ_4)	-1.379	2.898	0.1743*** (0.0336)	0.2061*** (0.0414)	0.2041*** (0.0207)	0.03880 (0.0550)
$EXBAL$ (ψ_5)	-1.506	2.928	0.0281** (0.010)	0.0341* (0.0170)	0.0460 (0.0303)	-0.0395 (0.0258)
$EXDEBT$ (ψ_6)	197.639	111.587	-0.0096*** (0.0010)	-0.0087*** (0.0009)	-0.0065*** (0.0007)	-0.0020 (0.0017)
DEF (ψ_7)	0.1144	0.319	-2.201*** (0.2965)	-2.192*** (0.2806)	-1.918*** (0.2086)	-1.8937*** (0.5201)
$ELECT$ (η)	0.1340	0.348		-0.8171*** (0.2173)	-1.202*** (0.2529)	-1.4901** (0.5201)
N ^a	236	236	236	236	236	63
R ²			0.376 ^d	0.387 ^d	0.434 ^d	
LM2 test ^b						Pr>z= 0.5944

- Countries in the Columns (3-5) sample include: Argentina, Brazil, Chile, Colombia, Costa Rica, Indonesia, South Korea, Mexico, Paraguay, Peru, Philippines, Poland, Russia, South Africa, Tunisia, and Venezuela. 39 presidential elections covered by ratings from the five NRSRO agencies are included in this sample from the 1987-1998 period. Countries in the Column (6) sample include: Argentina, Brazil, Chile, Colombia, Indonesia, South Korea, Mexico, Peru, Philippines, Poland, Russia, South Africa, Tunisia, and Venezuela. Nine presidential elections covered by ratings from Moody's are included in this sample from the 1987-1998 period.
- Lagrange multiplier test for second-order serial correlation in errors. Test based on z-score where $Pr > z = 0.5944$ does not suggest rejection of null hypothesis that there is no second-order serial correlation in errors.
- Results reported in Columns (3-5) include year, country and agency dummy variables. The majority of coefficient estimates for indicator variables of each type are significant at $p < .05$ or higher levels. Joint significance of coefficient estimates for indicator variables of each type are also significant at $p < .05$ or higher levels. These results are available from the authors on request.
- Pseudo-R²
- Results reported in Column (6) based only on ratings published by Moody's only. GMM estimator is Arellano and Bond's (1991) dynamic panel model, one-step estimator with robust standard errors. Note that the Sargon test of instrumental validity has an undefined distribution for the robust estimator. Results reported in Column (6) also include year and country indicator variables. The majority of coefficient estimates for indicator variables of each type are significant at $p < .05$ or higher levels. Joint significance of coefficient estimates for indicator variables of each type are also significant at $p < .05$ or higher levels. These results are available from the authors on request.

† = $p < 0.10$, * = $p < 0.05$, ** = $p < 0.01$, *** = $p < 0.001$

TABLE 5

Regression Results

Dependent Variable: Sovereign Bond Spreads Relative to Comparable US Treasuries 60 Days Before and After Election, 1994–1999

Estimator	(1) GEE ^{a, b, c}
Constant (β_0)	2.6376* (0.1122)
$DAY(\beta_1)$	-0.0025† (0.0010)
DAY^* $POSTDAY(\beta_2)$	0.0036† (0.0022)
$\beta_1 + \beta_2 = 0$	0.0011 (0.0019)
N ^a	1,694
Wald χ^2	1.37e+18***

- Results based on population-averaged panel data model. STATA's (2001) General estimating equations ("GEE") procedure provides general linear model estimates, allows for independent correlation structures for each of the downgrade groups, and provides semi-robust standard errors. Results include country and year indicator variables, semi-robust standard errors adjusted for clustering on each of 37 (Column 1) or nine (Column 2) downgrades, and equation error terms adjusted for first through tenth order auto-correlation (AR10). The majority of coefficient estimates for country and year indicator variables are significant at $p < .05$ or higher levels. Joint significance of these coefficient estimates are also significant at $p < .05$ level. These results are available from the authors on request.
- Countries in sample include: Argentina, Brazil, Bulgaria, Chile, Colombia, Mexico, Philippines, Poland, Russia, Uruguay and Venezuela. 14 presidential elections are covered in this sample from the 1994-1999 period.
- Re-estimation with 50-50 to 70-70 as well as 90-90 and 180-180 day windows yields coefficients with identical signs and similar estimated impact on spreads, but statistical significance on these coefficients varies (see footnote 7 in text). These results available from the authors on request.

† = $p < 0.10$; * = $p < 0.05$; ** = $p < 0.01$; *** = $p < 0.001$