

**Sovereign debt and regime type:
Re-considering the democratic advantage**

Emily Beaulieu
University of Kentucky

Gary W. Cox
Stanford University

Sebastian M. Saiegh
University of California,
San Diego

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Abstract

The literature exploiting historical data (e.g., North and Weingast 1989; Saiegh 2009; Summerhill 2011; Stasavage 2002; Dincecco 2009) generally supports the democratic advantage thesis, that democracies enjoy greater access to capital relative to their authoritarian counterparts (Schultz and Weingast 1996). However, studies of more recent—and extensive—datasets (Saiegh 2005; Archer, Biglaiser and DeRouen 2007) show a different picture. In particular, Archer, Biglaiser and DeRouen's (2007) study of 50 developing countries in the period 1987-2003 shows that democracies received no more favorable ratings from credit rating agencies (Moody's, Standard and Poor's, Fitch) than did otherwise similar autocracies. These findings raise the question: where's the democratic advantage? Our answer begins with the premise that countries choose not to enter the international bond market, until such time as they can receive an acceptable rating from the credit rating agencies. We then point out that far fewer autocracies than democracies have chosen to enter the market, presumably because they anticipate receiving unacceptably low ratings. In contrast, newly democratizing countries are particularly likely to enter. Thus, the democratic advantage has arisen in the postwar era primarily in the form of *credit rationing* of autocracies, most of which cannot even enter the market, rather than of poorer ratings or higher interest rates, for the exceptional autocracies which can profitably enter the market. This argument is further supported through a statistical model of the selection process by which states today receive credit ratings, and by considering additional historical evidence.

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Introduction

Do democratic regimes possess a credibility advantage over their authoritarian counterparts in matters of international finance? North and Weingast (1989) argued that constitutional reforms limiting executive discretion enhance the credibility of a country's sovereign debt. Schultz and Weingast (2003) drew the logical conclusion that there should be a "democratic advantage" in debt financing: because they place more limits on their executives, democracies should, all else equal, be able to float larger loans at lower interest rates than authoritarian regimes where executives face fewer constraints.

The literature exploiting historical data, which includes case studies of 17th-18th century England (North and Weingast 1989), 19th century Argentina (Saiegh 2009), and 19th century Brazil (Summerhill 2006), along with panel data on both city states (Stasavage 2007) and large states (Dincecco 2009), is generally supportive of the democratic advantage thesis. However, studies of more recent—and extensive—datasets show a different picture. Saiegh's (2005) study of 80 developing countries in the period 1971-1997 shows that democracies were more likely to reschedule their debts than autocracies, not less; and that they paid about the same interest rates. Similarly, Archer, Biglaiser and DeRouen's (2007) study of 50 developing countries in the period 1987-2003 shows that democracies received no more favorable ratings from the major credit rating agencies (CRAs)—Moody's, Standard and Poor's, Fitch—than did otherwise similar autocracies. These findings raise the question: where's the democratic advantage?

Our answer begins with the premise that countries only seek a rating from a CRA when they can present a plausible case that they will not default—so that they will receive an acceptable rating, leading to an acceptable interest rate. Thus, we start with

the observation that sovereign credit ratings are not automatic, nor do they occur at random. We then point out that far fewer autocracies than democracies have chosen to enter the market, presumably because they anticipate receiving unacceptably low ratings. In contrast, newly democratizing countries are particularly likely to enter. Thus, the democratic advantage has arisen in the postwar era primarily in the form of *credit rationing* of autocracies, most of which cannot even enter the market, rather than of poorer ratings or higher interest rates, for the exceptional autocracies that can profitably enter the market.

To elaborate on our answer, we first review the logic of the democratic advantage and reconsider the evidence bearing on it, particularly as it pertains to sovereign credit ratings. We then develop an approach to estimating the effects of regime type on credit ratings and credit access analogous to the “reservation wage” model of labor supply (Heckman 1976). Finally, we consider how our argument applies to an earlier period, the 1820s, when financial intermediaries first played an important role in the international market for sovereign debt.

The democratic advantage

In its first formulation (by North and Weingast 1989), the “democratic advantage” thesis referred primarily to limited government and ran as follows. Governments whose chief executives are subject to constitutional checks and balances can more credibly commit to repaying their debts, because the chief executive cannot unilaterally repudiate them. The greater credibility of limited governments leads both to better access to credit and to lower interest rates.

While the subsequent literature has proposed alternative ideas about the source of the democratic advantage—e.g., the fear of electoral reprisals (Schultz and Weingast 2003), the ability of bond-holders to find allies with the power to veto default (Stasavage 2003; Saiegh 2009), and superior bargaining efficiency (Cox 2011)—all the various theoretical accounts of the democratic advantage imply that the greater credit-worthiness of democracies should manifest itself *both* in larger loans *and* in smaller interest rates. Yet, the empirical literature has typically examined credit access and interest rates separately.

For example, a substantial literature uses credit ratings (which proxy for interest rates) as a dependent variable and asks what factors make a country more credit-worthy (for recent surveys, see Hoti and McAleer 2004 and Gaillard 2009). Only a handful of studies consider the political underpinnings of credibility and to date all have employed single-equation estimation techniques.

In this paper, we use “seeking a credit rating” to proxy “seeking access to credit” and “credit rating” to proxy “interest rate.” We argue that credit access and interest rates should be studied together, in order to account for selection effects of the former on the latter.

Our empirics focus on the ratings issued by the two best established firms. While the number of agencies providing third-party ratings has fluctuated recently, Standard and Poor’s and Moody’s were until 1990 the only two firms designated as National

Recognized Statistical Rating Organizations (NRSROs) by the US Securities and Exchange Commission and they continue to dominate the rating industry today.¹

Reconsidering the evidence

Archer, Biglaiser and DeRouen present a model in which the dependent variable is the rating (from Moody's, Standard and Poor's, or Fitch) that a country's sovereign bonds receive in a given year. Their predictive variables measure natural resource endowments; history of bond default; macroeconomic conditions such as total external debt, inflation, and current account balance; and various political factors, including a continuous measure of democracy from the Polity IV dataset. Their main finding (p. 341) is that "regime type and most other political factors have little effect on bond raters. Instead, trade, inflation, growth and [a past history of] bond default strongly affect sovereign ratings." In other words, economic fundamentals and past behavior drive the credit ratings a country receives; there is no evidence of a democratic advantage.

Archer, Biglaiser and DeRouen do show that, among a sample of 50 developing countries that participated in the international bond market 1987-2003, ratings were driven by economic considerations and not by regime type. However, relatively few autocracies secured ratings during this period, whereas relatively many democracies did. Of all autocratic country-years 1987-2003, 16% were rated by either or both of the two top CRAs (Moody's and S&P). In contrast, 50% of democratic country-years in this

¹ In the mid-1990s several smaller ratings agencies emerged, and were ultimately absorbed into a third agency: Fitch (Vaaler and McNamera 2004). While Fitch has grown as a result of its acquisitions, it is still considered a "distant third" relative to Moody's and S&P (Sinclair 2003).

period were rated. Most democracies had entered the international market for sovereign debt and received ratings by 2003, whereas most autocracies had not.²

Furthermore, if the democratic advantage is large, then democracies can enter the bond market with relatively poor economic fundamentals. Lacking any credibility advantage, however, autocracies can only enter the market on the strength of their economic credentials. Thus, if the democratic advantage is significant, then new *democratic* entrants should on average have poorer natural resource endowments, smaller domestic markets, and so forth than new *autocratic* entrants.

Some illustrative evidence for this prediction can be gathered by considering those autocracies that had entered the bond market by 2003. All of these entering autocracies received ratings; and most seem to have had sterling economic fundamentals. For example, Bahrain, Kuwait, Iran, Oman, Qatar, Saudi Arabia and UAE have oceans of oil and together account for 46 cases (country-years) of an autocracy issuing bonds and receiving a rating. China, Malaysia, and Singapore have stable hegemonic parties sitting on important emerging markets; and Taiwan during the waning days of one-party rule can be added to this group. Altogether, these countries account for 54 years of the data on autocracies with credit ratings.

In addition to good economic fundamentals, there are three regional groupings of non-democratic countries that appear to have entered the bond markets in part due to their geo-political location and with considerable encouragement from the west. First, in Latin America, Ecuador, Mexico, Paraguay and Peru between them account for 26 country-years in which an autocracy received a rating. Second, in the post-Soviet area, Hungary, Kazakhstan, and Turkmenistan account for 14 country-years. Third, in the Middle East

² Coding for democracy or autocracy comes from Cheibub, Gandhi and Vreeland (2010).

and North Africa, Egypt, Jordan, Lebanon, Morocco, and Tunisia account for 34 country-years.

If one excludes these three groups—the oil-rich, the stable rulers of important markets, and the geo-politically favored—the chance that an autocracy will receive a rating is substantially lower. Of 1,234 autocratic country-years outside the three groups during 1987-2003, only 2% received a rating.

More systematic evidence that entering democracies had poorer economic fundamentals than entering autocracies in the 1987-2003 period can be provided simply by calculating the average values of several key variables. During this period, new autocratic entrants to the bond market had an average natural resource endowment that almost tripled that of new democratic entrants (the difference being statistically significant). Autocracies' inflation rates were lower on average. And, their current account balances were also on average significantly more favorable than their democratic counterparts'.

Moving on to differences that were substantively meaningful but did not reach conventional levels of statistical significance, new autocratic entrants' growth rates were larger on average by about 0.4 percentage points than those of their democratic counterparts. Their populations were on average larger. The only rating criterion on which entering autocracies looked significantly worse than entering democracies was that their income per capita were lower on average.³

³ All these statistics compare newly rated autocracies to newly rated democracies. Some of the newly rated democracies, however, may have been seasoned borrowers (See the next section for a further description of the term “seasoned borrower”). For example, Belgium first secured ratings in 1988 and yet had floated sovereign bonds for many years previously. If one excludes seven long-term democracies that first secured ratings in the period 1987-2003 (namely, Belgium, Iceland, India, Ireland, Italy, Luxembourg, and Netherlands), the evidence for the hypothesis that entering democracies had poorer economic fundamentals than entering autocracies remains unchanged.

Selection bias in estimating the democratic advantage

The large difference in the rate at which autocracies and democracies participate in the international bond market, together with the systematic economic differences between participating autocracies and democracies, raises the possibility that a single-equation estimator of the impact of regime type on default rates, credit ratings and interest rates will underestimate the relevant effects. In particular, sample selection biases may explain why Archer, Biglaiser and DeRouen (2007) find no evidence of a democratic advantage. One does not directly observe how much autocracy depresses credit ratings because those autocracies that would receive low ratings decide not to enter the bond market.

We should note that empirically there were two routes by which a country might enter the sample of rated polities. One route, traveled by a substantial majority of new entrants, was self selection: the country itself requested (and often paid for) a rating from one of the CRAs. A second route, traveled by the remaining minority, was selection by international investment bankers: one or more large firms decided that they could profitably make a market for a particular country's sovereign bonds; and they requested that one of the CRAs issue a rating.

In principle and in practice, these two modes of entry into the sample were very similar. Typically, investment bankers were heavily involved in the decision, regardless of whether the request for a rating came formally from the nation or from the bankers. In either case, what mattered was whether (a) the country's bonds could be successfully

marketed; and (b) the country had valuable investment opportunities.⁴ Thus, in what follows we pool data from self-selected and banker-selected entrants.

Road map

To explore the possibility that selection bias may have affected estimation of the democratic advantage, we pursue three distinct lines of investigation. First, we consider a selection model in which all and only countries that can earn a rating above their “reservation rating” enter the international bond market, using data from 1987-2003 and 1946-2006 to test it. Second, we consider evidence from the 1820s, arguing that a similar form of selection bias influences the patterns observed then (in which some absolutist regimes were able to access credit on terms as favorable as those received by limited governments).

The “reservation rating” model

Under a “reservation rating” model, countries that have not yet secured ratings anticipate the rating they would earn, were they to seek one. They actually receive a rating if and only if their anticipated rating exceeds their reservation (minimum acceptable) rating. Since ratings map directly into interest rates—lower ratings, higher interest rates—we can also view this as a “reservation interest rate” model in which countries secure ratings if and only if their anticipated interest rate is less than their reservation (maximum acceptable) interest rate.⁵

⁴ This and the preceding paragraph are based on an interview with David Levey, managing director of Moody’s sovereign debt unit 1986-2004.

⁵ The average first rating that countries receive in our sample is indeed investment grade (7.15 if rated by Moody’s and 7.52 if rated by Standard and Poor’s). This seems to be a piece of evidence suggesting that countries only decide to get rated when they anticipate a favorable rating.

Denote the set of all countries that lack credit ratings as of year t by U_t (“U” for “unrated”). Partition U_t into countries that had recently floated sovereign bonds (U_t^1) and those that had not (U_t^0). In $t = 1974$, for example, the United Kingdom had recently floated sovereign bonds yet had no credit rating from any of the CRAs. It was thus a member of U_{1974}^1 . In contrast, North Korea has never floated sovereign bonds in its history. It was thus a member of U_t^0 for all $t \in \{1987, \dots, 2003\}$.

Conceptually, the distinction between “recent” and “non-recent” borrowers in U_t is that the former have clear reputations with lenders, whereas the latter do not and must thus pay the newcomer risk premiums explained by Tomz (2007, p. 27), if they wish to enter (or re-enter) the market. While the risk premium that a country must pay, due to being a newcomer, may vary continuously from zero to some maximum, we simply distinguish between countries which pay no newcomer risk premiums (recent borrowers) and countries which pay, or would need to pay, some positive newcomer risk premiums (non-recent borrowers). When a “recent” borrower secures a rating from a CRA, we shall refer to it as a new rating for a *seasoned borrower*. When a “non-recent” borrower secures a rating, we shall refer to it as a new rating for a *new entrant*.

Suppose that all countries in U_t anticipate that their bond ratings, were they to secure ratings, will be driven by a mix of economic fundamentals, per the Archer-Biglaiser-DeRouen model, and executive constraints, per the democratic advantage thesis. Furthermore, new entrants expect to pay some new risk premium. In light of these expectations, each country decides whether to secure ratings or not.

Anticipated ratings

To explain country j 's anticipated rating, let p_{jt} be the probability that j will keep to its repayment schedule on a loan taken out in year t . Suppose that country j 's credit rating will be $R[p_{jt}]$, where R is a monotonic increasing function. That is, the credit rating agencies will correctly calculate each country's probability of honoring its debt, p_{jt} , and transform this monotonically into a rating somewhere from C (the lowest possible) to AAA (the highest possible). It will be more convenient to use a numerical version of country j 's bond rating. Following Archer, Biglaiser and DeRouen (2007), we convert the letter ratings to a 0-16 scale. In other words, we can think of R as mapping p_{jt} into a value between 0 and 16.

We assume country j 's anticipated rating equals the rating it would in fact get, were it to solicit one. It is as if country j knows its true probability of honoring its debts (p_{jt}) and knows the function R that maps this into a credit rating.

We next assume that p_{jt} , and hence $R[p_{jt}]$, depends on country j 's economic fundamentals, X_{jt} , and its regime type, D_{jt} (where $D_{jt} = 1$ if j is a democracy at t). Letting $r_{jt}^a = R[p_{jt}]$ represent country j 's anticipated credit rating at time t , we write

$$r_{jt}^a = X_{jt}\beta + \gamma D_{jt} + \varepsilon_{jt} \quad (1)$$

Here, β and γ are parameters to be estimated; and ε_{jt} is an error term. Special interest attaches to the parameter γ , which represents the democratic rating advantage, or how much more credit-worthy a country is when it is democratic rather than non-democratic, holding economic fundamentals constant.

Reservation ratings

Country j 's reservation rating is the minimum rating (equivalently, maximum interest rate) that it would be willing to accept. To clarify the factors that influence a country's reservation rating, consider each country's marginal debt financing opportunity. After allocating all its available funds (from taxes, state-owned enterprises, foreign aid, and so forth) optimally, country j at time t identifies its next best as-yet-unfunded investment opportunity (henceforth: its marginal project). We assume that j chooses one of the following three options: (1) to forego the opportunity (netting 0); (2) to borrow without securing a rating and use the loan proceeds to finance the project (yielding an expected profit of W_{jt}); and (3) to borrow after securing a rating and use the loan proceeds to finance the project.

Assuming for convenience that country j is risk neutral, we can define its reservation rating as that rating which yields zero excess profits over its next best option (which is the better of (a) debt financing the project without securing a rating and (b) foregoing the project). Suppose that country j 's marginal project at time t requires an investment of L_{jt} and will yield an expected return of $V_{jt}(L_{jt})$. Country j 's expected profit—if it secures a rating, debt finances its project and honors its debt—is then $V_{jt}(L_{jt}) - L_{jt}(1+i_{jt}) - c_{jt}$, where i_{jt} is the interest rate on its bonds and c_{jt} represents the fixed costs of the debt issue.⁶ The fixed costs include any payments made to a CRA to secure a rating and, more importantly, the fees paid to international bankers to handle the marketing of the bonds. The maximum interest rate country j will accept is

$$i_{jt}^r = [V_{jt}(L_{jt}) - L_{jt} - c_{jt} - \max\{0, W_{jt}\}]/L_{jt}; \quad (2)$$

⁶ We simplify by assuming that the borrowing nation is patient (its discount factor is unity).

and we can denote the corresponding minimum acceptable credit rating by r_{jt}^r .⁷

A country's reservation rating, r_{jt}^r , declines as its reservation interest rate, i_{jt}^r , increases. Thus, r_{jt}^r declines as the country: acquires more attractive projects to finance ($V_{jt}(L_{jt}) - L_{jt}$ increases); faces lower fixed costs of floating bonds (c_{jt} declines); and has a poor ability to debt finance its projects without securing a rating ($W_{jt} < 0$ rather than $W_{jt} > 0$).

We argue that the expected returns of the investment projects available to most of the countries of the world should have increased during the post-war period, due to the globalization of markets and the reduction in trade barriers.⁸ We also believe that the fixed costs of issuing and marketing sovereign debt declined over this period, as the international bond market matured.⁹ Thus, *we expect globalization should have produced a secular decline in countries' reservation ratings* (r_{jt}^r). Finally, we assume that countries with a past history of borrowing without a rating had positive values of W_{jt} , while those without such a history had negative values of W_{jt} . Thus, countries that had recently borrowed without ratings should have had higher reservation ratings, all else equal.

There are two direct implications of our argument about globalization. First, if reservation ratings declined globally, then the total number of countries participating in the bond markets should have increased over time. Consistent with this expectation, the

⁷ Equation (2) follows by noting that securing a rating will be country j 's best option if and only if $V_{jt}(L_{jt}) - L_{jt}(1+i_{jt}) - c_{jt} > \max\{0, W_{jt}\}$.

⁸ The dramatic globalization of financial markets over the last thirty-five years has been widely discussed in both academic and policy circles (Rodrik 1997; Häusler 2002; Rudra 2002; Rudra and Haggard 2005; Das 2006). Domestic and international markets for stocks, bonds and a variety of other tradable securities have burgeoned, while reliance on traditional bank loans and deposits has lessened.

⁹ Interview, David Levey.

total number of countries with bond ratings from either Moody's or Standard and Poor increased from 3, in 1974, to 101, in 2003. Second, if reservation ratings declined globally, then the average rating given to newly rated countries should have declined over time. Consistent with this expectation, Moody's new ratings declined by about one fifth of a point per year (on a 16-point scale) over the period studied by Archer, Biglaiser and DeRouen, while Standard and Poor's new ratings declined by about one seventh of a point per year.¹⁰

To express our argument about reservation ratings econometrically, let r_{jt}^r denote country j 's reservation rating in year t and assume

$$r_{jt}^r = Z_{jt}\xi + v_{jt} \quad (3)$$

Here, Z_{jt} is a matrix of regressors affecting j 's reservation rating in year t , ξ is a column vector of parameters to be estimated; and v_{jt} is an error term. Following our discussion above, we assume that Z_{jt} consists of a set of temporal fixed effects; and an indicator variable identifying seasoned borrowers. The temporal effects allow the global mean reservation rating to adjust from year to year. If our globalization hypothesis is correct, we should find that the coefficients on the year dummies show a pattern of increasingly negative values.

Entry

A maintained assumption of our model is that country j will enter the bond market if and only if it anticipates receiving a sufficiently high rating: $r_{jt}^a \geq r_{jt}^r$. We observe ratings only for countries that choose to secure them. Let $I_{jt} = 1$ if country j receives a rating in year t , $= 0$ otherwise.

¹⁰ Moody's decline was statistically significant; Standard and Poor's was not.

Following Heckman (1976), we assume the errors in equations (1) and (3) follow a bivariate normal distribution:

$$\begin{pmatrix} \varepsilon_{jt} \\ \nu_{jt} \end{pmatrix} \sim N \left(\begin{pmatrix} 0 \\ 0 \end{pmatrix}, \begin{pmatrix} \sigma_{\varepsilon}^2 & \sigma_{\varepsilon\nu} \\ \sigma_{\varepsilon\nu} & \sigma_{\nu}^2 \end{pmatrix} \right)$$

With this assumption, $\Pr[I_{jt} = 1 | X_{jt}, D_{jt}, Z_{jt}] = \Pr[X_{jt}\beta + \gamma D_{jt} + \varepsilon_{jt} > Z_{jt}\xi + \nu_{jt} | X_{jt}, D_{jt}, Z_{jt}] = \Pr[\nu_{jt} - \varepsilon_{jt} < X_{jt}\beta + \gamma D_{jt} - Z_{jt}\xi | X_{jt}, D_{jt}, Z_{jt}]$. Since the composite error $\nu_{jt} - \varepsilon_{jt}$ is normally distributed with mean zero and variance $\tau^2 = \sigma_{\varepsilon}^2 + \sigma_{\nu}^2 + 2\sigma_{\varepsilon\nu}$, one can model the decision to secure a rating as a probit: $\Pr[I_{jt} = 1 | X_{jt}, D_{jt}, Z_{jt}] = \Phi[(X_{jt}\beta + \gamma D_{jt} - Z_{jt}\xi)/\tau]$.

The main problem with assuming a bivariate normal distribution for the errors is that the dependent variable runs from 0 to 16. To deal with this we linearly transform the Archer-Biglaiser-DeRouen credit ratings, r , to $r' = \frac{1}{16} + \frac{255}{256}r$, and then take the natural logarithm. Thus, our operational measurement of the anticipated rating from equation (1) is $\ln(r')$, rather than r ; and we assume that reservation ratings are on a similar scale.

Data, estimation and results

We use Heckman's (1979) method to estimate the impact of democracy on sovereign credit ratings. The model he suggests first estimates a probit model of the decision to enter the market, with dependent variable I_{jt} and regressors X_{jt} , D_{jt} and Z_{jt} . It then runs a second-stage regression, in which the actual credit rating received by a newly rated country is the dependent variable; and a correction for sample selection is made,

based on the first-stage results.¹¹ For the “selection” equation we employ temporal dummy variables as part of Z_{jt} (regressors affecting country j ’s reservation rating).

Technically, the Heckman model is identified when the same independent variables in the selection equation appear in the outcome equation. If all variables influencing selection influence the subsequent outcome of interest, however, then the Heckman method is of dubious value. A commonly used technique is to include at least one “extra” explanatory variable that influences selection but not the subsequent outcome of interest. In our case, we include both the “seasoned borrower” indicator and a series of year effects.¹² Finally, we use clustered error terms to account for the likely non-independence of observations from the same country; and estimate using MLE.¹³

1987-2003

We first evaluate the impact of democracy with the same explanatory variables and time period as Archer, Biglaiser and DeRouen. Our sample for this analysis consists of country-years in the period (1987-2003) for all countries that had not yet received a credit rating by 1986: $\bigcup_{t=1987}^{2003} U_t$. As of 1986, all the OECD members were rated, except for Belgium, Greece, Iceland, Luxembourg and Turkey, all of which had secured ratings by

¹¹ The standard errors of the estimates also must be adjusted for the selection process (Greene 1993). In the results presented below, all standard errors have already been corrected.

¹² Because our observations I_{jt} –which represent whether a country receives a credit rating in a given year— are equivalent to grouped duration data, the year effects approximate a baseline hazard function, following Beck, Katz, and Tucker (1998, 1268).

¹³ MLE tends to be less robust but is more efficient when v_{jt} and ϵ_{jt} really are jointly normally distributed (Woolridge 2002).

1989. Thus, the bulk of the OECD countries never enter our analysis, and our sample is largely similar to Archer, Biglaiser and DeRouen's.¹⁴

Our results (not reported but available on request) show that democracies are significantly more likely to receive a rating. Moreover, once we correct for selection effects, democracy significantly affects the rating a country receives, should it decide to enter the market.

By restricting their sample to developing countries from 1987-2003, Archer, Biglaiser, and DeRouen effectively control for whether the rated country is a new entrant or seasoned borrower, since most developing countries in the contemporary period began receiving credit ratings without a preceding reputation.¹⁵ In principle, however, there is no reason why the theory presented in this paper should be more applicable to developing countries than developed, particularly since it accounts for whether the country in question is a seasoned borrower. Thus, it makes sense to expand the scope of our analysis.

1946-2006

Tables 1 and 2 present the results of Heckman's selection model for all country-years from 1946-2006, for all sovereigns that had not yet received a credit rating by

1946: $\bigcup_{t=1946}^{2006} U_t$. Given the span of these data, we use decade temporal dummies, rather than year variables.

[Tables 1 & 2 about here]

¹⁴ A replication using the exact same countries as Archer Biglaiser and Derouen provides only 8 observations of "unrated" countries and, as such, does not provide adequate information for the 2nd stage analysis.

¹⁵ Archer Biglaiser and Derouen do include a control for previous default

In Table 1, the dependent variable in stage 1 (reported in the bottom portion of the table) is whether a country received a rating from Moody's Credit Rating Agency in a given year, while the dependent variable for stage two is the actual rating Moody's conferred. Table 2 provides a similar analysis for Standard and Poor's Ratings.

Both models show results consistent with our theory. First, the coefficient for the parameter indicating whether selection is nonrandom and the error terms are correlated (*lambda*) is statistically significant at conventional levels in both models. These findings confirm the appropriateness of the selection model. Second, the estimated coefficient relating democracy to the probability that a country receives a rating (from either Moody's or Standard and Poor's) is positive, and statistically significant, indicating that democracies are more likely than authoritarian regimes to seek ratings. Based on our theory, we think this means that democracies, on average, expect to receive more favorable ratings than autocracies. Furthermore, once we account for selection, the positive and significant coefficient relating regime type to the actual rating that countries receive indicates that the expectations of more favorable ratings are, in fact, correct.

In substantive terms, we are interested in the extent to which there is a "democratic advantage". To establish the magnitude of the democratic effect, we need to calculate the variable's marginal effect (i.e. its influence when all the other relevant variables are held constant). In the Heckman model, the marginal effect of an independent variable on the outcome of interest in the observed sample (credit ratings in our case) has two components. First, there is the direct effect of democracy on the mean rating. Second, there is an indirect effect because democracy also appears in the selection equation and thus affects the probability that an observation is actually in the sample.

Figure 1 presents a graphical representation of the estimated probability that a country receives a credit rating conditional on its political regime.¹⁶ The results clearly indicate that, even after we control for economic conditions, democracies have a higher probability of obtaining a credit rating. These figures can be interpreted as the indirect effect of democracy on credit ratings: democratic countries are more likely to be rated, and because ratings map directly into interest rates, rated countries face lower interest rates.

[Figure 1 about here]

To further examine the relationship between political regimes and countries' creditworthiness, we fit a fractional polynomial on the data. Specifically, we calculate the predicted value of each country's actual moody rating based on a fractional polynomial of their predicted probability of being rated obtained from our "selection" equation described above. Figure 2 shows the resulting curves, along with 95 percent confidence intervals (denoted by the shaded areas) of the estimated means for each type of political regime.¹⁷

[Figure 2 about here]

The estimates presented in Figure 2 represent a convenient way to match on propensity score and compare credit ratings. As Figure 2 indicates, there is a substantial gap between democracies and autocracies. Indeed, the comparison of democracies and autocracies with equal estimated probabilities of securing a rating suggests that

¹⁶ These results correspond to the analysis of Moody's credit ratings; a similar exercise using Standard and Poor's ratings yields identical results.

¹⁷ Fractional polynomials were first introduced by Royston and Altman (1994) as a method for determining the functional form of a continuous covariate from a flexible range of candidate models. Their use has been advocated as the analysis does not depend on the number and choice of cut points when categorizing continuous variables (Lambert et. al. 2005).

democratic countries that enter the credit market tend to obtain better ratings than their autocratic counterparts.

This crude analysis, however, does not take into account the fact that varying numbers of democracies and autocracies at each value of the estimated probability of being rated exist. So, for example, there is a considerable number of democracies with a high probability of being rated ($>.65$), but with meager ratings so the gap disappears in that range. Moreover, matching on propensity score should ensure equal values of "anticipated rating - reservation rating," rather than equal values of actual ratings. So, it is possible that autocracies with a given probability of being rated have quite different reservation ratings than democracies with the same estimated probability.

To address some of these issues, we estimate the predicted value of each country's expected rating based on a fractional polynomial of their predicted probability of being rated. A graph of the estimated credit ratings against the probability of being rated is presented in Figure 3. The results indicate that there is clearly a more consistent democratic advantage: countries with democratic institutions are expected to obtain higher credit ratings than autocracies for every possible estimated probability of being rated.

[Figure 3 about here]

The results presented in Figure 3 indicate that democracy is positively associated with credit ratings. However, they do not fully account for the fact that varying numbers of democratic and autocratic countries that exist at different values of the estimated probability of being rated. To assess the effective magnitude of the democratic advantage,

we need to calculate the marginal effect of political regimes. The nonlinear nature of our estimator implies there is no single marginal effect of political regime, so we focus on some particular cases. Specifically, we consider a non-seasoned borrower that secured a rating in the 1980s and set all other variables to the sample average. The predicted credit rating in that case would increase by 10 points if the country possesses democratic institutions. This change is equivalent to going from a B rating to a AA rating (the second-highest possible score). A similar calculation for a representative country with a seasoned borrower status also yields a 10-point change when the country is democratic. This entails a change in ratings from BB to AAA (the highest-possible score). This in all means a “democratic” advantage.

Does financial intermediation reduce the democratic advantage?

Flandreau and Flores (2009) argue that, when the first robust international market for sovereign bonds got going in the 1820s, strong financial intermediaries played a crucial role that largely defused the democratic advantage. Their argument runs as follows.

First, the intermediaries—the Rothschilds, Barings and other large banks—in effect loaned their reputations to sovereign borrowers. Bond purchasers relied, not on the reputation of the sovereign borrower, but rather on the reputation of the intermediary. Second, the most prestigious banks—the Rothschilds and Barings—were willing to lend their sterling reputation to any state which “could implement the policy adjustments” they required; and the ability to implement these adjustments depended mainly on “the quality of the administrative apparatus and centralization of decision making” in the state (p

679). Thus, stable and centralized autocratic states such as Russia, Austria and Prussia were able to borrow on favorable terms. In other words, since intermediaries' reputations were what mattered, and intermediaries were willing to deal with autocrats, no democratic advantage existed. Indeed, Flandreau and Flores conclude (p. 679) that "there was a bias in favor of arch-conservatives who had no remorse about implementing unpopular policies or even ruthless repression. This somewhat frightening conclusion is antithetic to the 'democratic advantage' view..."

While we agree that financial intermediaries in the 1820s could in effect rent their reputations to sovereign borrowers, we do not agree with the ultimate conclusion that this lessened the democratic advantage. Rather, we believe that sample selection, similar to that we have identified above, occurred in the 1820s as well; and that once one accounts for this, the success of a few exceptional autocracies no longer casts much doubt on the overall thesis.

Suppose the intermediaries of the 1820s judged a country more credit-worthy when its executive faced more democratic restraints, controlling for economic fundamentals. They might still deal with some autocracies—those which could overcome their credibility deficit with other characteristics making them an attractive client. But democracies should still have had an advantage in accessing credit at a reasonable price (interest rate).

The evidence from the 1820s seems broadly consistent with this view. First, Ferguson (1998, pp. 131-43), echoing Polanyi (1944), argues that the Rothschilds favored borrowers with more democratic restraints in the early 1800s. More colorfully, consider the case of Gregor MacGregor, a Scottish swindler who managed to sell sovereign bonds

for the non-existent Central American country of Poyais. MacGregor clearly was fully in control of the characteristics of Poyais and he saw fit to endow it, not simply with abundant natural resources ripe for exploitation, but also with a democratic form of government (*cite). Thus, even swindlers preferred to market sovereign bonds that were backed by more democratic regimes. Second, and more importantly, the vast bulk of autocracies worldwide did not issue sovereign bonds in the 1800s. In contrast, a much higher proportion of the very few states with limited government issued bonds. Thus, the democratic advantage appeared mostly in the form of superior access to credit, rather than in the form of better interest rates, conditional on access.

The evidence from the contemporary period seems similar to that from the 1820s. First, the intermediaries seem to view democracies as more credit-worthy, all else equal. Second, as shown above, a hefty portion of the democratic advantage takes the form of denying autocracies access to credit, rather than charging them a higher price for it.

Conclusion

Beginning with North and Weingast's (1989) seminal treatment, various scholars have argued that democracies should be perceived as more credit-worthy than otherwise similar autocracies, leading to a "democratic advantage" in borrowing (Schultz and Weingast 2003; Stasavage 2003; Saiegh 2009; Cox 2011). While different authors stress different factors as key to the greater credit-worthiness of democracies, all agree that greater credit-worthiness should generate some mixture of better access to credit and lower interest rates.

This theoretical agreement notwithstanding, previous empirical studies have typically pursued single-equation estimation strategies, examining either credit access or interest rates separately. In this paper, we provide the first estimates of the democratic advantage that take a multi-equation approach, in which the decision to access international markets is proxied by the decision to seek a rating from either Moody's or Standard and Poor's; and interest rates are proxied by the rating received. Once one accounts for the fact that countries choose whether to seek ratings, and do so in light of the ratings they anticipate receiving, the two components of the democratic advantage come into clearer focus. We find that democracy is a strong predictor of a country's decision to seek a credit rating (i.e., seek access) and that, once one accounts for this decision, democracy is also a strong predictor of the rating received (hence, interest rates).

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Tables

Table 1. Moody's Sovereign Credit Ratings (1946-2006)

	Estimated Coefficient	Robust Standard Error	[95% Confidence Interval]	
Moody's Rating				
Democracy	.730	.253	.233	1.227
Current Account (lag)	.016	.012	-.006	.039
GDP/cap Growth (lag)	.029	.012	.004	.053
GDP (lag)	.0001	.0004	.0001	.0002
Inflation	-.001	.0002	-.001	-.0006
Trade (lag)	.413	.218	-.014	.841
Resource Endowment (lag)	-.001	.003	-.008	.005
Constant	1.273	.411	.46	2.079
Rated by Moody's				
Democracy	.903	.201	.507	1.299
Current Account (lag)	.031	.014	.004	.059
GDP/cap Growth (lag)	.015	.014	-.012	.043
GDP (lag)	.002	.001	.0005	.004
Inflation	.001	.001	-.001	.001
Trade (lag)	.521	.367	-.199	1.241
Resource Endowment (lag)	-.001	.005	-.011	.008
Seasoned Borrower	.704	.247	.219	1.188
1970s	-.758	.207	-1.164	-.352
1980s	-1.342	.178	-1.691	-.992
1990s	-.839	.250	-1.331	-.348
Constant	.020	.409	-.782	.823
Inverse Mills Ratio (λ)	.212	.098	.118	.498
N	1375			
Censored	594			
Uncensored	781			
Wald Chi ² (7)	60.03			
P > Chi ²	.0000			

Notes: These are results of a Heckman MLE estimation with disturbance terms clustered at the country level. GDP (lag) is expressed in US\$ 100,000,000 units.

Table 2. Standard & Poor's Sovereign Credit Ratings (1946-2006)

	Estimated Coefficient	Robust Standard Error	[95% Confidence Interval]	
S&P's Rating				
Democracy	.785	.189	.413	1.156
Current Account (lag)	.001	.013	-.026	.027
GDP/cap Growth (lag)	.022	.012	-.001	.046
GDP (lag)	.0001	.00004	.00001	.0001
Inflation	-.001	.0003	-.001	-.0003
Trade (lag)	.341	.185	-.021	.704
Resource Endowment (lag)	-.004	.003	-.011	.002
Constant	1.338	.316	.717	1.959
Rated by S&P				
Democracy	1.025	.221	.591	1.458
Current Account (lag)	.022	.015	-.007	.051
GDP/cap Growth (lag)	.014	.017	-.018	.047
GDP (lag)	.002	.0009	.0006	.004
Inflation	-.001	.001	-.001	.001
Trade (lag)	.653	.339	-.012	1.318
Resource Endowment (lag)	-.001	.006	-.012	.011
Seasoned Borrower	.777	.274	.239	1.315
1970s	-.596	.166	-.923	-.271
1980s	-1.488	.226	-1.931	-1.044
1990s	-.732	.230	-1.182	-.281
Constant	-.328	.421	-1.154	.497
Inverse Mills Ratio (λ)	.171	.071	.031	.310
N	1289			
Censored	594			
Uncensored	695			
Wald Chi ² (7)	53.02			
P > Chi ²	.0000			

Notes: These are results of a Heckman MLE estimation with disturbance terms clustered at the country level. GDP (lag) is expressed in US\$ 100,000,000 units.

Figure 1. Predicted Probability of Securing a Rating by Regime Type.

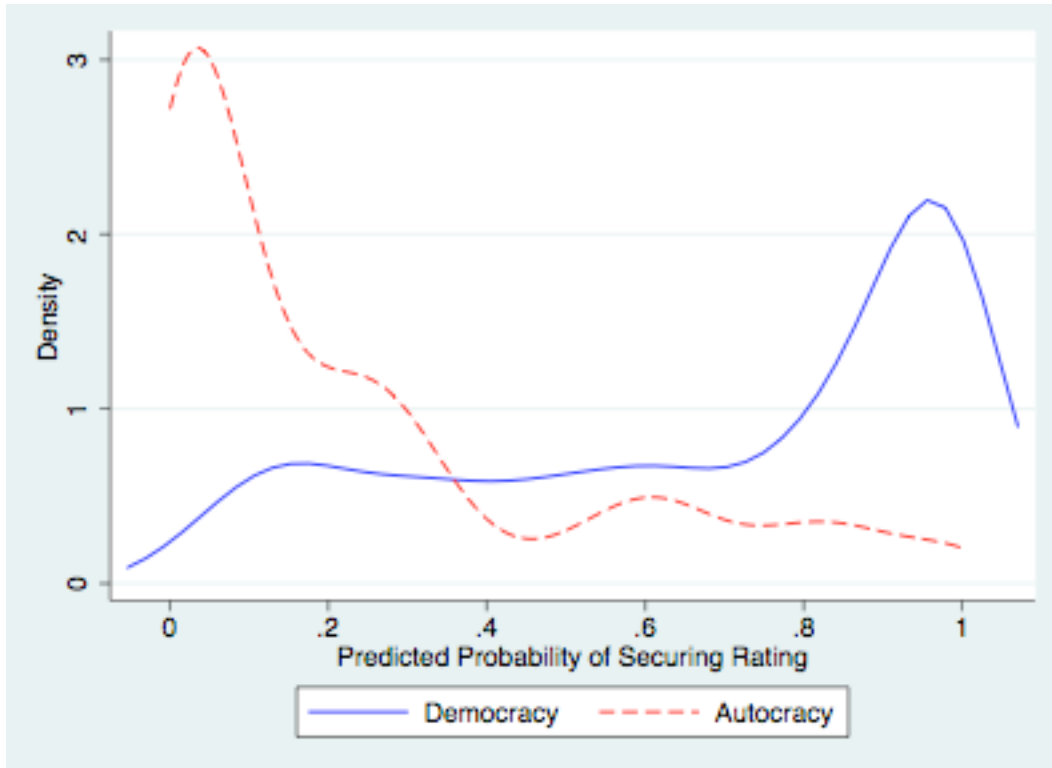


Figure 2. Countries' predicted probability of being rated and actual ratings by political regime (fractional polynomial)

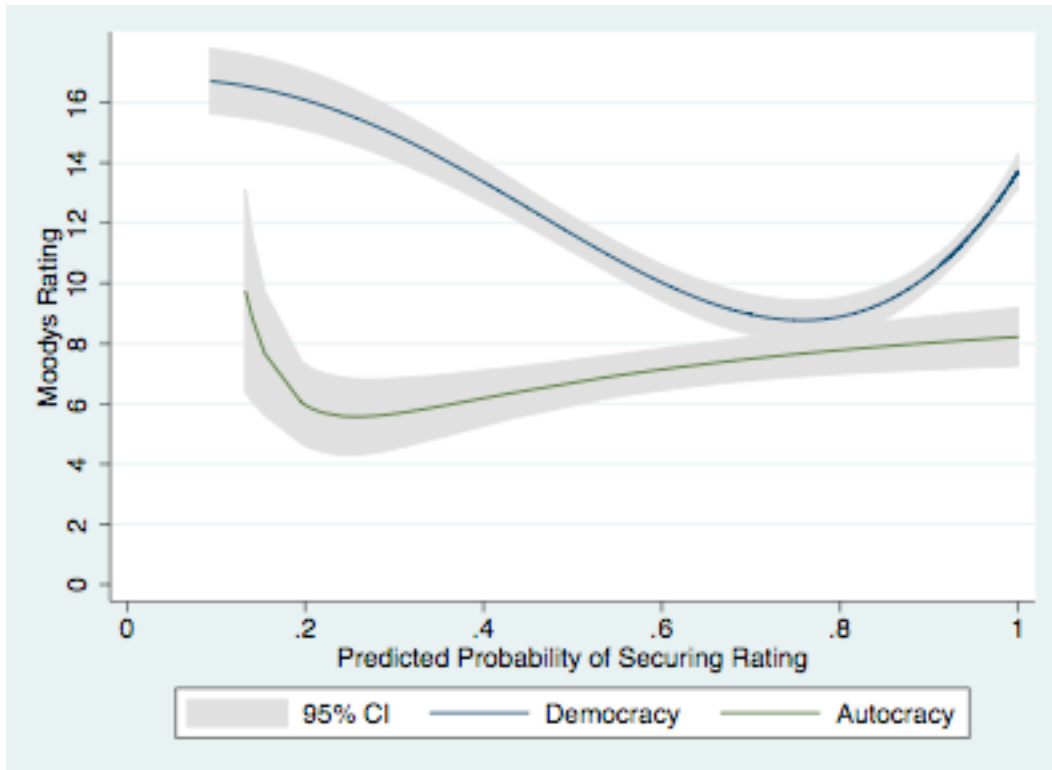


Figure 3. Countries' predicted probability of being rated and expected ratings by political regime (fractional polynomial)

