# Sovereign Debt: Election Concerns and the Democratic Disadvantage*

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**Abstract**

We re-examine the concept of 'democratic advantage' in sovereign debt ratings when optimal repayment policies are time-inconsistent. If democratically elected politicians are unable to make credible commitments then default rates are inefficiently high, so democracy potentially confers a credit market disadvantage. Institutions that are shielded from political pressure may ameliorate the disadvantage by adopting a more farsighted perspective. Using a numerical measure of institutional farsightedness obtained from the Global Insight Business Risk and Conditions database, we find that the observed relationship between credit-ratings and democratic status is indeed strongly conditional on farsightedness. With myopic institutions, democracy is estimated to cost on average about 3 investment grades. With farsighted institutions there is, if anything, a democratic advantage.

KEYWORDS: Sovereign debt, Default, Risk premia, Autocracy, Democracy, Institutions

JEL CLASSIFICATION: H63, F55, D72, D82, H75, O43, C72.

# 1 Introduction

Recent years have seen a number of democratic countries defaulting (e.g. Greece and Argentina) while facing the economic and political fallouts of austerity policies.[1] In Greece, a new government came into power on the basis of an explicitly anti-austerity platform. In contrast, autocratic countries such as Romania in the 1980s have repaid foreign debt even in states of the world where repayment arguably imposed a high cost on the citizens. How political imperatives can sustain sovereign debt in democracies vs. autocracies, in the absence of credible external punishment of default, is discussed by many authors such as Amador (2012), Beaulieu et al (2012), Guembel and Sussman (2009), McGillivray and Smith (2003) and Oneal (1994). Many, including Schultz and Weingast (2003), have argued that there is a 'democratic advantage' in repayment.[2] As we discuss in Section 2, the empirical evidence is quite mixed. We argue that a combination of electoral pressures and a lack of commitment ability may raise the borrowing costs for democracies, so any democratic advantage must be conditional on commitment institutions.

A simple model guides our empirical analysis. A representative citizen has uncertain income and no liquid assets. To finance an investment project, the government needs to borrow from foreign banks. If the representative citizen could choose a default policy ex ante, before the debt is incurred, he would take into account that the risk premium on the debt will depend on the default policy. However, after the debt is incurred, the representative citizen would like to deviate from the ex ante optimal policy by defaulting in more states of

[1] Default is here broadly defined and includes partial default, e.g. when creditors face a 'haircut'.

[2] Others have suggested that autocracy may underpin political stability, but Huntington (1968) argues that democratic status is neither necessary nor sufficient as a precondition for political order.

the world. If short-term election concerns force the leader to internalize the citizen's realized utility, then he faces a 'Samaritan's dilemma': he cannot implement the ex ante optimal policy because it is time-inconsistent, i.e., it specifies repayment in states where the citizen prefers to default.[3] In equilibrium, there will be too much default and risk-premia will be high: a *democratic disadvantage*.[4]

An autocratic leader, less sensitive to the plight of the masses, might be less inclined to default. For example, Ban (2012) attributed Romania's decision to repay its foreign debt in the 1980s to the leader's ideological commitment to policy independence. There are in fact many reasons why such a leader might decide to repay. Typically, a default entails externally imposed economic or even political restructuring, with associated costs for the incumbent leader. A default may also be a signal that the current incumbent has low competence, which may have negative consequences for him. It may signal that the incumbent is a type who is less likely to repay future loans. Reputational concerns matter for sovereign borrowing without collateral, as shown by Eaton and Gersovitz (1981) and Kletzer and Wright (2000), and might weigh heavily on leaders who expect to stay in office and would like future access to credit.[5]

With time-inconsistent democracy, the representative citizen might try to reduce the risk-premium on the public debt by electing a leader whose preferences are biased in favour of repaying, even in bad states of the world (see D'Erasmo and Mendoza 2016a). However, this

[3]In reality, not all democratically elected governments behave as Good Samaritans. Hausmann (2014) describes the repayment decision of the Venezuelan government as "a signal of its moral bankruptcy".

[4]Although the model makes strong assumptions, it could be generalized in many dimensions, e.g., to have heterogeneous citizens. As long as the median voter prefers to default in bad states of the world, the qualitative insights will not change.

[5]If a default signals the sovereign borrower's 'type', then the well-known Bulow and Rogoff (1989) argument doesn't apply, and reputation can underpin true lending contracts.

does not solve the time-inconsistency problem if the representative citizen can remove the leader when a bad state occurs. 'Farsighted institutions' would be needed to protect leaders from such short-term political pressure. By making make it feasible to repay the debt against the will of the citizens, such institutions can solve the time-inconsistency problem and raise (ex ante) social welfare. Therefore, a democratic advantage (in the sense of low risk-premia) may be expected only for mature democratic societies, where decision-making is not very sensitive to immediate election concerns. In democracies with 'myopic' institutions, where the decision-makers are exposed to short-term political pressure, the Samaritan's dilemma (the time-inconsistency of the optimal policy) applies, and risk-premia are expected to be high. The hypothesis is therefore that any democratic advantage must be conditional on having farsighted institutions, where farsightedness means being shielded from short-term electoral politics when making decisions that have long-run repercussions.

In order to test the hypothesis, we build on Beaulieu et al (2012), which represents the current state of the art in the empirical literature. This is particularly demanding for our hypothesis, as these authors find in favour of the democratic advantage. Theory suggests that income levels, institutions and whether debt is held externally or domestically should matter for repayment decisions and risk premia. Thus, our first point of departure from Beaulieu et al (2012) is to split their sample into OECD and non-OECD countries. The OECD countries have better institutions and debt is held domestically, which is precisely the scenario where we expect a democratic advantage. The estimation results strongly support conditionality, even controlling for the level of GDP: in the non-OECD subsample in particular the empirical relationship between a country's credit rating and its democratic status is negative and statistically significant, reversing previous findings.

Our main hypothesis is that the response of observed credit ratings to democracy should be conditional on a measure of institutional quality that approximates 'farsightedness'. We indeed find that when government is measured to be myopic there is a strong democratic disadvantage. In such circumstances democracy is estimated to cost about 3 investment grades on the standard 16-point grading structure employed by Moody's and Standard and Poor's. On the other hand when government is measured to be far-sighted there is, if anything, a democratic advantage.

Arguably the democracy indicator variable may fail to capture the true extent of leader-accountability. Elected leaders may be confident of continued incumbency, and indeed autocrats may be subject to replacement even if not by the ballot. We show that our results are robust to replacing the democracy indicator with a measure of political competition, again finding that an increased likelihood of replacement is associated with lower credit ratings.

The rest of the paper is organized as follows. Section 2 discusses some related literature. Section 3 presents the simple model of sovereign debt and Section 4 tests the two main predictions. Section 5 concludes.

# 2 Related Literature

The theoretical argument for a democratic advantage starts from the observation that democratic institutions will align the interests of political leaders with those of their constituents. If the constituents themselves hold the government debt, then the elected leaders risk losing office if they default on it, and this would serve as a commitment to repay (North and Weingast, 1989, Schultz and Weingast, 2003). In other words, democratically elected leaders

are inclined to repay the debt because that is what their constituents want. This would be a *democratic advantage*: it would lower the risk premia on the government debt. Clearly, this commitment becomes weaker if the debt is held mainly by foreigners, or more generally, if the median voter doesn't hold much debt. Schulz and Weingast (2003, footnote 49) acknowledge that their argument is "weaker in the case of developing economies whose debt is held entirely by foreigners" and Guembel and Sussman (2009) agree that debt is more likely to be repaid when the median voter is a debt-holder.

Even citizens who are not debt holders may prefer to repay, if default is believed to translate into widely felt economic costs. For example, a default could imply a negative shock to the net worth of domestic banks, which could endanger stability within the financial system (Schultz and Weingast, 2003). For developing countries, the more serious consequence of a default may be a loss of access to credit markets. However, in a bad state of the world, the citizens' immediate concern may be the burden of repayment and associated austerity policies – increased taxation or contraction of certain public services (and therefore public sector employment) and reduced income (either directly from transfers or indirectly via weakened demand in the economy). Thus, the citizens may prefer default in bad states of the world, although ex ante they would be better off if they could commit to repay. This time-inconsistency turns the democratic advantage into a disadvantage.

Acharya and Rajan (2013) give an interesting argument for why a myopic (popularity-seeking) government may prefer not to default on externally held debt, at least when initial debt levels are low: servicing the current debt allows the government to borrow more in order to increase current spending. But this requires the ability to credibly commit to repaying a larger debt in the future, which in turn requires that the future domestic cost

of default will be high. Our model is one-shot but could be extended to several periods. Our qualitative results would remain the same, unless (as suggested by Acharya and Rajan, 2013) default costs are expected to become so high in the future that future governments prefer to repay a large debt even in the worst possible state of the world. However, we think it is plausible that there is always a chance that in sufficiently bad future states, the representative citizen (and hence a popularity-seeking government) would prefer to default, especially if the debt level is high. This creates time-inconsistency; many aspects of the model could be generalized (allowing multiple periods, domestic savings, debt rollover etc.) without changing this fundamental point.

If the population is heterogeneous, then the median voter might attempt to make a commitment to repay by electing a leader who is biased in favour of bond-holding rich citizens (see D'Erasmo and Mendoza 2016a). But for the commitment to be credible, it must be difficult for the median voter to replace the leader in bad states of the world. Our model emphasizes this commitment problem. For another interesting analysis of distributional considerations relating to default in a heterogeneous agent model, see D'Erasmo and Mendoza (2016b).

The endogenous replacement of the leader distinguishes our model from models where the probability of losing office is an exogenously given measure of political instability. Cuadra and Sapriza (2008) analyze how the default decision depends on this exogenous probability in a model where political leaders are biased towards one or another group of citizens. Hatchondo, Martinez, and Sapriza (2009) instead assume the leader can be a patient or an impatient type (with the former type less likely to default), with lenders anticipating possible changes in leadership that may trigger default. Cuadra and Sapriza (2008) study

how political instability (turnover) and polarization increase default risk. In these models, as in our model, the key issue is the commitment problem. However, these authors focus on the preferences of the leader and on heterogenous voters, while we emphasize the endogenous replacement of the leader.

In an interesting recent working paper, Bodea and Hicks (2017) find empirical support for the hypothesis that a country's credit rating depends positively on the independence of its central bank. As an illustration, they mention the case of Hungary, where in 2010 the parliament passed a law undermining the independence of the central bank. This caused the major credit rating agencies to immediately downgrade Hungary's credit rating; Standard and Poor's explicitly criticized the weakening of Hungary's independent institutions such as the central bank and the constitutional court. Since weakening these institutions presumably makes economic policy more susceptible to public pressure, their analysis complements ours. For a historical perspective, North and Weingast (1989) attributed the increased credit worthiness of the English government to the creation of the Bank of England in 1694. Stasavage (2002) agreed that bureaucratic delegation can restrain government opportunism, specifically, that debt repayment becomes more credible if the central bank has the right to withhold revenue from the government in the event of a default. Along the same lines, Biglaiser and Staats (2012) find that rule of law, strong and independent courts, and protection of property rights have significant positive effects on credit ratings of developing countries.

Empirically, there is mixed evidence on the relationship between risk premia on sovereign debt and the extent of democracy. Saiegh (2005) finds that democracies are, if anything, more prone to reschedule their debt, but also finds that interest rates are not significantly

different across regimes. Archer et al (2007) found that the extent of democracy, as measured by the POLITY2 democracy score, had no explanatory power for credit rating in a sample of fifty developing countries between 1987 and 2003. McGillivray and Smith (2003) find some support for the hypothesis that leadership turnover improves sovereign bond premia. Oneal (1994) finds that financial returns to U.S. foreign direct investment over the period 1950-1984 were higher in countries with authoritarian regimes. In theory, higher (marginal) returns can easily be reconciled with greater risk premia. Przeworski and Limongi (1993) find that the relationship between economic growth and political regime is far from clear-cut.

We hope to shed some light on these mixed findings by showing that the relationship between democracy and default rates is conditional on institutional structure.

# 3 Theory

A country has access to an (indivisible) investment project. Implementing the project requires borrowing \$1 from a foreign bank. Let $r$ denote the interest rate. The required repayment is then $R \equiv 1 + r$. Throughout, we assume the project is implemented and focus on the repayment decision. After the project is implemented, the representative citizen's income, denoted $\theta \geq 0$, is realized. We assume $\theta$ is a random variable with cumulative distribution $F$ and support $[\underline{\theta}, \bar{\theta}]$, where $0 \leq \underline{\theta} < 1 < \bar{\theta}$. We refer to $\theta$ as the state of the world.

The time line is as follows.

Stage 1. Competitive banks announce interest rates, and the country's leader chooses a bank from which to borrow \$1.

Stage 2. The project is implemented and the state $\theta$ is realized.

Stage 3. The leader either repays the loan in full (i.e., pays $R$) or defaults.

Stage 4. The leader is either replaced, or stays in power.

If the loan is repaid at stage 3, the representative citizen consumes $\theta - R$. Her utility is $u(\theta - R)$, where $u$ is an increasing strictly concave utility function. Consumption must be non-negative so repayment is only feasible if $\theta \geq R$. To rule out corner solutions, assume $u(0) = -\infty$. If the country defaults at stage 3, the representative citizen consumes $\theta$. In addition, default causes her to suffer a loss of utility $L > 0$. Her utility will therefore be $u(\theta) - L$. Following much of the literature on sovereign debt, we may interpret $L > 0$ as a "penalty" that international lenders impose on a defaulting country.[6]

At stage 3, the representative citizen will be indifferent between defaulting and repaying when the state $\hat{\theta}$ satisfies[7]

$$u(\hat{\theta} - R) = u(\hat{\theta}) - L \tag{1}$$

Strict concavity implies that $u(\theta - R) < u(\theta) - L$ when $\theta < \hat{\theta}$, which means that at stage 3 the representative citizen prefers default. If $\theta > \hat{\theta}$ then $u(\theta - R) > u(\theta) - L$ so the representative

[6]The model could be easily generalized is many dimensions. Even if citizens are heterogeneous and some debt is held domestically, the main insight remains the same as long as default makes the median voter better off in sufficiently bad states (which is what creates time-inconsistency). Along the lines of Acharya and Rajan (2013), we could have multiple periods, and when the state is bad and debt is low, the country could roll over its debt and borrow more. However, unless the future cost of default is sufficiently high as to eliminate any time-inconsistency problem, our qualitative the results would still hold. We could also allow, following Broner, Martin and Ventura (2010), citizens to buy public debt on secondary markets. This would not change the main insights, assuming in a bad state of the world the representative citizen (or median voter) has little or no money with which to buy debt.

[7]If $\theta = R$, then $u(\theta) - u(\theta - R) > L$ as $u(0) = -\infty$. By strict concavity of $u$, we have $u'(\theta - R) > u'(\theta)$, so when $\theta$ increases $u(\theta - R)$ increases faster than $u(\theta)$. If $\bar{\theta}$ is large enough, then diminishing marginal utility of consumption will eventually cause the difference between $u(\theta)$ and $u(\theta - R)$ to become insignificant, so $u(\theta) - u(\theta - R) < L$. Continuity the assures the existence of $\hat{\theta}$ such that $u(\hat{\theta}) - u(\hat{\theta} - R) = L$.

citizen prefers to repay. Intuitively, since $u$ is concave, repaying the loan is more costly (in terms of utility) the lower is current income $\theta$. If intense political pressure forces the leader to always make the decision that the representative citizen prefers at stage 3, then the cut-off point for repaying the loan will be $\hat{\theta}$ which satisfies (1). But this, as will be shown below, would imply an excessive default risk: a commitment to repay in more states would improve ex ante welfare. Intuitively, the equilibrium interest rate depends on the probability of default, but this effect is not taken into account by a citizen who pressurizes the leader to default at stage 3, because at that stage $R$ has already been determined. To improve ex ante welfare, then, the country's institutions should make it possible to resist political pressure to default, even when $\theta < \hat{\theta}$.

Reducing the short-term electoral pressure on the political leaders could be done, e.g., by giving independent institutions (such as the central bank) more influence over economic policy. The political leaders will then be able to blame these other institutions for unpopular decisions, and only if the voters' loss of utility is quite large would the leader's position be at risk. We model such an institutional framework in the simplest possible way: there is $\Delta \geq 0$ such that if the leader repays the loan then he will be replaced at stage 4 if this decision caused the representative citizen a net loss of utility of at least $\Delta$. We assume $\Delta$ is an exogenously fixed parameter determined by the institutional structure – the higher is $\Delta$ the less electoral pressure there is on the leader. As a special case, $\Delta = 0$ means the leader must maximize the representative citizen's payoff at each point in time.

Consider now the leader's decision at stage 3. His objective is to maximize his expected 'ego rents'. If he is replaced, he gets no ego rents. If he stays in office, then the ego rents equal $\underline{E}$ if there was a default, and $\overline{E}$ if there was no default. We assume $\underline{E} < \overline{E}$, so that,

conditional on staying in office, the future benefits will be higher after repayment than after default. The most straightforward justification for this is his reputational concerns, and that repayment will facilitate greater ongoing access to credit markets (McGillivray and Smith, 2003). Also $\underline{E}$ will be low if outside lenders impose a penalty for default, or due to external sanctions or policy constraints from international organizations like the IMF.

By definition of $\Delta$, the leader can repay without losing office when

$$u(\theta - R) \geq u(\theta) - L - \Delta.$$

This implies that, for a given $R$, he will repay the loan if and only if $\theta \geq \theta(R, \Delta)$, where $\theta(R, \Delta)$ satisfies

$$u(\theta(R, \Delta) - R) = u(\theta(R, \Delta)) - L - \Delta. \tag{2}$$

Note that $\theta(1, \Delta) > 1$ because $u(0) = -\infty$. When $r = 0$ the probability of default is $F(\theta(1, \Delta)) > 0$, so banks cannot break even at zero interest rate; a positive interest rate is necessary to make up for the risk of default.

If $\Delta = 0$ then the cut-off point is $\theta(R, 0) = \hat{\theta}$ which satisfies (1). This corresponds to the case where intense political pressure forces the leader to always take the decision the representative citizen prefers at stage 3. When $\Delta$ increases, the effect of political competition becomes less intense, and the leader will be less constrained in his repayment decision.

A loan with interest rate $r$ will be repaid when $\theta \geq \theta(R, \Delta)$, where $R = 1 + r$. Thus, the loan is repaid with probability $1 - F(\theta(R, \Delta))$. The expected profit for the bank that lends

\$1 to the country will be

$$\pi(R, \Delta) \equiv (1 - F(\theta(R, \Delta)))\, R - 1.$$

Competition among banks implies that they make zero expected profit when the default risk has been accounted for. Thus, the equilibrium interest rate must be such that $R = R^*(\Delta)$ where $R^*(\Delta)$ satisfies $\pi(R^*(\Delta), \Delta) = 0$. Any lower interest rate would yield a negative profit, i.e., if $R < R^*(\Delta)$ then $\pi(R, \Delta) < 0$. As discussed above, a reduction in $\Delta$ is interpreted as a weaker institutional structure which allows greater short-term political pressure to be put on the leader. We now show that a reduction in $\Delta$ raises the risk premium.

**Proposition 1** *The equilibrium interest rate is decreasing in* $\Delta$. *That is,*

$$\frac{dR^*(\Delta)}{d\Delta} < 0.$$

**Proof.** We know that

$$\pi(R^*(\Delta), \Delta) = 0. \tag{3}$$

By definition of equilibrium, $\pi(R, \Delta) < 0$ for all $R < R^*(\Delta)$. Therefore, we must have

$$\pi_1(R^*(\Delta), \Delta) > 0,$$

where the subscript denotes partial derivative. We obtain the partial derivative $\theta_2(R, \Delta)$ by

differentiating (2):

$$\theta_2(R,\Delta) = \frac{-1}{u'(\theta(R,\Delta)-R) - u'(\theta(R,\Delta))} < 0$$

where the denominator is positive due to the strict concavity of $u$. We then have

$$\pi_2(R,\Delta) = -\theta_2(R,\Delta)F'(\theta(R,\Delta))R > 0$$

Totally differentiating (3) then gives

$$\frac{dR^*(\Delta)}{d\Delta} = -\frac{\pi_2(R^*(\Delta),\Delta)}{\pi_1(R^*(\Delta),\Delta)} < 0.$$

■

We now establish what was claimed above, namely, that $\Delta = 0$ leads to an inefficiently high risk of default. To see this, let $x$ denote a cut-off point such that the loan is repaid if $\theta \geq x$ and there is default if $\theta < x$. The bank's zero profit condition is $(1 - F(x))R - 1 = 0$, so that $R = \hat{R}(x)$, where

$$\hat{R}(x) \equiv \frac{1}{1-F(x)}.$$

The higher the cut-off point, the higher the default risk, hence the higher the interest rate: $\hat{R}'(x) > 0$. The representative citizen's *ex ante* expected payoff, before the state is realized, is:

$$EU = \int_0^x (u(\theta) - L)\, dF(\theta) + \int_x^\infty u(\theta - \hat{R}(x))dF(\theta). \tag{4}$$

If $\Delta = 0$ then the equilibrium cut-off point is $x = \hat{\theta}$ which satisfies (1). The required

repayment is

$$\hat{R}(\hat{\theta}) = \frac{1}{1 - F(\hat{\theta})}.$$

The derivative of $EU$ with respect to $x$, evaluated at the cut-off point $\hat{\theta}$, is strictly negative:

$$\begin{aligned} \left.\frac{dEU}{dx}\right|_{x=\hat{\theta}} &= u(\hat{\theta}) - u\left(x_0 - \hat{R}(\hat{\theta})\right) - L - \hat{R}'(\hat{\theta}) \int_{\hat{\theta}}^{\infty} u'\left(\theta - \hat{R}(\hat{\theta})\right) dF(\theta) \qquad (5) \\ &= -\hat{R}'(\hat{\theta}) \int_{\hat{\theta}}^{\infty} u'\left(\theta - R(\hat{\theta})\right) dF(\theta) < 0 \end{aligned}$$

If the leader always gives in to public opinion, and therefore always maximizes the representative citizen's utility at stage 3, then the equilibrium cut-off point will be $\hat{\theta}$. If at stage 1 the country could commit to a stricter repayment policy, with a cut-off point $x < \hat{\theta}$, then risk-premia would be lower (as $\hat{R}'(x) > 0$). The inequality in (5) implies that the representative citizen would then be strictly better off, from the ex-ante perspective. This commitment would require the leader not to give in to political political pressure to default at stage 3 even though $u(\theta - R) < u(\theta) - L$. If the institutional framework does not mitigate this pressure – if the country's institutions are 'myopic' – then the risk-premium will be high and ex ante welfare low. With a more 'farsighted' institutional framework, corresponding to $\Delta > 0$, the risk premium is lower and ex ante welfare is higher. In short, the democratic disadvantage is conditional:

Hypothesis 1: In democratic countries with 'myopic' institutions, political pressure (election concerns) will make it difficult to repay in bad states of the world, so the risk premia in international borrowing will be high.

Hypothesis 2: The democratic disadvantage (the high risk premium) is mitigated by

farsighted institutions.

# 4 Empirical Evidence

The empirical analysis builds directly on Beaulieu, Cox and Saiegh (2012) (BCS). As discussed above this work represents the current state of the art, with an inclusive dataset covering 118 countries between 1961 and 2008.[8] Notably this benchmark represents a particularly demanding test for the hypotheses of the present paper as BCS find in favour of the democratic advantage.

The dependent variables are credit ratings data from Credit Rating Agencies (CRAs), in particular Moody's and Standard and Poor's, used to proxy for risk premia. These data are qualitative and are converted to a numerical score, $CR'$, lying on a 16-point scale (with higher ratings corresponding to lower risk premia and hence lower borrowing costs). Following BCS and before them Archer, Biglaiser and DeRouen (2007), the dependent variable in the empirical work is $CR = \ln\left(\frac{1}{16} + \frac{255}{256}CR'\right)$.[9]

[8] Data availability reduces the sample size in the estimation.

[9] The use of credit ratings as the dependent variable requires the assumption that rating standards are consistent across time and country. The inherent unobservability of the underlying variable makes it difficult to rule out this possibility although a partial defence of the ratings data is possible. Firstly, and not surprisingly, the agencies claim reliability and comparability, and undoubtedly the agencies face important forces compelling objective measurement. Secondly, Cantor and Packer (1996) document a strong correlation between interest rate spreads (i.e. market-based measures of risk) and CRA ratings. Finally, any inconsistencies such that do exist arguably are (or perhaps at least should be) represented by random measurement error hence should not bias the estimation results.

## 4.1 Credit Ratings and Democracy

The key explanatory variable is $DEMOCRACY$, a dummy variable equal to 1 if a country-year is considered democratic according to the criteria in Przeworski et al (2000). These data are updated by Cheibub, Gandhi, and Vreeland (2010). In order to quantify the relationship between credit rating and democracy we follow a standard approach taken in the literature and specify a basic pooled regression, where $DEMOCRACY$ enters linearly. The benchmark regression is:

$$CR_{it} = \mathbf{XB} + \gamma DEMOCRACY_{it} + \varepsilon_{it}$$

where $CR_{it}$ is the credit rating (separately from Moody's and Standard and Poor's) of country $i$ at time $t$. The control variables (in $\mathbf{X}$) firstly follow Model 1 in BCS (in their Table 2). Specifically these are lagged values of the current account balance, growth in GDP per capita, the level of GDP, inflation, trade openness, a measure of resource endowment, a default indicator set equal to 1 if default occurred in the previous 5 years, the current level of central government debt (as a percentage of GDP) and fixed decadal effects.[10] In addition to these controls we also include the current level of gross central government debt measured as a percentage of GDP, from Reinhart and Rogoff (2011). The estimation results below cluster standard errors by country as standard.

The specification follows BCS and therefore estimates $\gamma$ using within-decade (but not within country) cross-country comparisons, conditional on the lagged observables. Despite the inclusion of an extensive set of control variables this identification is potentially biased, as

[10]Debt as a percentage of GDP (as well as other control variables) could potentially be endogenous to democratic status. However the mean (and standard deviation) of the debt ratio in democracies is 50.9 (62.8) and in non-democracies is 52.7 (47.1) hence the distributions are similar across the two groups.

the possibility that $DEMOCRACY$ is correlated with other unobservable drivers cannot be ruled out. Below we therefore also make use of an instrumental variable approach following Persson and Tabellini (2009) where $DEMOCRACY$ is instrumented depending on foreign democratic capital.

Columns 1 and 2 of table 1 contains estimation results, respectively using the Moody's and Standard and Poor's ratings, for the full data set.[11] When using the full sample, consistent with BCS we find evidence of a democratic advantage: in both columns the estimated coefficient for democracy is positive, and statistically significant at the 10% level in the case of the S&P credit rating. These results reflect the conventional wisdom that financial markets prefer democracy. However, inference from the full sample requires parameter stability over the sample. The theory developed above suggests that the effect of democracy on credit ratings may be conditional: the presence of good institutions neutralizes inefficiencies caused by myopic election concerns. A first pass at this simply divides the sample depending on OECD membership. The OECD Framework for the Consideration of Prospective Members explicitly states requirements relating to institutions underpinning economic and public governance.[12] There is another reason for making this division. The theoretical model assumes that the debt is held externally. As argued by Schultz and Weingast (2003), domestic debt holders may exert pressure to repay, through the ballot or through some other internal process. It is less clear how external lenders can hold elected leaders to account. For this reason it also makes sense to distinguish between OECD members, with a greater capacity

[11]Note that the reported sample sizes in table 1 are lower than those reported in BCS. The reason for this is that the sample size they report applies to their first-stage regression – which examines whether or not a country has a credit-rating at all. Table 1 in this paper corresponds to their second-stage regression – the credit-rating itself – which inevitably is a smaller subset of the first-stage.

[12]See Annex 1 of http://www.oecd.org/mcm/documents/C-MIN-2017-13-EN.pdf

to raise funds internally, and non-members, who are to a greater extent reliant on borrowing externally.[13,14] We hypothesize that there will be a democratic disadvantage for non-OECD members who have not yet developed good institutions.

In columns 3 and 4 the sample is restricted to non-OECD countries, and the results relating to democracy change meaningfully. In both columns the coefficient relating to democracy is estimated to be negative and is statistically significant. Columns 5 and 6 conversely contain results for the OECD subsample. With the caveat that 95% of the OECD sample is classified as democratic, it is still noteworthy that the estimated relationship between credit ratings and democratic status is strongly positive. The coefficient estimates are statistically different in the two subsamples (at $p < 0.01$) and without any ambiguity the results show that the previously estimated democratic advantage is solely driven by the OECD members. Democratization for a non-OECD member is instead (at least holding other observables constant) statistically associated with a credit rating deterioration.

Our model assumes the electorate favours default in bad states of the world. In reality, while foreign debt-holders cannot use the ballot to punish a defaulting democratic government, domestic debt holders may use their ballots to this effect (Schulz and Weingast, 2003). The key issue is therefore how much government debt is held by the (tax-paying) pivotal voter. Columns 7 and 8 of table 1 contain results examining whether the effect of democracy on a country's credit rating changes depending on the extent to which public debt is held internationally. Abbas et al (2010) provide data on outstanding public debt securities as a

[13] Abbas et al (2014) document that non-resident held sovereign debt for 13 OECD members averaged below 20% between 1961-2008. Conversely Panizza (2008) documents that sovereign debt is typically held externally in developing countries. For example in a sample of 97 countries in 1994, 70% of total public debt was held externally.

[14] This split also has the advantage that the two subsamples are approximately equal.

percentage of GDP separately held by domestic and international lenders. We define DEBT COMP as outstanding international public debt securities divided by outstanding domestic public debt securities. Higher values of DEBT COMP thus indicate a greater reliance on international lending. This variable is then multiplied by the democracy indicator variable in order to generate an interaction term. The hypothesis here is that as the proportion of debt held internationally increases, the democratic advantage deteriorates and hence that the coefficient estimate on this interaction term is negative. For both credit ratings the coefficient estimate for this interaction term is negative as hypothesized, but is not significant. Whilst the smaller sample size here (necessitated because of limited coverage of the Abbas et al (2010) data) is one possible explanation for this insignificance, the evidence suggests that it is not the composition of debt that explains the difference between the OECD and non-OECD members.

Table 2 reports results when the two-stage Heckman (1979) estimation methodology is used, as in BCS. For convenience columns 1 and 2 duplicates their Model 2 where GDP per capita replace GDP in levels as a control.[15] These results point towards a strong democratic advantage. Columns 3 and 4 restricts the sample to non-OECD countries and in this case the statistical relationship is in both cases estimated to be negative, although is statistically insignificant.

A significant concern with this empirical investigation is the non-random assignment of the democracy 'treatment'. Democracy is an outcome in itself and has its own drivers. In particular correlation between these drivers and the error term in the regressions can mean

[15]The regression results here also control for sovereign debt (as a percentage of GDP) in addition to the controls used in BCS.

that the parameter estimates are biased. In order to address this concern we follow Persson and Tabellini (2009) and use their measure of 'foreign democratic capital' ($FDC$) to instrument democratic status in particular country-years. This measure is derived as a weighted average of *polity2* (democracy) scores in neighbouring countries with weights depending on geographic distance. Persson and Tabellini (2009) use this measure to instrument for regime in a growth regression and acknowledge the necessary exclusion restriction: that this variable has no direct effect, in their case on domestic growth. Here the exclusion restriction is that foreign democratic capital should have no direct effect on a country's credit rating. This seems reasonable – the effect of foreign democratic capital on domestic outcomes likely manifests itself primarily through its effect on democracy itself.

Table 3 contains estimation results using $FDC$ to instrument for $DEMOCRACY$. In the full sample (columns 1 and 2) the coefficient estimates for (instrumented) $DEMOCRACY$ in the second-stage regression are positive, although are not statistically significant. When the sample is restricted to the non-OECD countries (in columns 3 and 4) the coefficient estimates are negative, and in the case of the Moody's credit ratings this relationship is statistically significant at the 10% level. The sample sizes are unfortunately here considerably reduced, but the results are consistent with the inference arising from the OLS regressions.[16] Moreover the parameter estimates are reasonably stable in terms of magnitude, which suggests that the OLS results are not systematically biased.

A further challenge with the empirical exercise is that both the credit ratings data and the democracy indicator are highly persistent. In table 4 the analysis is extended to examine the determinants of changes in credit ratings, and in particular whether credit-ratings are

[16]The Persson and Tabellini (2009) data end in 2000, which reduces the sample.

differentially responsive to economic conditions. Our model emphasizes the role of economic shocks as an impetus for default under democracy. An autocratic leader who is not accountable to his citizens would be less responsive to their suffering (corresponding to a high $\Delta$ in our model) and hence more likely to repay in states of bad economic performance. Hence we test a subsidiary hypothesis that changes to a country's credit-rating are more sensitive to economic performance measures under democracy than under autocracy.

Before interpreting the results in table 4 note that for both the Moody's and Standard and Poor's ratings data, there is no annual change in a country's credit rating in 84% of the dataset. Identification in this table thus is obtained from the remaining 16% of observations. Positive realizations denote improvements in the credit score, hence the hypothesis for example in the case of GDP per capita growth is that the coefficient estimate is positive for both regime types, but larger in the case of democracies.

Columns 1 and 2 contain results for the full sample, columns 3 and 4 contain results for the subset of democracies, and columns 5 and 6 contain results for the autocracies. Whilst the sample size of autocracies is markedly smaller than that for the democracies there are indications that credit ratings in democracies are somewhat more sensitive to economic conditions than they are in autocracies. In the case of growth in GDP per capita the coefficient estimates when using the democratic subsample (columns 3 and 4) are both positive and significantly different from zero at the 5% level, whilst for autocracies (columns 5 and 6) they are statistically insignificant, and even negative when using the Moody's rating.

Similarly differential responses to the current account can also be aligned with our theoretical model. Current account surpluses, and associated foreign exchange inflows, all else equal imply a greater capacity to repay external debt. If the current account deteriorates

then the utility loss to citizens from repaying debt is conceivably higher, and this utility loss would matter more and hence increase default risk more in democratic countries than in autocracies. The results are consistent with this. Credit ratings are positively and statistically significantly associated with improved current accounts in the case of the democracies. Conversely the in the case of autocracies, there is no discernible relationship.[17]

## 4.2 Credit Ratings, Democracy and Institutions

Our hypothesis is that democratization causes a deterioration in credit ratings unless institutions can solve the time-inconsistency problem. In order to test whether the effect of democracy on credit rating is conditional on the extent of myopia in policy-making, we make use of data from the Global Insight Business Risk and Conditions database. In the words of the data-provider their government effectiveness series (denoted $GMO$) captures "Policy consistency and forward planning: How confident businesses can be of the continuity of economic policy stance – whether a change of government will entail major policy disruption, *and whether the current government has pursued a coherent strategy. This factor also looks at the extent to which policy-making is far-sighted, or conversely aimed at short-term economic advantage.*" (Our italics added.) Numerically they range from 0 (low government effectiveness) to 1 (high government effectiveness). Not withstanding considerable measurement issues these data arguably contain information regarding shortsightedness in policy-making.

The hypothesis that the effect of democracy on credit rating varies with farsightedness in policy-making is investigated using an interaction of $GMO$ with the democracy rating.

[17]The results of table 4 are open to another interpretation - simply that the macrodata are to a greater extent mismeasured in the autocracies subsample. Given also that the subsample of autocracies is considerably smaller the inference offered here is inevitably somewhat tentative.

Following the theory the 'unconditional' response of credit rating to democracy is hypothesized to be negative. When $GMO$ is at its minimum, then democratization is hypothesized to lead to a deterioration in the credit rating. However the interaction of $DEMOCRACY$ with $GMO$ is hypothesized to be positive. The democratic disadvantage is ameliorated when institutions are far-sighted.

Table 5 contains estimation results augmenting the benchmark specification to include $GMO$ and its interaction with $DEMOCRACY$.[18] Columns 1 and 2 contain results for the full sample and columns 3 and 4 for the non-OECD countries only. Notably, controlling for $GMO$ and its interaction with $DEMOCRACY$ substantially aligns the results of the full sample with those of the non-OECD subsample. This corroborates the argument that the effect of Democracy is conditional on institutional quality. Moreover in all instances the estimated coefficients are consistent with the theoretical hypotheses: when institutional quality ($GMO$) is low, then democracy is associated with lower credit ratings. When institutional quality is high, then democracy is associated with higher credit ratings. These results are statistically significant in the full sample, though this is reduced in the smaller sample of non-OECD countries.

Following previous literature, the dependent variable in this analysis is a non-linear function of the underlying credit rating, hence inference of the effect of a change to $DEMOCRACY$ on credit ratings depends both on the value of $GMO$ and also the initial credit rating. In order to get a simple quantification of the estimation results, in column 5 we re-estimate column 2 (which has the more conservative estimates) replacing the dependent variable with a linear credit rating score ($CR'$, described above). The estimation results confirm the find-

[18]The sample sizes are smaller when including $GMO$ as these data only begin in 1996.

ings: at low levels of $GMO$ the estimated relationship between democracy and credit scores is negative, whilst at high levels it is positive. The 25th percentile of the $GMO$ institutional quality measure is $GMO = 0.38$.[19] At this value $DEMOCRACY$ is associated with a reduction in the credit rating of about 3 investment grades on the 16-point scale. However at the 75th percentile of institutional quality $GMO = 0.69$, $DEMOCRACY$ is associated with approximately a 1.5 investment grade improvement.

Table 6 splits the sample by regime-type to focus on differential effects of institutional quality. Our theory emphasizes that democracies face a time-inconsistency problem caused by concerns for the welfare of the electorate, but this may be alleviated by farsighted institutions (approximated by $GMO$). Before discussing the empirical results note that there are other important channels through which institutional quality can influence credit ratings. Nonetheless the theory is suggestive that the premium to farsightedness should be higher under democracy, since democracies face the problem of time-inconsistency. Columns 1 and 2 contain results for democracies, and columns 3 and 4 contain results for autocracies. Consistent with the theory the estimated sensitivity of the credit rating to institutional quality is quantitatively and statistically stronger under democratic regime types.

In table 7 the analysis extends to examining how citizens' capacity to exert political pressure on the leader affects the credit rating. Conceivably the $DEMOCRACY$ indicator variable by itself fails to capture all of the relevant information. Replacement of leaders may occur in autocracies, and even if not, an autocratic leader may be constrained to take into account the welfare of his citizens. Conversely, elected leaders with large majorities may be

[19] $GMO = 0.28$ undoubtedly indicates weak institutions. The minimum value taken in the OECD subsample is $GMO = 0.5$.

well insulated from political pressure.

To investigate this empirically, table 7 includes two separate regressors, encapsulating the extent to which the populace can exert political pressure on the leader, both taken from the Database of Political Institutions. In particular we use the variables $FRAC$, measuring the probability that two deputies picked at random from the legislature will be from different parties, and $MAJ$, measuring the margin of victory – the fraction of seats held by the government. High values of $FRAC$ and low values of $MAJ$ denote greater political competition, which we take to act as a proxy for the capacity of the populace (and the representative voter) to exert political pressure on the leader. Given the stronger requirement to please the citizenry, then the temptation for the government to default increases and a lower credit rating ensues. The two measures are negatively correlated though not perfectly (the correlation coefficient is $\rho = -0.77$). The means (and standard deviations) for $FRAC$ and $MAJ$ under democracy are respectively 0.65 (0.14) and 0.56 (0.15). Under autocracy the corresponding values are 0.32 (0.31) and 0.83 (0.19). Unsurprisingly $FRAC$ ($MAJ$) is higher (lower) under democracy, but the data display interesting variation – suggesting that autocrats are in some instances politically constrained, and conversely that some elected governments are relatively unconstrained.

Columns 1 and 2 of table 7 augments the regression model used in columns 1 and 2 of table 1 to include $FRAC$.[20] Firstly note that the coefficient estimate for $DEMOCRACY$ is negative in all specifications in this table, and is significantly different from zero at the 10% level in the case of column 1. In both columns 1 and 2 the estimated coefficient for $FRAC$ is negative, but statistically insignificant. An increase in the probability that two deputies

[20]The result in table 7 also control for OECD membership in order to proxy for institutional quality.

picked at random from the legislature are from different parties is weakly associated with a worsened credit rating.

However when political pressure is instead proxied using $MAJ$ (in columns 3 and 4 of table 7) the relevant coefficient estimates are positive, as hypothesized, and are significantly different from zero at the 5% level, in both cases. The larger the fraction of seats held by the government, the better the credit rating. Arguably $MAJ$ is a better measure of the underlying political pressure mechanism. For example $FRAC$ is prone to increase with the number of opposition parties, which by itself would not clearly constrain a government that say held a given 60% of the legislature. It is this latter number which better measures the extent to which the government is insulated from political pressure.

A natural extension examines the interaction of $DEMOCRACY$ with $MAJ$. In principle one would expect that political pressure (measured by $MAJ$) would have a stronger effect under democracy. However, in unreported regressions this interaction was found to be wholly insignificant in all cases. The conclusion we draw from these findings is that political pressure exists, and operates to increase the inclination to default, under both systems.

# 5 Conclusion

There is no consensus in the literature on whether there is a democratic advantage in sovereign debt repayment. While authors such as Schultz and Weingast (2003) have argued in favour of a democratic advantage, Saeigh (2005) finds that this is not true when the sample includes developing countries. We have attempted to reconcile these contradictory views.

In our model, leader accountability to those ultimately liable to pay back the debt confers an inherent democratic *dis*advantage, with higher default rates and concomitant higher risk premia. Commitment to rational long term decision-making ameliorates the problem. In effect, we reiterate the conclusions of Shultz and Weingast (2003): ultimately it is the institutions of mature democracies that determine the democratic advantage. In our model, good institutions imply the ability to override the citizens' desire to default in bad states of the world. If a country has not yet developed such institutions, then democratization will lead to lower credit ratings, as political leaders try to maximize their constituents' utility at each point in time. Thus, even controlling for income levels, we expect a non-monotonic relationship between democracy and credit ratings.

Empirically, we confirm that there is no democratic advantage outside the OECD. The estimated relationship between observed credit-ratings and democratic status is found to be strongly conditional on institutional farsightedness. When government is measured to be myopic there is a strong democratic disadvantage: democracy is estimated to cost about 3 investment grades on the standard 16-point grading structure employed by Moody's and Standard and Poor's. When government is measured to be far-sighted there is a democratic advantage of around 1.5 investment grades. Increased political pressure as measured inversely by the fraction of seats held by the governing party is also associated with worsening credit scores.

# Data Appendix

| Series | Description | Source |
|---|---|---|
| Moody's | Country Credit Rating | BCS |
| S&P | Country Credit Rating | BCS |
| DEMOCRACY | Democracy Indicator | BCS |
| CURRENT ACCOUNT | Percentage GDP | BCS |
| GDP.CAP Growth | GDP per capita growth | BCS |
| GDP | GDP in US$ (100,000,000 units) | BCS |
| INFLATION | Annual percentage change in CPI | BCS |
| TRADE | Percentage GDP | BCS |
| RESOURCE ENDOWMENT | Constructed by adding annual ores, metals and fuel exports as a percentage of merchandise exports | BCS |
| DEFAULT | Dummy variable indicating whether external default or debt restructuring tooke place | BCS |
| GOV DEBT | Gross central government debt, percentage of GDP. | RR |
| DEBT COMP | Ratio of outstanding international public debt securities to outstanding domestic public debt securities | PDD |
| FDC | Foreign Democratic Capital | PT |
| GMO | Government effectiveness | GIBRCD |
| FRAC | Probability that two deputies picked at random from the legislature will be from different parties | DPI |
| MAJ | Fraction of seats held by the government | DPI |

Notes: BCS denotes Beaulieu, Cox and Saiegh (2012). RR is Reinhart and Kenneth S. Rogoff (2011). PDD is the historical debt database constructed by Abbas et al (2010). PT is Persson and Tabellinii (2009). GIBRCD is the Global Insight Business Risk and Conditions Database. DPI is the Database of Political Institutions

| Credit Rating | Moody's | S&P | Moody's | S&P | Moody's | S&P | Moody's | S&P |
|---|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| DEMOCRACY | 0.161 | 0.227 | −0.303 | −0.403 | 0.277 | 0.610 | 0.378 | 0.545 |
| | (1.41) | (1.84)* | (1.77)* | (2.70)** | (8.85)*** | (28.4)*** | (2.52)** | (1.65)*** |
| GOV DEBT | −0.002 | −0.002 | −0.005 | −0.007 | −0.001 | −0.001 | −0.004 | −0.004 |
| | (1.09) | (0.92) | (1.42) | (1.77)* | (1.49) | (1.27) | (1.36) | (1.35) |
| DEBT COMP | | | | | | | −0.016 | 0.059 |
| | | | | | | | (0.26) | (0.63) |
| DEBT COMP*DEMOCRACY | | | | | | | −0.095 | −0.141 |
| | | | | | | | (0.73) | (1.19) |
| CURRENT ACCOUNT (*lag*) | 0.016 | 0.004 | 0.005 | −0.019 | 0.004 | 0.004 | −0.006 | −0.008 |
| | (1.27) | (0.34) | (0.36) | (1.31) | (0.85) | (0.86) | (0.54) | (0.63) |
| GDP.CAP Growth (*lag*) | 0.013 | 0.015 | 0.021 | 0.027 | −0.020 | −0.023 | −0.002 | 0.001 |
| | (1.11) | (1.24) | (1.55) | (1.89)** | (3.34)*** | (4.01)*** | (0.22) | (0.06) |
| GDP (*lag*) | 0.0001 | 0.0001 | 0.0005 | 0.0002 | 0.000 | 0.000 | 0.0001 | 0.0001 |
| | (3.13)*** | (3.08)*** | (1.79)* | (0.86) | (3.09)*** | (2.72)** | (2.38)** | (2.43)*** |
| INFLATION (*lag*) | −0.0005 | −0.0004 | −0.0004 | −0.000 | −0.019 | −0.025 | −0.0002 | −0.0001 |
| | (1.42) | (0.85) | (1.34) | (0.06) | (22.9)*** | (39.0)*** | (1.09) | (0.20) |
| TRADE (*lag*) | 0.005 | 0.004 | 0.006 | 0.005 | 0.002 | 0.001 | 0.005 | 0.005 |
| | (3.10)*** | (2.63)** | (3.53)*** | (3.54)*** | (2.07)** | (1.48) | (2.28)** | (2.67)** |
| RESOURCE ENDOWMENT (*lag*) | −0.005 | −0.005 | −0.003 | −0.002 | 0.001 | 0.002 | −0.003 | −0.003 |
| | (1.15) | (1.45) | (0.55) | (0.51) | (0.98) | (1.84)* | (0.58) | (0.52) |
| DEFAULT | −1.263 | −1.266 | −0.743 | −0.772 | (OMITTED) | (OMITTED) | −1.339 | −1.668 |
| | (4.24)*** | (4.10)*** | (2.92)*** | (3.21)*** | | | (4.12)*** | (3.76)*** |
| INTERCEPT | 1.641 | 1.775 | 1.224 | 1.872 | 2.404 | 2.091 | 1.928 | 1.749 |
| | (6.33)*** | (8.73)*** | (2.80)*** | (6.31)*** | (19.02)*** | (17.47)*** | (7.14)*** | (5.75)*** |
| Decade fixed effects | Yes | Yes | Yes | Yes | Yes | Yes | | |
| Sample | Full | Full | non-OECD | non-OECD | OECD | OECD | Full | Full |
| Observations | 1012 | 929 | 441 | 377 | 571 | 552 | 551 | 544 |
| $R^2$ | 0.395 | 0.350 | 0.403 | 0.342 | 0.64 | 0.74 | 0.418 | 0.662 |

**Table 1: Estimation Results - the effect of democracy on credit ratings**

Notes: The decade fixed effects are not shown. t-statistics in parentheses (with standard errors clustered by country). Statistical Significance at *90% confidence level; **95% confidence level; ***99% confidence level.

| Credit Rating | Moody's | S&P | Moody's | S&P |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| DEMOCRACY | 0.408 (3.27)*** | 0.472 (3.56)*** | −0.171 (0.82) | −0.237 (1.35) |
| GOV DEBT | −0.005 (2.12)** | −0.005 (1.89)* | −0.008 (2.28)** | −0.009 (2.51)** |
| CURRENT ACCOUNT (*lag*) | 0.010 (0.79) | −0.004 (0.35) | 0.000 (0.03) | −0.025 (2.50)** |
| GDP.CAP Growth (*lag*) | 0.012 (0.92) | 0.014 (1.10) | 0.021 (1.37) | 0.026 (1.76)* |
| GDP (*lag*) | 0.000 (2.88)*** | 0.000 (2.97)*** | 0.001 (1.58) | 0.000 (1.38) |
| INFLATION (*lag*) | −0.004 (1..21) | −0.000 (0.64) | −0.000 (0.89) | 0.000 (0.14) |
| TRADE (*lag*) | 0.006 (3.25)*** | 0.005 (2.71)*** | 0.007 (2.70)*** | 0.006 (3.77)*** |
| RESOURCE ENDOWMENT (*lag*) | −0.004 (0.78) | −0.003 (0.79) | −0.001 (0.18) | 0.001 (0.31) |
| DEFAULT | −1.337 (3.76)*** | −1.439 (4.19)*** | −0.618 (1.92)* | −0.783 (2.97)*** |
| INTERCEPT | 1.483 (5.72)*** | 1.452 (5.71)*** | 1.280 (2.75)*** | 1.460 (4.51)*** |
| Decade fixed effects | Yes | Yes | Yes | Yes |
| $\rho$ $(rho)$ | 0.576 (5.13)*** | 0.546 (5.70)*** | 0.440 (4.08)*** | 0.406 (4.04)*** |
| $Wald\ test\ (\rho = 0)\ \chi^2$ | 26.27*** | 32.49*** | 16.68*** | 16.34*** |
| Sample | Full | Full | non-OECD | non-OECD |
| Observations | 1954 | 1871 | 1300 | 1236 |

**Table 2: Heckman (Selection) Estimation Results - the effect of democracy on credit ratings**

Notes: Heckman (1979) estimation following Beaulieu, Cox and Saiegh (2012). The decade fixed effects are not shown. Z-statistics in parentheses. Statistical Significance at *90% confidence level; **95% confidence level; ***99% confidence level.

| Credit Rating | Moody's | S&P | Moody's | S&P |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| DEMOCRACY | 0.150 | 0.423 | −0.570 | −0.283 |
| | (0.50) | (1.11) | (1.76)* | (0.54) |
| GOV DEBT | −0.001 | 0.001 | −0.006 | −0.006 |
| | (0.71) | (0.41) | (2.16)** | (1.91)* |
| CURRENT ACCOUNT (*lag*) | 0.021 | 0.011 | 0.005 | −0.011 |
| | (2.44)** | (1.07) | (0.33) | (0.50) |
| GDP.CAP Growth (*lag*) | 0.016 | 0.024 | 0.021 | 0.039 |
| | (1.47) | (1.45) | (1.30) | (1.31) |
| GDP (*lag*) | 0.0001 | 0.0001 | 0.000 | 0.0004 |
| | (3.86)*** | (3.21)*** | (0.99) | (1.33) |
| INFLATION (*lag*) | −0.0006 | −0.0004 | −0.0005 | −0.000 |
| | (2.11)** | (1.38) | (1.66)* | (0.33) |
| TRADE (*lag*) | 0.005 | 0.002 | 0.005 | 0.001 |
| | (3.25)*** | (1.48) | (2.36)** | (0.89) |
| RESOURCE ENDOWMENT (*lag*) | −0.001 | −0.002 | −0.000 | −0.001 |
| | (0.54) | (0.85) | (0.05) | (0.34) |
| DEFAULT | −0.800 | −1.045 | −0.211 | −0.620 |
| | (4.22)*** | (5.33)*** | (1.00) | (3.07)*** |
| INTERCEPT | 1.701 | 1.713 | 1.850 | 2.319 |
| | (5.45)*** | (4.27)*** | (3.84)*** | (3.43)*** |
| Decade fixed effects | Yes | Yes | Yes | Yes |
| Sample | Full | Full | non-OECD | non-OECD |
| Observations | 668 | 588 | 255 | 194 |
| F-test | 17.12 | 28.74 | 37.69 | 37.12 |

**Table 3: Instrumental Variable Estimation Results**

Notes: Regressions estimated by Two-Stage-Least-Squares where $DEMOCRACY$ is instrumented using Persson and Tabellini's (2009) measure of foreign democratic capital. F-test denotes the F statistic of the significance of the instrument in the first stage regression. Other notes as for table 1.

| Credit Rating | Moody's | S&P | Moody's | S&P | Moody's | S&P |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| GOV DEBT | −0.0008 | −0.0009 | −0.0008 | −0.0009 | −0.0018 | −0.0040 |
| | (1.77)* | (0.97)* | (1.82)* | (1.76)* | (1.35) | (1.79)* |
| CURRENT ACCOUNT (*lag*) | 0.0067 | 0.0040 | 0.0092 | 0.0051 | −0.0052 | −0.0100 |
| | (2.21)** | (1.62) | (2.51)** | (1.86)* | (1.18) | (0.50) |
| GDP.CAP Growth (*lag*) | 0.0113 | 0.0117 | 0.0148 | 0.0156 | −0.0038 | 0.0036 |
| | (1.91)* | (1.96)* | (2.02)** | (2.19)** | (0.44) | (0.61) |
| GDP (*lag*) | 0.0000 | 0.0000 | 0.0000 | −0.0000 | −0.0000 | 0.0000 |
| | (1.44) | (0.17) | (1.65) | (0.00) | (0.37) | (0.03) |
| INFLATION (*lag*) | 0.0000 | 0.0001 | 0.0000 | 0.0000 | 0.0004 | 0.0043 |
| | (0.13) | (1.02) | (0.24) | (0.38) | (0.31) | (0.19) |
| TRADE (*lag*) | 0.0001 | −0.0001 | 0.0002 | −0.0001 | 0.0004 | 0.0012 |
| | (0.42) | (0.51) | (0.80) | (0.32) | (1.22) | (0.78) |
| RESOURCE ENDOWMENT (*lag*) | −0.0001 | −0.0013 | −0.0002 | −0.0013 | 0.0018 | 0.0039 |
| | (0.12) | (2.01)** | (0.48) | (1.98)* | (1.18) | (1.22) |
| DEFAULT | −0.043 | 0.150 | −0.378 | −0.290 | −0.080 | −0.622 |
| | (1.09) | (0.77) | (0.85) | (1.32) | (0.85) | (2.54)** |
| INTERCEPT | −0.081 | 0.101 | −0.110 | 0.568 | 0.219 | 0.073 |
| | (0.62) | (1.37) | (0.85) | (0.85) | (1.37) | (0.43) |
| Decade fixed effects | Yes | Yes | Yes | Yes | Yes | Yes |
| Sample | Full | Full | Democracies | Democracies | Autocracies | Autocracies |
| Observations | 964 | 883 | 842 | 779 | 122 | 104 |
| $R^2$ | 0.033 | 0.027 | 0.041 | 0.053 | 0.093 | 0.079 |

**Table 4: Estimation Results - the determinants of changes to credit ratings**

Notes: Dependent variable is the annual difference in the credit rating. The decade fixed effects are not shown. t-statistics in parentheses (with standard errors clustered by country). Statistical Significance at *90% confidence level; **95% confidence level; ***99% confidence level.

| Credit Rating | Moody's | S&P | Moody's | S&P | Linear(S&P) |
|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) |
| DEMOCRACY | −1.831 | −1.287 | −1.660 | −1.128 | −8.859 |
| | (3.51)*** | (2.52)** | (2.19)** | (1.59) | (5.73)*** |
| DEMOCRACY*GMO | 2.504 | 1.768 | 2.203 | 1.332 | 15.094 |
| | (3.41)*** | (2.41)** | (1.91)* | (1.19) | (6.23)*** |
| GMO | 0.607 | 1.136 | 0.682 | 1.118 | 4.787 |
| | (0.84) | (1.49) | (0.69) | (1.16) | (2.04)** |
| GOV DEBT | −0.004 | −0.003 | −0.006 | −0.008 | −0.008 |
| | (1.47) | (1.39) | (1.23) | (1.82)* | (1.06) |
| CURRENT ACCOUNT (*lag*) | 0.006 | −0.007 | 0.003 | −0.021 | 0.061 |
| | (0.46) | (0.81) | (0.16) | (1.23) | (1.61) |
| GDP.CAP Growth (*lag*) | 0.017 | 0.014 | 0.019 | 0.012 | −0.030 |
| | (1.32) | (1.26) | (1.04) | (0.79) | (0.90) |
| GDP (*lag*) | 0.0001 | 0.0001 | 0.000 | 0.0003 | 0.0001 |
| | (1.87)* | (1.90)* | (1.06) | (1.22) | (1.90)* |
| INFLATION (*lag*) | −0.009 | −0.013 | −0.013 | −0.012 | −0.060 |
| | (1.95)* | (3.89)*** | (1.81)* | (2.52)** | (6.20)*** |
| TRADE (*lag*) | 0.002 | 0.002 | 0.004 | 0.004 | 0.011 |
| | (1.18) | (1.36) | (1.48) | (2.13)** | (1.49) |
| RESOURCE ENDOWMENT (*lag*) | −0.006 | −0.002 | −0.004 | 0.001 | −0.003 |
| | (1.28) | (0.51) | (0.61) | (0.26) | (0.32) |
| DEFAULT | −0.793 | −0.633 | −0.625 | −0.522 | −0.620 |
| | (2.30)** | (1.76)* | (1.66) | (1.55) | (0.90) |
| INTERCEPT | 1.580 | 1.179 | 1.311 | 1.134 | 3.807 |
| | (3.19)*** | (2.37)** | (1.57) | (1.62) | (2.42)** |
| Decade fixed effects | Yes | Yes | Yes | Yes | Yes |
| Sample | Full | Full | non-OECD | non-OECD | Full |
| Observations | 584 | 572 | 312 | 300 | 572 |
| $R^2$ | 0.600 | 0.596 | 0.436 | 0.400 | 0.846 |

**Table 5: Estimation Results - conditional effects of democratization**

Notes: GMO is the government effectiveness measure from the Global Insight Business Risk and Conditions database described in the text. Columns 1-4 use $CR$ as the dependent variable, column 5 uses $CR'$ (both variables are defined at the beginning of section 3). The decade fixed effects are not shown. t-statistics in parentheses (with standard errors clustered by country). Statistical Significance at *90% confidence level; **95% confidence level; ***99% confidence level.

| Credit Rating | Moody's | S&P | Moody's | S&P |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| GMO | 3.202 | 2.965 | 1.144 | 0.962 |
| | (6.37)*** | (7.25)*** | (1.81)* | (1.04) |
| GOV DEBT | −0.004 | −0.003 | −0.003 | −0.005 |
| | (1.31) | (1.23) | (1.29) | (1.39) |
| CURRENT ACCOUNT (*lag*) | 0.009 | −0.006 | −0.010 | −0.033 |
| | (0.58) | (0.61) | (0.89) | (1.28) |
| GDP.CAP Growth (*lag*) | 0.013 | 0.014 | 0.019 | −0.017 |
| | (0.79) | (1.19) | (0.76) | (0.60) |
| GDP (*lag*) | 0.000 | 0.000 | 0.0005 | 0.0005 |
| | (1.80)* | (1.75)* | (2.29)** | (2.76)** |
| INFLATION (*lag*) | −0.007 | −0.011 | −0.020 | −0.022 |
| | (1.46) | (3.25)*** | (1.89)* | (1.72) |
| TRADE (*lag*) | 0.003 | 0.002 | 0.003 | 0.004 |
| | (1.08) | (0.95) | (2.00)* | (1.74) |
| RESOURCE ENDOWMENT (*lag*) | −0.007 | −0.003 | 0.008 | 0.010 |
| | (1.23) | (0.61) | (1.47) | (2.27)** |
| DEFAULT | −0.686 | −0.507 | −1.19 | −0.779 |
| | (1.49) | (1.05) | (3.27)*** | (2.06)* |
| INTERCEPT | −0.357 | −0.167 | 0.887 | 1.165 |
| | (0.69) | (0.45) | (1.61) | (1.93)* |
| Decade fixed effects | Yes | Yes | Yes | Yes |
| Sample | Democracies | Democracies | Autocracies | Autocracies |
| Observations | 489 | 478 | 95 | 94 |
| $R^2$ | 0.600 | 0.619 | 0.729 | 0.675 |

**Table 6: Estimation Results - benefits of far-sighted institutions, democracies and autocracies**

Notes: GMO is the government effectiveness measure from the Global Insight Business Risk and Conditions database described in the text. The decade fixed effects are not shown. t-statistics in parentheses (with standard errors clustered by country). Statistical Significance at *90% confidence level; **95% confidence level; ***99% confidence level.

| Credit Rating | Moody's | S&P | Moody's | S&P |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| FRAC | −0.395 | −0.285 | | |
| | (1.04) | (0.83) | | |
| MAJ | | | 1.122 | 1.038 |
| | | | (2.11)** | (2.08)** |
| DEMOCRACY | −0.255 | −0.162 | −0.145 | −0.056 |
| | (1.74)* | (0.98) | (1.07) | (0.38) |
| GOV DEBT | −0.004 | −0.003 | −0.004 | −0.004 |
| | (1.98)* | (1.88)* | (2.22)** | (2.19)** |
| CURRENT ACCOUNT (*lag*) | 0.009 | −0.004 | 0.003 | −0.010 |
| | (0.85) | (0.58) | (0.38) | (1.30) |
| GDP.CAP Growth (*lag*) | 0.016 | 0.020 | 0.013 | 0.016 |
| | (1.66) | (1.80)* | (1.32) | (1.50) |
| GDP (*lag*) | 0.0001 | 0.0001 | 0.0001 | 0.0001 |
| | (2.53)** | (2.40)** | (3.16)*** | (2.96)*** |
| INFLATION (*lag*) | −0.0003 | −0.0002 | −0.0003 | −0.0002 |
| | (1.05) | (0.55) | (1.20) | (0.44) |
| TRADE (*lag*) | 0.005 | 0.004 | 0.005 | 0.004 |
| | (3.22)*** | (3.60)*** | (3.03)*** | (3.58)*** |
| RESOURCE ENDOWMENT (*lag*) | −0.001 | −0.001 | 0.001 | 0.001 |
| | (0.18) | (0.01) | (0.37) | (0.57) |
| DEFAULT | −0.707 | −0.737 | −0.663 | −0.750 |
| | (2.63)** | (2.84)*** | (2.69)*** | (2.93)*** |
| OECD | 1.008 | 0.986 | 1.058 | 1.035 |
| | (6.85)*** | (6.70)*** | (6.83)*** | (6.94)*** |
| INTERCEPT | 1.617 | 1.631 | 0.603 | 0.742 |
| | (5.91)*** | (6.99)*** | (1.19) | (1.72)* |
| Decade fixed effects | Yes | Yes | Yes | Yes |
| Sample | Full | Full | Full | Full |
| Observations | 963 | 898 | 977 | 912 |
| $R^2$ | 0.529 | 0.521 | 0.555 | 0.545 |

**Table 7: Estimation Results - political pressure and credit ratings**

Notes: FRAC is the probability that two deputies in the lower house picked at random will be from different parties. MAJ is the fraction of seats held by the government. The decade fixed effects are not shown. t-statistics in parentheses (with standard errors clustered by country). Statistical Significance at *90% confidence level; **95% confidence level; ***99% confidence level.

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