Leader Survival, Regime Type and Bilateral Investment Treaties*

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June 17, 2015

Abstract

The accumulation of capital is essential for economic development, but investors face risk when committing their capital to productive use. Bilateral Investment Treaties (BITs) help developing country leaders commit to limit their expropriation. Democratic states with functional domestic courts, strong reputations and transparency in policymaking all make commitments to protect foreign investment credible. Autocratic countries, where the domestic rule of law, or the independence of the courts cannot be relied upon suffer from a weak reputation for protection of foreign investment. It is these countries and leaders that have the most to gain from signing BITs. Survival and instrumental variable models show that BITs enhance leader survival by more in autocracies relative to democracies, and that institutionalized autocratic leaders have less to gain in terms of survival from BITs signing than do personalistic dictators. Using creditworthiness scores and event-studies, we also show that BIT signing improves leader survival via improving the domestic investment climate.

*Thanks to Lex Peel for research assistance and Leonardo Baccini for sharing his data.

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The accumulation of capital is essential for economic development, but investors face risk when committing their capital to productive use. Fixed capital is susceptible to expropriation, and income and profit run the chance of excessive or punitive taxation by rapacious governments, eager to bolster private bank accounts, fiscal revenue or campaign funds. Investors (especially international investors) are less likely to commit their capital to a host country in the absence of reliable and predictable protections against expropriation. Bilateral Investment Treaties (BITs) are mechanisms host country leaders use to commit (to some degree) to limit their expropriation. BITs therefore, may be effective in attracting foreign direct investment (FDI) into states that otherwise are unable to commit to restrain the "grabbing hand."

In many countries, domestic courts, strong reputations and transparency in policymaking all make commitments to protect foreign investment credible. These are more often than not the states we describe as "democratic." Other countries, where the domestic rule of law, or the independence of the courts cannot be relied upon (more often "autocracies") suffer from a weak reputation for the protection of foreign investment. It is these countries and leaders that have the most to gain from signing BITs.

We argue here that the effect of signing BITs on a leader's survival in office is larger for autocratic leaders when compared to democratic leaders. BITs enhance leader survival in most cases; *BITs enhance leader survival by more in autocracies relative to democracies.*

This article addresses two questions. First, what explains the pattern of accession to BITs? The number, variety, and depth of BITs varies across countries and across time. This question has engaged scholars since the emergence of BITs as a central force in the international legal environment governing transborder capital flows, and a variety of explanations have emerged.[1] We will focus in this paper on an explanation that is grounded in domestic politics.

The second, perhaps more interesting question is the one that drives international political economy more broadly. Why do countries sign international agreements? Conventional approaches focus on the international level – international treaties are focal points for coordinating the behavior of states in environments where there are gains from cooperation. Instead, following much recent work, we focus here on the domestic level – international agreements are signed by leaders to

[1] See for example, Elkins, Guzman, and Simmons (2006), Tobin and Busch (2010).

help solve domestic political problems. Agreements at the international level are fundamentally determined by the political problems faced by leaders at home.

All leaders desire to survive in office, and/or to secure their or their party's, or their chosen successors', reelection/reappointment prospects. It follows naturally that leaders with domestic political constraints that limit those survival or reelection prospects will seek to overcome those constraints. In democratic polities, domestic law and institutions govern much of the relationship between the government and economic decision makers. Domestic law, traditions, reputations, as well as the concern for accountability drive democratic leaders to be circumspect and limited in the degree to which they exercise the power of the state to extract revenue or reallocate ownership of fixed assets. As a result democratic leaders have little incentive to further bind their hands by a ceding to BITs; the value added in terms of reputation or credibility is limited, and the gains are few.

Autocratic leaders on the other hand remain to some degree accountable to their core supporters (if not a majority of the population, or even majority of the voters). And the core supporters more often than not are better off when they have access to international capital markets, when foreign investors set up local plants that demand the inputs from the local suppliers, or put local workers to work. Recent research shows that autocratic leaders are eager to attract foreign capital and are more likely to disclose economic information to enhance transparency and credibility in order to achieve it (Hollyer, Rosendorff, and Vreeland 2015). Similarly in order to attract foreign capital and to make their commitments to respect property rights credible, autocratic leaders enter international investment agreements. Where domestic institutions and reputations are weak, BITs provide a relatively cheap method to import credible, property rights-enhancing institutions without the difficulty of building a home-grown property rights regime. Autocratic leaders are therefore more likely to sign BITs and see their survivability in office enhanced by BIT accession.

The rest of the paper is organized as follows. The next section expands on the theoretical framework. The first empirical strategy and results, namely analyzing differences between autocracies and democracies, are presented afterwards. It follows the analysis of differences within autocratic regimes. Next, we discuss and present evidence on the mechanisms behind these results. The last section concludes.

1 Theoretical Motivation

Domestic politics and political institutions matter for the form and functioning of international economic cooperation (Gilligan and Johns 2012). International *trade* agreements are now largely understood as devices that are used by political leaders to solve domestic problems of credibility and commitment (Johns and Rosendorff 2009). Promises to maintain lower tariffs are often not credible in the face of domestic political pressure to protect influential industries. Leaders use trade treaties and their attendant dispute settlement mechanisms to generate information about their performance (and their type) to bolster political support among their domestic audiences. Treaties are designed with both limits on unilateral behavior and flexibility to permit accommodation of domestic political imperatives (Rosendorff 2005, Reinhardt and Kucik 2008).

Leaders therefore carefully design and then choose to participate within an international legal regime, not merely recognizing the effects of these treaties on their domestic politics, but using those effects to enhance their political support and to bolster their reelection or survival prospects. Leaders design and accede to treaties with an eye on domestic political consequences.

Since democratic leaders are generally viewed as more accountable or responsive to the voters at large relative to autocratic leaders, and the gains from international trade so significant, many argue that democratic leaders are more likely to sign free trade agreements, and to be more cooperative when it comes to international trade more generally. Democracies are more likely to sign Preferential Trade Agreements (PTAs) than autocracies, particularly when these agreements involve dispute resolution procedures (Mansfield, Milner, and Rosendorff 2000, 2002, Rosendorff 2006). Democracies are also likely to cooperate more on trade issues due to other mechanisms. Mansfield, Milner, and Rosendorff (2000) argues, for instance, that the separation of powers characteristic of democracies leads to more cooperative behavior than in unitary states.

A recent paper explores the consequences of this "democracies are more cooperative" thesis with respect to leader survival. If democracies sign PTAs more frequently, *ceteris paribus*, do democratic leaders experience more political gains or electoral returns from doing so relative to non-democratic leaders? Hollyer and Rosendorff (2012*b*) build a formal model (in which PTAs reduce the volatility of noisy signals about the economy) and find that PTAs increase the likelihood that a government

will survive in office, and this effect is larger in democracies.[2]

These studies of international trade and regime type lead to the overwhelming conclusion that democratic leaders are incentivized to seek trade agreements to a degree that exceeds that of non-democratic leaders, for they have more to gain from doing so. Democratic leaders find it cheaper and easier to make use of international trade agreements to enhance the credibility of their commitments to keep extractive tariffs and other trade policies in check.

This logic does not extend, somewhat surprisingly, to other issue-dimensions of international commercial interactions. It might be intuitive to expect that when it comes to making a credible commitment not expropriate a foreigner's fixed investment via an international instrument such as a BIT, democracies would be similarly more inclined to accede to these treaties. This would be an understandable logical extension, but would in fact be erroneous.

1.1 The Economic and Political Consequences of BITs

Bilateral investment treaties enhance a leader's commitment to protecting property rights of foreign investors. They guarantee a high standard of treatment, offer legal protection under international law, provide access to international dispute resolution, and limit the policy shifts that governments can undertake. BITs offer *precision of obligations* along a variety of dimensions crucial to lowering the transactions costs of foreign investment: they require a well-defined standard of treatment, the free transfer of funds and repatriation of capital and profits, *transparency* of national laws, equal treatment across investors, compensation for war and other civil disturbances. Most significantly, they offer dispute-settlement provisions that permit both investor and state standing.[3]

There is an emerging consensus that FDI is enhanced by the presence of BITs. Early studies suggested BITs had little effect on FDI (e.g. Vandevelde, Aranda, and Zimmy 1998). Tobin and

[2]See also Mansfield and Milner (2012).

[3]The innovation that has given the BITs their bite is that both investor-state and state-state disputes can be brought before an international tribunal for adjudication. Such bodies include the World Bank Group's International Center for the Settlement of International Disputes (ICSID), or the International Chamber of Commerce (ICC). The United Nations Commission on International Trade Law (UNCITRAL) has a framework document that can govern arbitrations but does not operate an arbitration institution. The basis in international law for the enforcement of arbitral decisions is provided by the 1958 New York Convention on the Recognition and Enforcement of Foreign Arbitral Awards. Aside from BITs, there are other instruments of international law that have some of these investment-protecting features, such as Trade and Investment Framework Agreements, Investment Guarantee Agreements, protections embedded in Preferential Trade Agreements, Friendship, Navigation and Commerce treaties and others (UNCTAD 2000).

Rose-Ackerman (2005) confirmed the overall negative finding, studying US FDI flows to developing countries. Salacuse and Sullivan (2005) find that US BITs do increase FDI inflows (subsequently modified by Haftel (2008)); while Gallgher and Birch (2006) find the opposite result. Büthe and Milner (2009) look at non-OECD countries' inflows of FDI as a percentage of GDP, and find a positive correlation with the number of BITs that are signed. Recently, Jandhyala, Henisz, and Mansfield (2011) have a comprehensive study in which they find that BITs do increase FDI when the BIT is between a lesser developed and more developed pair, rather than between two poor or two rich countries.

The problem with much of this literature is that all countries in the sample are viewed as having the same propensity to sign BITs or that this propensity varies in a random fashion. In fact, some countries are more likely to sign these treaties, and the propensity to sign these treaties is correlated with the dependent variable (FDI flows), and hence the error term in these regressions. Specifically, since those countries otherwise least likely to attract FDI are most likely to sign a BIT (as in the eyes of investors are most in need of the treaty's assurances), the coefficient on BIT signing is biased downward (see also Kerner 2009).

In an attempt to address the endogeneity of the BITs and FDI flows, Kerner (2009) shows that BITs to enhance FDI flows, using a two stage instrumental variable approach. Rosendorff and Shin (2012) model the decision to sign a BIT and, using an alternative set of instruments, also show that BITs do indeed enhance FDI. In a follow-up piece, they show that since it is those polities that are less transparent and less democratic that sign BITs more frequently, they are the ones who experience the largest improvement in FDI flows (Rosendorff and Shin 2014). As a result, autocratic leaders have more to gain from BITs, as the FDI they attract is largely attributable to them.

If BITs are good for FDI for autocracies, and autocratic states sign more BITs than do democratic states, it seems natural to explore whether BITs enhance leader survival in autocracies more than they do in democratic states.

In work most closely related to this, Mazumder (2014) explores the effect of BITs on leader survival and generates different results. Unlike Mazumder, we find no "pernicious" effect of BITs on political survival. Mazumder suggests that BITs *harm* the reelection prospects of leaders in

democracies, while "autocratic leaders benefit" (p. 3), and argues that there is a mechanism at work that involves the interaction of domestic business elites, small and medium enterprises and multinational corporations. We find that there is no discernible effect on leader survival in democracies, but that there is a significant positive effect in autocracies. We make use of a larger dataset, with updated leader survival data. We also address some censoring issues and we adopt a strategy akin to using country specific random effects to account for the observation that survival times of leaders from the same country are likely to be correlated.

1.2 Hypotheses

Following North and Weingast (1989), the central dilemma for any leader is to credibly commit to limiting the coercive power of the state. The incentive to extract resources from investors, or to renege on commitments to repay loans may be large, especially when there are no penalties for doing so. The solution devised by the Crown in 17th century England was to change the fundamental institutions governing the process of law-making in England – the emergence of new institutions that more strongly protected property rights.[4]

Many developing countries in the late 20th or early 21st century suffer similar problems to 17th century England. Colonial history, weak legal systems (and the structure of the judiciary), continuing ethnic conflict have all been identified with weak states and weak institutional development. Weak institutions, such as low party institutionalization or absence of multiple candidates in single-party legislative elections, fail to provide the venues to check the power of the leader (Gehlbach and Keefer 2011, 2012) or other insider actors (Jensen, Malesky, and Weymouth 2014), hence discouraging investment.[5] Moreover, institutional structures that fail to adequately reign in the extractive power of the state have a tendency to continue to survive, making internal institutional change of the type North and Weingast (1989) describe, difficult or unlikely (Acemoglu, Johnson, and Robinson 2001).

Leaders however, often have more autonomy or discretion when it comes to international agree-

[4]Parliament had to approve any change in the terms of loans and taxes, could prevent the firing of judges who might not support the Crown and otherwise limit the ability of the Crown to bypass parliament (North and Weingast 1989). These sorts of "checks and balances" are shown by Stasavage (2002) to enhance commitment and private investment in developing countries, but he finds the effect of these institutions was conditional on the party in power.

[5]In contrast, strong democratic institutions are associated with higher levels of investment (Jensen 2003).

ments. International agreements often incorporate, build or establish a set of rules, norms and behaviors that are considered acceptable, and those that are considered non-compliant. These agreements regulate international interactions – they generate focal points, coordinate expectations, eliminate or reduce incomplete information, offer commitment devices etc. By signing such an international agreement, the leader effectively imports the institutions that can enhance development; these institutions are adopted, having jumped the internal barriers that prevented their emergence domestically.

Bilateral investment treaties (BITs) are legal instruments signed between states that take on the force of international law, and govern the rights and and obligations of states that host foreign capital within their jurisdictions. In ratifying a BIT, a state incorporates the terms of the treaty as part of its legal system (Salacuse and Sullivan 2005). To varying degrees, BITs provide a compelling mechanism to credibly import a set of institutions that commit a state not to expropriate, over-regulate, over-tax, or otherwise excessively interfere in the market, and endangers the signatories with "swift, substantial compensation" in the instance of violation.[6] BITs enhance the credibility of the government to limit discretionary and arbitrary changes in policy, and thereby encourage higher levels of investment.

We take as our premise that leaders choose policy (and policy instruments) in order to enhance their survival in office (Bueno De Mesquita et al. 2004). Leaders also (often) have private incentives to expropriate assets and extract revenue from productive activity; this of course reduces the willingness of domestic and foreign capital owners to invest in the first place, and harms economic growth and development. Survival in office is enhanced by economic development and wealth creation that accrues to the leader's core supporters. In democracies, leader survival is associated with *aggregate* economic growth and development affecting the wellbeing of large mass of society, and hence institutions emerge within democratic polities that protect private investment and reduce the risk of expropriation.

The more accountable is the policymaker to a broad electorate, and the more the economy relies on foreign capital for the employment of domestic labor (as is the case in most developing countries), the more important is a reputation for protection rather than expropriation of foreign

[6]BITs are not entirely homogenous and vary over a number of dimensions (Allee and Peinhardt 2014).

capital. Workers in a capital poor democracy apply electoral pressure to their leaders to encourage foreign capital to invest domestically, thereby increasing their marginal product and hence their wage. The more accountable is the leader to the voters, most of whom are workers in developing states, the greater that political pressure is likely to be to protect foreign capital. Hence democracy reduces the likelihood of unfair "takings" – reassuring capital owners that domestic labor will punish leaders at election time if they expropriate excessively.[7]

Democratic states are also associated with institutions conducive to a hospitable investment climate, such as a functioning judiciary protecting the rule of law, and a well-behaved, less corrupt and functioning bureaucracy.

Democratic leaders therefore, requiring neither improved reputations nor improved institutional legitimacy find the benefits of importing added property rights institutions via a BIT will be small in magnitude.

Autocratic leaders find an alternative solution to a similar dilemma. The desire for economic performance (that can be used to reward political supporters) runs up against the private benefits of expropriatory takings. Autocrats however, have far fewer domestic institutional constraints that limit the reach of the grabbing hand. The leaders with the most to gain in terms of credibility, and hence a substantially improved investment climate will be those leaders in institution-poor environments, and most in need of importing the institutions associated with a BIT. Autocratic leaders, therefore are more likely to see their survival enhanced by the signing of a BIT.

We hypothesize the following:

Hypothesis 1 (Regime Type: Autocracies vs. Democracies)**.** *The effect on leader survival of BIT signing will be greater among autocratic leaders that among democratic leaders.*

We can also make use of the observed variation across types of autocratic regimes. Different autocratic regimes face varying constraints and incentives, thus influencing foreign economic policies (Steinberg and Malhtora 2014). Indeed, the institutional environment and economic uncertainty vary with the identity of the leader and its inner circle: monarchies rely on family and kin networks; military leaders rely on military juntas; and civilian dictators rely on elites within the regime party

[7]This is especially true of political elites more accountable to workers or to the owners of capital that is complementary to FDI. See Pinto and Pinto (2008). There is one potential caveat: new democracies sometimes have trouble making credible commitments. See Keefer and Vlaicu (2008).

(Cheibub, Gandhi, and Vreeland 2010).

We have argued above that democracies, by virtue of the larger and more dispersed support coalition, are more likely to see property rights protected – for aggregate economic wellbeing is enhanced by capital formation, and aggregate economic performance rewards democratic incumbents. There is also variation in the size of the underlying support coalition across autocratic types. We argue therefore that those autocrats with larger bases of support will see smaller gains from BIT signings; those autocrats that rely on narrow inner circles for survival are the least credible and experience the greatest benefit from BITs in terms of survival.

Civilian dictators, often relying on populist (if not democratic) support, are characterized by a larger core of supporters, and we predict that among autocratic types, the survival benefits of BITs is smallest for these civilian, institutionalized dictators. In contrast, monarchies are characterized by small inner circles and core support bases; there are few constraints to expropriation. Survival however relies on the continued and repeated care and feeding of the core support base, and expropriation cuts off the resources necessary to reward those supporters (investment dries up). These autocratic variants are in the direst need of credible commitments to protect property rights; monarchies, we predict, have the most to gain in terms of survival by signing BITs.

Military juntas are an autocratic form that lie somewhere between monarchies and civilian dictators on the scale of underlying support coalition size. We predict, therefore, that the effect on survival of BIT signing by military regimes lies somewhere between that of the personalistic monarchies and the institutionalized civilian dictators.

Hypothesis 2 (Regime Type: Across Autocratic Types)**.** *The effect on leader survival of BIT signing will be greater among more personalistic autocratic leaders than among more institutionalized autocratic leaders.*

The next section explores the empirical effect regime type has on the link between BIT signings and leader survival. We offer three approaches - a duration model both with and without propensity score matching, and an instrumental variables approach. Section 3 offers a hazard model specification on the effect of different types of autocratic regimes on the link between signing and survival, again with and without matching.

Our argument operates via a mechanism that links BIT signing to aggregate economic perfor-

mance, or at least an enhanced investment climate. Section 4 digs more deeply into the postulated mechanisms linking BITs to survival – via a direct effect of facilitating capital accumulation, and a more indirect effect of enhancing the economic environment. The enhanced economic climate mechanism is explored empirically using an error correction model: the effect of BITs on credit-worthiness (measured three different ways) is examined. Finally an event study model is used to show that BIT signings increase the returns to holding sovereign bonds, indicating an improvement in the investment climate.

2 BITs and Leader Survival: Autocracies and Democracies

In this section, we test the hypothesis that BIT signing influences leader survival, and that this effect is conditioned by regime type. A cursory examination of the data offers some initial confidence in the claim. Autocratic leaders in developing countries sign many BITs: ibn Al-Khalifa (Bahrain) signed 28, Qatar's Al Thani signed 49, and Belarus' Lukashenko signed 50. Democratic leaders in similar parts of the world at similar stages of development, such as Israel's Rabin (10) and Netanyahu (6), or Cypres' Clerides (11) or Bulgaria's Kostov (18) signed many fewer.

To offer more compelling evidence, we rely on survival (event history) analysis complemented by propensity score matching techniques. Evidence based on the survival of developing countries' leaders in office from 1960 to 2013 strongly supports our arguments.

Then we explore an instrumental variables approach to deal with the endogeneity of BIT signing, and once again show that controlling for selection, autocratic leaders experience a greater effect on survival with BITs than do democratic leaders.

2.1 Data

Leader survival data is drawn from the Archigos database (Goemans, Gleditsch, and Chioza 2009). We use the readily available Version 2.9, which contains information until 2004. However, limiting the data to the period covered by Archigos 2.9 would exclude 514 BITs signed since 2004.[8] To address this issue we update the Archigos data through December 31, 2013. Thus, the unit of analysis we use is the leader-year over the 1960-2013 period. Our theory presumes a developing

[8]BITs signed as of June 1, 2013, according to UNCTAD.

country eager to have access to foreign capital; hence we restrict our sample to non-OECD countries, but include BITs signed with any partner.[9] We observe 145 countries with 1194 leaders, and once we incorporate our set of covariates, our full sample is compromised of 133 countries and 819 leaders. Since the data are both left and right censored we adjust for censoring in our estimates. Thus, leaders who were in office prior to 1960 are only considered to be at risk from January 1, 1960 onwards.

Our main regressor of interest is the log of the number of BITs signed by a given leader. We construct this measure by collecting BIT signing data from the United Nations Conference on Trade and Development (UNCTAD) for all countries between January 1, 1960 and June 1, 2013.[10]

We recode these data so the observation is the leader-year.[11] We then construct a count measure (*BITs signed*) of the number of BITs signed between the time a given leader takes office and year t. In our analyses below, we apply a logarithmic transformation: $log(BITnumber + 1)$. The use of the logarithm reflects the view that the effect of BITs on strengthening the credibility of the property-protection regime is subject to diminishing marginal returns.[12]

Our measure of democracy is taken from the Polity IV index (2013 version) (Marshall, Gurr, and Jaggers 2013). We use the cumulative polity score (*polity2*), which consists of a subjective index that captures the regime authority spectrum on a 21-point scale ranging from -10 (hereditary monarchy) to +10 (consolidated democracy). To test the conditional nature of the effect of BIT signing postulated above, we interact this value with the log number of BITs signed under a given leader.

We incorporate a battery of economic variables as controls. We include values of the log of per capita GDP in constant 2005 US dollars, the percentage growth rate in real GDP, the log of total population size, the log of Aid inflows, all of which are drawn from the World Development Indicators (WDI) hosted by the World Bank. Given the relevance of natural resources, we proxy these resources with data compiled by Ross (2013) and control for the natural logarithm of the

[9] Restricting the partners to be OECD members only does not change the results (see Appendix.)

[10] Source: `http://unctad.org/en/Pages/DIAE/International%20Investment%20Agreements%20(IIA)/Country-specific-Lists-of-BITs.aspx`

[11] In some instances, BIT accession is contemporaneous with a change in leaders. Take for instance the change of power in Croatia from Zlatko Tomcic to Stipe Mesic on February 18th, 2000. That day, two BITs were officially signed; one with Thailand and one with Zimbabwe. In theses cases, we adjudicate signings to the new incumbent –in this particular case, to Mesic.

[12] Using the absolute number instead of taking the log yields almost identical results.

oil and gas production in constant 2009 US dollars. Finally, it is important to take into account how other international economic treaties influence leader survival (Hollyer and Rosendorff 2012*b*). We make use of data collected by Dür, Baccini, and Elsig (2014). To avoid overlap with our BIT measure, we control for the logarithm of the number of PTAs without investment clauses that go into operation between the time a given leaders takes office and year t.[13] Finally, we also control for the total number of BITs signed by the country, up to the previous leader.

A list of summary statistics is provided in Table 1.

[Table 1 about here.]

We also present summary statistics of the number of BITs signed per-leader (Table 2). As is standard in the literature, we define a regime as democratic if it has a *polity2* score greater or equal than 5; as autocratic if it has a score lower or equal than -5; and as anocratic otherwise. On average, autocratic leaders sign more BITs during their tenure in office – not surprising given their average longer tenure.

[Table 2 about here.]

Below, we put our hypothesis to the test by using three alternative approaches. First, we estimate a Cox frailty proportional hazards model. However, results are open to criticism due to selection bias concerns. We address this concern in two ways. One, we process the full data making use of propensity score matching where we match signer- with non-signer-leaders. Two, we estimate a recursive bivariate probit model with an instrumental variable. All specifications provide strong support for our claims.

2.2 Cox Frailty Model Estimates

To analyze our hypotheses, we first estimate a Cox proportional hazards model. The hazard rate, $h(t)$ represents the conditional probability of having an event at time t, conditional on having survived up to that time. In particular, the event we model is the removal of a given leader from

[13] Tobin and Busch (2010) show that a BIT between two states leads to a PTA between the same states; but that if the developing country has many BITs, especially with other wealthy states, any pair of states is less likely to sign a PTA.

office. The hazard rate of leader l from country c is a function of a baseline hazard function $h_0(t)$ and observed covariates, $\mathbf{X}_{l,c} : h_{l,c}(t) = h_0(t)e^{\mathbf{X}_{l,c}\beta+\epsilon_{l,c}}$. Here, the baseline hazard function is estimated non-parametrically using the observed time of regime failure.[14] The Cox model allows flexibility in this estimation by not constraining $h_0(t)$ to take any particular functional form. Observed covariates operate multiplicatively on $h_0(t)$, shifting the expected risk of leader removal proportionally up or down depending on the value of β. For instance, positive coefficient values imply that an increase in the given covariate is associated with an upwards shift in the hazard function, $h(t)$ – i.e., an increase in the risk of being removed from office.

In our estimates, we adjust for the shared frailty faced by regimes from a given country. This assumes that survival times of regimes from the same country are correlated. This modeling choice holds that some regimes are more prone to failure than others. This accounts for variations in electoral institutions, party systems, culture or other country-specific factors that are likely to be correlated with leader survival. We therefore estimate the following model:

$$h_{l,c}(t) = h_0(t)e^{\mathbf{X}_{l,c}\beta+\theta_c+\epsilon_{l,c}} \tag{1}$$

where θ_c is a country-specific frailty parameter drawn from a log-Gamma distribution with mean zero. This is equivalent to estimating model with country-specific random effects in a more standard time-series-cross-section framework (Box-Steffensmeier and Jones 2004). Evidence from likelihood-ratio tests against models without shared frailties strongly indicates that shared frailties should be included in the specifications.

Results are reported as Models 1 and 2 in Table 3.

[Table 3 about here.]

While the basic Cox frailty model makes no assumption about the shape of the baseline hazard function $h_0(t)$ it does assume that hazard rates are proportional across units, i.e. that changes in covariate values shift the hazard function up or down, but do not affect its shape.

We test these assumptions by using Grambsch-Therneau and Harrell's rho tests. Both the global Grambsch-Therneau global test and some of the covariate specific Harrell's rho test leads

[14] This can be read as an estimate of the rate of event occurrence when all the covariates are zero. That is, the baseline hazard reflects how the rate of event occurrence changes with time only.

us to reject the null hypothesis of no relationship between the residuals and time. In particular, the evidence suggests that the effect of both the log number of BITs signed and Polity change over time. Because of this, we condition their effect on time (Box-Steffensmeier and Zorn 2001). We do so by interacting them with the number of years in office – i.e., survival time. Results are displayed as Models 3 and 4 in Table 3.

The evidence follows our expectations. Signing BITs is associated with a lower risk of being removed from office. Examination of the time-varying regressors in Models 3 and 4 suggests that this effect declines over a leader's tenure. The effect of each additional BIT signed is smaller the longer a leader is in office.

The main piece of evidence is the interaction effect between BIT signing and democracy. Our argument posits that the relationship between BITs and leader survival is stronger in autocracies than in democracies. That is, we expect the interaction effect to be positive.[15] Evidence from all models support our claims. All interactions are positive and statistically significant. Nonetheless, scholars should be careful when interpreting interactive models, particularly in nonlinear models. To aid interpretation, we estimated hazard rates at different values of our variables of interest, and show them graphically in Figure 1

Figure 1 plots the hazard rate based on estimates from Model 2, Table 3. We calculate the estimated hazard rates for a pure autocracy (i.e., minimum *Polity2* score of -10) and for a pure democracy (i.e., maximum *Polity2* score of 10), at different tenures, while keeping all other covariates at their sample means. In both cases, we illustrate the estimated hazard rate when the number of BITs signed is zero, one, and the maximum value in the sample. The evidence confirms our interpretation: autocratic leaders benefit greatly from signing BITs whereas this is not the case for leaders in democratic regimes.

[Figure 1 about here.]

To further facilitate interpretation, we estimate the substantive effect of signing a BIT while in office and how it varies by regime type, examining the percentage change in the hazard of leader failure.[16] We rely on simulations of 10,000 draws of the beta and variance-covariance matrices, and

[15] The dependent variable is leader failure. So a positive coefficient on the interaction term means that failure falls as polity falls for a given number of BITs, and the reduction in failure is enhanced as the number of BITs rises.

[16] In particular, we estimate the effect of signing the first BIT in the leader's tenure –i.e., from 0 to 1.

calculate the percentage change in the hazard as follows:

$$\%\Delta h(t) = \frac{exp(\beta X_2) - exp(\beta X_1)}{exp(\beta X_1)} \times 100 \quad (2)$$

where X_1 is the value of the variable before the change (0) and X_2 is the value after the change (1).[17]

Figure 2 illustrates the estimated percentage change in the hazard (where the solid black lines represent the 95% confidence intervals around the estimated percent change (dotted line) in the hazard rate). It demonstrates that the results are substantively meaningful. As expected, the change in hazard rates is larger and highly statistically significant for the most autocratic states, estimated at -87% [95 C.I.: -94 – -77%]. In contrast, this benefit diminishes and becomes statistically indistinguishable from zero as democracy increases.[18]

[Figure 2 about here.]

2.3 Matching Estimates

Endogenous selection into BIT signings is likely to create an imbalance in covariates between "treated" leaders (signatories) and "non-treated" leaders (non-signatories). Regression methods can address this imbalance only under restrictive assumptions regarding the functional form of the selection process. Matching relaxes these functional form assumptions. However, if selection takes place on unobservables, our matching estimates will be biased and endogeneity can only be addressed through the use of instrumental variables or Heckman-type models (von Stein 2005).

While we present evidence from an instrumental variable estimation below, instruments can always be criticized on the grounds of potential violations of the exclusion restriction. Because of that, here we also present propensity score matching estimates (Ho et al. 2007).

The logic behind propensity score matching is straightforward. It pairs units that enter into the so called 'treatment condition' – in our case, BIT signing – with similar units that remain in the so-called 'control' condition. This process is done in two steps. First, the probability that a given unit enters into treatment is estimated. Then, treated and control units are matched according to these

[17] Since we use the natural logarithm of the number of BITs sign, this number is actually 2.7182818 in our estimation.
[18] Table A1 in the Appendix displays the values for each point of *Polity*2 score.

estimated probabilities. While there has been a burgeoning literature on matching algorithms, research on panel matching techniques is still in its early stages. The key complication is that we need to match on leaders (a single country for multiple years - time series), not leader-years (individual observations). To address this, we follow the approaches taken by Simmons and Hopkins (2005) and Hollyer and Rosendorff (2012*b*). For any given leader l who did not sign a BIT, we take the mean of our set of covariates for every period under observation. For all leaders who signed a BIT in a given year t, we take the mean of the set of covariates for all years prior to t. Hence, the unit of analysis in this new data is the leader – and not leader-year. We then implement our matching strategy, to later 'decompress' our matched data, into the leader-year format once again.

To create our matched data set, we employ a nearest-neighbor matching algorithm with a caliper of .5 standard deviations, and without replacement. The final matched data contains 486 BIT signatories that are paired with 486 non-signatories.

Results for this new data are reported in Table 4. The information in Models 1 through 4 is analog to the corresponding Models 1–4 in Table 3.

[Table 4 about here.]

The result of these matched estimations in all models follows closely the evidence from the unmatched estimates. As expected, BIT signing is associated with a lower risk of removal from office, and this effect decreases over time in office. Furthermore, the interaction between BITs and democracy is always positive. As before, instead of relying simply on the estimated coefficients, we estimate the hazard rates for the set of covariates of interest. Estimates from Model 2 are presented graphically in Figure 3.

[Figure 3 about here.]

Again we estimate the hazard for democratic and autocratic leaders, for different cases of BIT signing. Again, the evidence strongly supports our theoretical prediction. While BIT signing is associated with a lower risk of removal from office, this benefit is only accrued by autocratic leaders.

2.4 Instrumental Variable Probit Model

To deal with the endogenous selection into BITs, we present results from an instrumental variable probit model. The instrumental variable probit model estimates two equations simultaneously via maximum likelihood. First, a selection equation estimates a leader's likelihood of signing a BIT for any given leader-year. Then, the outcome equation estimates the effect of BIT singing on the probability that the leader is removed from office.[19]

For the model to be identified, we need a variable that influences the likelihood of signing BITs but in no other way affects leader survival. Based on recent work by Rosendorff and Shin (2012), we use the cumulative number of non-economic UNESCO conventions the leader is party to.[20]

The unit of analysis remains leader-year. The outcome variable is an indicator of whether the leader was removed from office that year, or not. To account for time-dependence, we include cubic polynomial of the years the leader has been in office. The key variable of interest is *BITs signed* which is (the log of) the number of BITs signed between the time a given leader takes office and year t. In the selection equation, the main variable is the logarithm of the cumulative number of UNESCO conventions a leader has signed over her tenure, taken from Rosendorff and Shin (2012). The economic controls are the same from the previous section. Finally, we include both region and year fixed effects, and cluster the standard errors at the leader level.

Results are presented in Table 5. The first two columns display the estimation for Autocracies, while the last two do so for Democracies. Evidence from the selection equation is consistent with the literature finding that UNESCO conventions predict BIT singings. The outcome equation provides support for our arguments. BIT singings have a strong and negative effect on leader failure – i.e., increase leader survival. On the other hand, BIT signing has no discernible effect on democratic leaders.

[Table 5 about here.]

[19] Similar to other types of selection models, the estimate ρ represents the correlation between the error terms of the two equations, effectively accounting for selection, and facilitating the unbiased estimations of the effect of BITs on leader survival.

[20] The UNESCO reports the list of conventions each state is party to and their date of signing and ratification. These include, for instance, The Protocol to the Convention for the Protection of Cultural Property in the Event of Armed Conflict, and Convention on Wetlands of International Importance Especially as Waterfowl Habitat. See Rosendorff and Shin (2012).

3 Authoritarian Regime Types

In this section, we test the hypothesis that the effect of BIT signing on leader survival is moderated by the *type* of the autocratic regime. Classification of autocratic regimes as monarchic, military, or civilian is taken from the Democracy and Dictatorship (DD) dataset compiled by Cheibub, Gandhi, and Vreeland (2010). As before, we rely on survival analysis complemented by propensity score matching techniques. The results strongly support our arguments.

3.1 Cox Frailty Model Estimates

To analyze our hypotheses about different autocratic regime types, we re-estimate a Cox proportional hazards model from the previous section, but replace the $Polity2$ variable with the $Monarchy$, $MilitaryRegime$, and $CivilianDictatorship$ indicators. Moreover, we include the interaction of each one of these indicators with our BITs variable. Democratic regimes represent the baseline category. Results are reported in Table 6.

[Table 6 about here.]

The evidence follows our expectations. Signing BITs has no statistically significant effects on leader survival for democratic leaders. In contrast, as the interaction terms show, BITs are associated with a lower risk of being removed from office for autocratic leaders, and the estimates are as expected, that is, the more paternalistic regimes – the monarchies – experience the largest effects.

3.2 Matching Estimates

We also present propensity score matching estimates. Here, we follow a similar procedure as delineated before, but instead of matching on the mean of democracy variable, we matched on the median of our set of authoritarian regime type dummies.[21] Results for these estimations are reported in the Supplemental Appendix (Table A2).

The estimation using the matched data follows closely the evidence from the full data. As expected, the interaction between BITs and various autocratic regime types is always negative. As

[21] Results do not change if we matched on *polity*2 as in the previous section.

before, the magnitude of the interactions follow our expectations, namely the association is larger for monarchic rulers.

4 Mechanisms

In the previous sections we showed a strong and robust association between signing BITs and autocratic leader survival. However, the mechanisms underlying how BITs are prolonging autocrat's tenure are less clear. We argue that two main mechanisms help explain our results. First, a direct effect via capital accumulation enhances economic performance and development. Second, an indirect effect, via enhancing the overall investment climate and economic environment. Below, we first briefly review the extant literature of the direct effect which we think supports our approach. Next, we bring novel evidence of potential indirect mechanisms at play by examining the case of sovereign creditworthiness and overall economic risk.

4.1 Direct Channel: Capital Accumulation

Leaders in host countries sign BITs to attract foreign capital. As noted before this benefit is mainly accrued by autocratic leaders, who are thus able to stay longer in power. The intuition behind such outcome is perfectly illustrated with the behavior of a "stationary bandit" (Olson 1993). These type of autocrat leaders are better off respecting the property rights today (i.e., not expropriating) but securing a long-stream of revenue and national income later.

In an autocratic regime, the proceeds of increased investment and enhanced economic environment tend to disproportionately benefit those affiliated with the regime (Bueno De Mesquita et al. 2004). Moreover, FDI inflows in particular are prone to asymmetrically benefit regime supporters. For instance, leaders can implement requirements that international investors establish joint ventures, typically with established domestic elites or requirements for technology transfers to domestic companies affiliated with the regime. Similarly, uncertainties in the political or legal environment may lead foreign investors to choose to employ or partner with domestic officials or their families even absent overt government pressure to do so. A prominent anecdotal example of this are the recent SEC investigations of JP Morgan Chase's "Sons and Daughters" program –which involved the selective hiring of the children of prominent Chinese officials– for violations of

the Foreign Corrupt Practices Act, serve to underscore the way in which foreign investment can selectively benefit ruling officials under autocratic rule (Hollyer, Rosendorff, and Vreeland 2015).

Overall, to the extent that foreign investment improves the economy, it also enhances the stability of the regime in power (Miller 2012).

4.2 Indirect Channel: An Enhanced Economic Environment

BITs are designed to attract foreign capital, in particular foreign direct investment, by enhancing the property rights environment. If that is the case, however, we should also expect positive spillovers in the economic environment. In this section, we analyze the extent to which participation in BITs improves sovereign creditworthiness by examining measures of credit ratings and economic risk.

As such, we move from thinking about foreign direct investment to think about *portfolio investment*. We believe this a natural step since both FDI and portfolio investment imply the flow of foreign capital, and sometimes it can be hard to confidently separate the two (Dixit 2011).

In particular, we want to examine sovereign creditworthiness. This is important as it has both clear economic and political consequences. First, access to credit can have significant economic impacts as it offers an additional policy tool, for instance when reacting to real business cycles. Second, creditworthiness has been recently linked with leader survival. Arias (2015) finds that cheaper credit increases the extent of patronage politics and consequently increases leader survival. DiGiuseppe and Shea (2015*b*) show that credit downgrades affect nondemocratic leaders' tenure more than democratic leaders' tenure. In a complement piece, they find that better credit conditions improve survival as well, but this benefit is accrued only by autocratic regimes (DiGiuseppe and Shea 2015*a*).

While the link between BITs and creditworthiness has been ignored in the literature, we are not the first ones to suggest that sovereign creditworthiness is influenced by international agreements. Dreher and Voigt (2011) argue that membership into international organizations (IOs) –i.e., multilateral international agreements– is linked to a boost in credibility, proxied by country risk ratings. The increased in credibility is a result of countries delegating powers to IOs. Tomashevskiy and Kono (2015) focus on PTAs, showing that participation in PTAs also improves a country's credit

rating. They argue that the mechanism is twofold. First, since PTAs can reduce trade volatility, they can better secure export revenues needed to service sovereign debt. Second, they argue that there exists an ideological channel irrespective of real economic effects, where credit rating agencies subscribe to liberal economic policies, and hence positively react to them.

We argue that BITs should have similar consequences. First, they are able to attract foreign direct investment (direct channel). Second, they represent a commitment to market-friendly policies towards inward foreign direct investment, which should be positively perceived by CRAs (Tomashevskiy and Kono 2015). Third, some BITs create opportunities for bondholders to demand the same rights as foreign direct investors. This is a result of clauses that rely on open-ended definitions of investment that do not exclude sovereign debt. For instance, the BIT between Argentina and Italy signed in May, 1990 influenced bondholders' legal resources after Argentine's 2001 default. In the case *Abaclat and Others v. Argentine Republic* (ICSID Case No. ARB/07/5) Italian bondholders who refused the debt-restructuring deal successfully argued that the Argentina-Italy BIT gave them the right to pursue compensation through investor-state arbitration at the ICSID.[22]

However, following our core argument, we expect the positive link between BIT and creditworthiness to be present only in autocratic regimes. Hence, we posit the following:

Hypothesis 3 (BITs and Creditworthiness)**.** *The effect on sovereign creditworthiness of BIT signing will be greater among autocratic leaders that among democratic leaders.*

4.3 TSCS Estimation: Error Correction Model

To asses sovereign creditworthiness, we mainly rely on Standard & Poor's (S&P) sovereign ratings. S&P is one of the three major credit rating agencies (CRAs) along with Moody's and Fitch. We rely on S&P Ratings since it offers the largest temporal and cross-sectional coverage, which is crucial for the purposes of our analysis as we aim to compare autocratic systems with democratic systems. These ratings asses a country's creditworthiness, namely the ability and willingness to service its debt in full and on time. Published ratings take the form of ordinal letter grades, going from D (default category) and C (highest default risk) to AAA (lowest default risk). At the same time, these rating is divided in investment grades (BBB or higher) and non-investment grades (BB

[22] See `https://icsid.worldbank.org/apps/ICSIDWEB/cases/Pages/casedetail.aspx?CaseNo=ARB/07/5`

or below). As is standard in the literature (e.g., Afonso 2003, Archer, Biglaiser, and DeRouen Jr. 2008), we convert these into a 17-point (0-16) scale where 0 corresponds to the lowest rating and 16 corresponds to the highest one.

While S&P ratings is a fairly standard proxy for creditworthiness, they nonetheless have drawbacks. Primarily, while its coverage is the largest among CRAs, it nonetheless falls short for standards in the discipline, in particular when analyzing developing countries. For instance, ratings for developing markets generally start in the mid-1990s. At the same time, other systematic biases might affect the sample as states that are deemed to risky to invest in the first place or that are small enough such that resources to rate them are not justified (DiGiuseppe, Barry, and Frank 2012).[23] As such, we also rely on credit ratings elaborated by *Institutional Investor (II)* magazine. II conducts semiannual (March and September) credit surveys retrieving the opinion of senior economists and sovereign risk analysis at international banks and money management and securities firms to rank a country creditworthiness (i.e., likelihood of default) on a scale of 0 to 100, where higher values represent more creditworthy states.[24] We rely on the yearly average, which spans from 1980 to 2009 and covers up to 111 developing countries in our sample.

As a final robustness check, we analyze a behavioral outcome relying on Contract Intensive Money (CIM) data. CIM is defined as the ratio of noncurrency money to the total money supply, namely $\frac{M2-C}{M2}$, where $M2$ captures the (broad) money supply and C represents the currency outside banks. While not a measure of creditworthiness per se, as it does not measure default risk, it does captures an objective measure of enforceability of contracts in the domestic economy (i.e., economic risk) which has direct economic consequences (Clague et al. 1996). The intuition behind the CIM measure is simple: if economic agents cannot be confident that their assets in banks will not be confiscated, they will lean towards currency as their preferred form of money. As such, a strong 'contract enforcement' environment has clear economic consequences, and one of them should be a higher proportion of contract-intensive money. An additional advantage of the CIM is its coverage. Data is available since the beginning of our sample (i.e., 1960) for up to 120 developing countries.

Since the aforementioned variables are estimated for a given country and yearly aggregated,

[23] Similar selection issues might affect Bond indices for example.

[24] These experts are autonomously polled and weighted in concordance with the assets of their firm (D'Ambrosio 2005).

the unit of analysis in this section is country-year. As such, the key independent variables are the number of BITs signed by a country in a given year and the *Polity*2 score in that given year. As before, we rely on a standard set of control variables, namely GDP, GDP per capita, trade, number of PTAs signed without investment clauses, as well as the number of cases filing against the country at the ICSID. In addition, we use country fixed effects to control for time-invariant confounding factors and year fixed effects to account for global, year specific shocks. The empirical specification is described next and Table 7 displays the summary statistics.

[Table 7 about here.]

We estimate an error correction model, which allows us to model both short- and long-run effects (De Boef and Keele 2008). Since our key test relies on the interaction between BITs and democratic institutions, we simplify the interpretation of the results by estimating two separate models, one for autocratic regimes and one for democratic regimes. As such, we estimate the following

$$\begin{aligned}\Delta Creditworthiness_{i,t} = \alpha_a Creditworthiness_{i,t-1} + \beta_a \Delta BIT_{i,t} + \gamma_a BIT_{i,t-1} \\ + \Delta \mathbf{X}_{i,t}\phi_a + \mathbf{X}_{i,t-1}\rho_a + \delta_t + \tau_i + \epsilon_{i,t}\end{aligned} \tag{3}$$

for autocratic countries (i.e., $Polity2 \leq -5$), and

$$\begin{aligned}\Delta Creditworthiness_{i,t} = \alpha_d Creditworthiness_{i,t-1} + \beta_d \Delta BIT_{i,t} + \gamma_d BIT_{i,t-1} \\ + \Delta \mathbf{X}_{i,t}\phi_d + \mathbf{X}_{i,t-1}\rho_d + \delta_t + \tau_i + \epsilon_{i,t}\end{aligned} \tag{4}$$

for democratic countries (i.e., $Polity2 \geq 5$).

Here, $Creditworthiness$ is one of the key variables described before (including CIM as proxy for economic risk instead of default risk), where i is a given country and t a given year –and the subscripts a and d denotes the estimation for autocracies and democracies. While β captures the short-run effects, the long-run effects are captured by the parameters estimating the effect of the lagged variables, that is γ. The long run multiplier, which computes the total effects of a change in an independent variable, is obtained by dividing the long run parameter by $-\alpha$, which is anticipated to range between $[-1, 0]$. As noted above, we use country fixed effects (τ_i) to control for time-invariant confounding factors and also control for year fixed effects (δ_t). We also I include

a battery of standard controls in vector $\mathbf{X}_{i,t}$, namely GDP, GDP per capita, Trade, ICSID filings, and PTAs signed without investment clauses. While we are splitting the sample based on *Polity*2 values, we nonetheless include the *Polity*2 score as a control in the analysis. Finally, errors are clustered at the country level.

Results are shown in Table 8. In each case, Columns 1 and 2 correspond to autocratic regimes while Columns 3 and 4 correspond to democratic regimes –without and with controls in each case.

[Table 8 about here.]

S&P Ratings The results analyzing creditworthiness using S&P Ratings are displayed in Panel A. As noted before, the time and geographic coverage heavily limits the sample size. Nonetheless, the evidence strongly corresponds with our theoretical predictions. Countries who sign BITs see an improvement in their S&P credit rating, but this benefit is only accrued by autocratic regimes. The coefficient sizes of interest for autocracies are highly significant and stable across specifications, while the ones for democracies are more unstable and are not significant once we control for relevant covariates. For instance, the long-run effects Nonetheless, the limited sample size warrants caution when interpreting these results. To address this, and check the robustness of this finding, we proceed to analyze a second measure of creditworthiness.

Institutional Investors In Panel B, we analyze our second measure of creditworthiness, namely Institutional Investors Ratings. It is reassuring that the overall pattern is replicated. Columns 1 and 2 show large and highly significant and stable results for autocratic regimes signing BITs. In contrast, Columns 3 and 4 show small, unstable and significant results for BITs when they are signed by democratic regimes.

Contract Intensive Money Our last results are shown in Panel C. As noted above, while CIM is not a measure of creditworthiness per se, it is a behavioral outcome related to economic risk. In addition, it has an extensive time and geographical coverage, thus being a suitable robustness check. Once again, the results supports our expectations. We see strong results for the autocratic sample (once we control for relevant covariates) but no significant effects emerge when analyzing the democratic sample.

Overall, the evidence points in the same direction. We find that BITs are associated with an enhanced economic climate, examining different measures of sovereign creditworthiness and economic risk. However, as we hypothesized, we only find this on the subset of autocratic regimes.

4.4 Event Study Estimation

We employ an even-study methodology to assess the reaction of investors to BIT signing.[25]

This method is based on the fact that, given rationality in the market place –i.e., capital markets are efficient with respect to public information–economic agents will adjust expected values, and the effect of an event will be quickly reflected in asset prices. As such, we examine the abnormal returns (in sovereign debt bond indices) around various event windows surrounding BIT signings, using a 'market model' (MacKinlay 1997)

Normal returns are estimated using a symmetric corresponding day event window around the date of signing regressing country returns on market returns. We then calculate the mean cumulative return of the target bond price within the different windows of the signing dates. (Below, we show our results for different estimation windows, starting 60 days before and up until 10 days preceding the BIT.) The cumulative abnormal returns (CARs) sum the abnormal returns over the event window.

The econometric specification is as follows:

$$CAR_{it} = \alpha + \mathbf{X}_{it} + \epsilon_{it} \tag{5}$$

where CAR represents the cumulative abnormal returns for country i over the event window t. The parameter of interest is the constant term, α, which captures the impact of the event on average returns. The vector $\mathbf{X}$ controls for standard economic and political variable, namely $Polity2$, GDP (Ln), GDP growth, and Trade (% of GDP). Finally, the error term ϵ_{it} is allowed to be arbitrarily correlated within countries but independent otherwise. That is, we use cluster robust standard errors at the country level.

Hypothesis 3 predicts $\alpha > 0$ for autocratic regimes and $\alpha = 0$ for democracies. Nonetheless, we test it with a two-sided test.

[25] See MacKinlay (1997) for a review of event-study methodology and its wide applications in economics and finance.

Data We use data on sovereign debt bond indices. In particular, we rely on J.P. Morgan EMBI (Emerging Market Bond Index) Global data, which consists of U.S. dollar denominated and daily traded bond prices. These indices are constructed by meausring the price at which sovereign debt bonds are traded on secondary markets. If investors believe a nation is likely to default, its bonds trade at a discount. Changes in the value of the bond index provie a means to measure market actors' perceptions about the likelihood of default. We use return on bonds to estimate market perceptions of default risk, that is, creditworthiness. We collect bond indices for all available developing nations, which provide us with closing index value for each trading day.

Results Results are shown in Table 9. Each panels displays the results for a symmetric day window, from 1-day in Panel A through 4-day in Panel D. These correspond to 3 days and 9 days, respectively. We also show the robustness of the results to different estimation windows, as can be seen in the column pairs. Finally, to facilitate interpretation and to test Hypothesis 3, we split the sample as before between autocratic leaders and democratic leaders.

[Table 9 about here.]

Results strongly supports our predictions. Signing a BIT has a positive and a significant impact in Bond indices, which reflects an increased in creditworthiness. This finding is robust to different event and estimation windows. In contrast, when democratic leaders sign a BIT, they do not experience such economic benefit.

5 Conclusion

There is an increasing recognition that a state's interactions with international institutions will have effects, anticipated or otherwise, on the tenure of leaders in office in those states. Moreover the effect of the international organization on the survival prospects of those leaders depends on the regime type of the country.

When it comes to bailouts from the International Monetary Fund (IMF), for example, IMF programs help autocratic leaders to survive but they hurt the survival of democratic leaders. An IMF loan provides the liquidity needed to distribute private goods to the small coalition that supports the autocrat and strengthens their hold on power. Democratic leaders however demonstrate

incompetence and mismanagement of the economy when they appeal to the IMF, shortening their tenure in office (Smith and Vreeland 2006).

In the human rights arena, those autocratic leaders who accede to human rights treaties survive longer in office than those that do not. The international human rights treaties are associated with delaying the change of leadership in these autocracies. And, since these are the most severe abusers of human rights, there exists an association between accession to the international human rights regime and the long-term survival of these worst abusers (Hollyer and Rosendorff 2011, 2012*a*).

Unlike bailouts and human rights, the effect of trade agreement runs in the opposite direction. Trade agreements enhance the survival of democratic leaders for variety of reasons – but mainly they commit leaders to broad-based policies of lower prices and protects leaders from opportunistic special interests, as well as insuring leaders against eviction from office after external aggregate negative shocks (Hollyer and Rosendorff 2012*b*).

Here we have examined the effect of Bilateral Investment Treaties on leader survival, and once again the effect of the treaty on survival is conditioned by regime type. Here too, autocratic leader-survival is enhanced by BIT signing to a larger degree than is democratic leader-survival. Autocracies often lack the crucial institutional structures to secure property rights - separation of powers, checks and balances, rule of law, an independent judiciary, a non-corrupt bureaucracy. These are often difficult to build domestically, and it is easier and simpler to import a set of rules and obligations from abroad that serve a similar, property-rights protecting purpose. A treaty, enforced by third party tribunals, where firms as well as governments have standing, reduces the incentives to expropriate, and makes promises to foreigners to refrain from punitive taxation more credible. Hence autocratic leaders, eager to consolidate support among their coalition with foreign capital that complements local factors, are eager to sign BITs. Democracies are characterized by domestic institutions that function to protect property from unreasonable seizure by the state, and as such democratic leaders have less to gain from signing BITs. They sign them less frequently, and experience a much smaller bump in their survival prospects.

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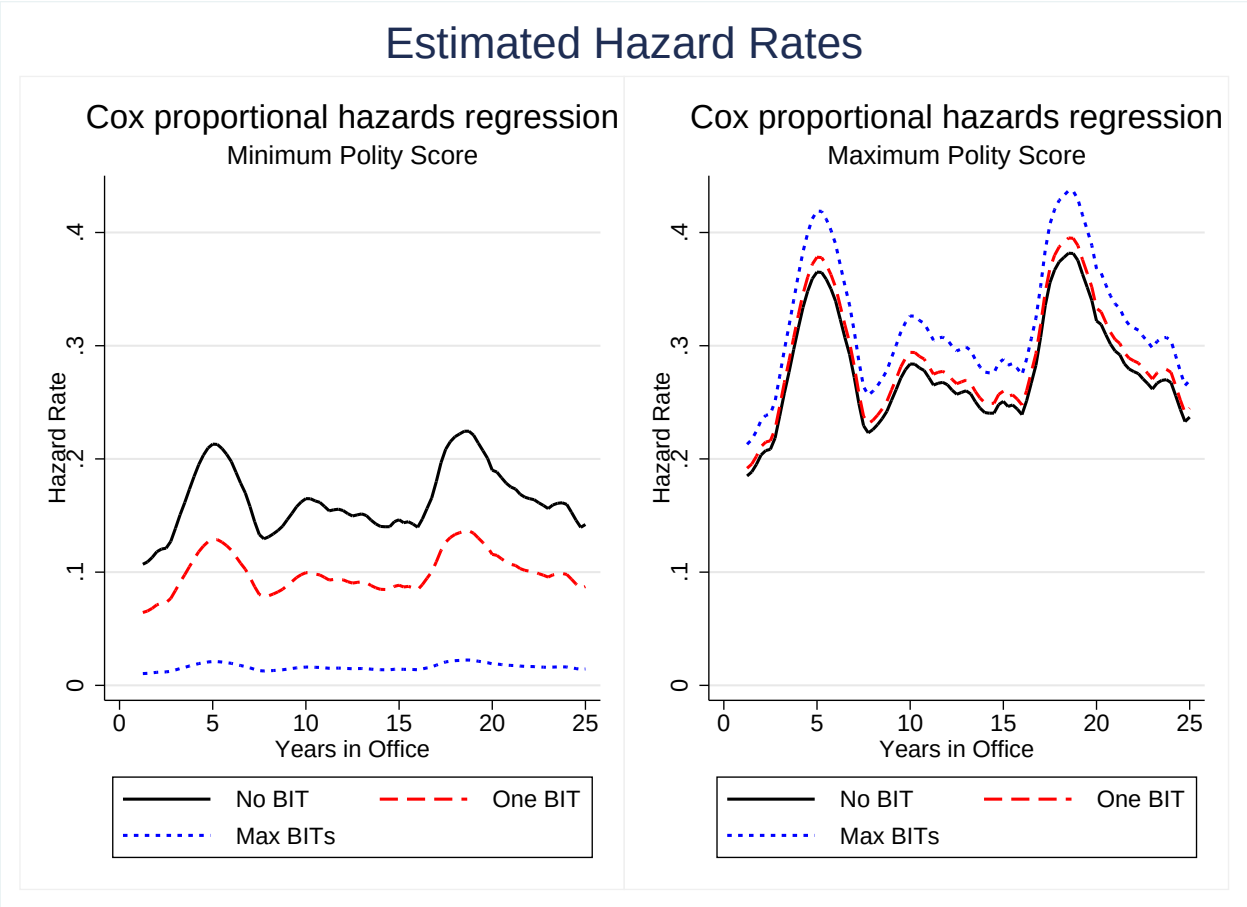
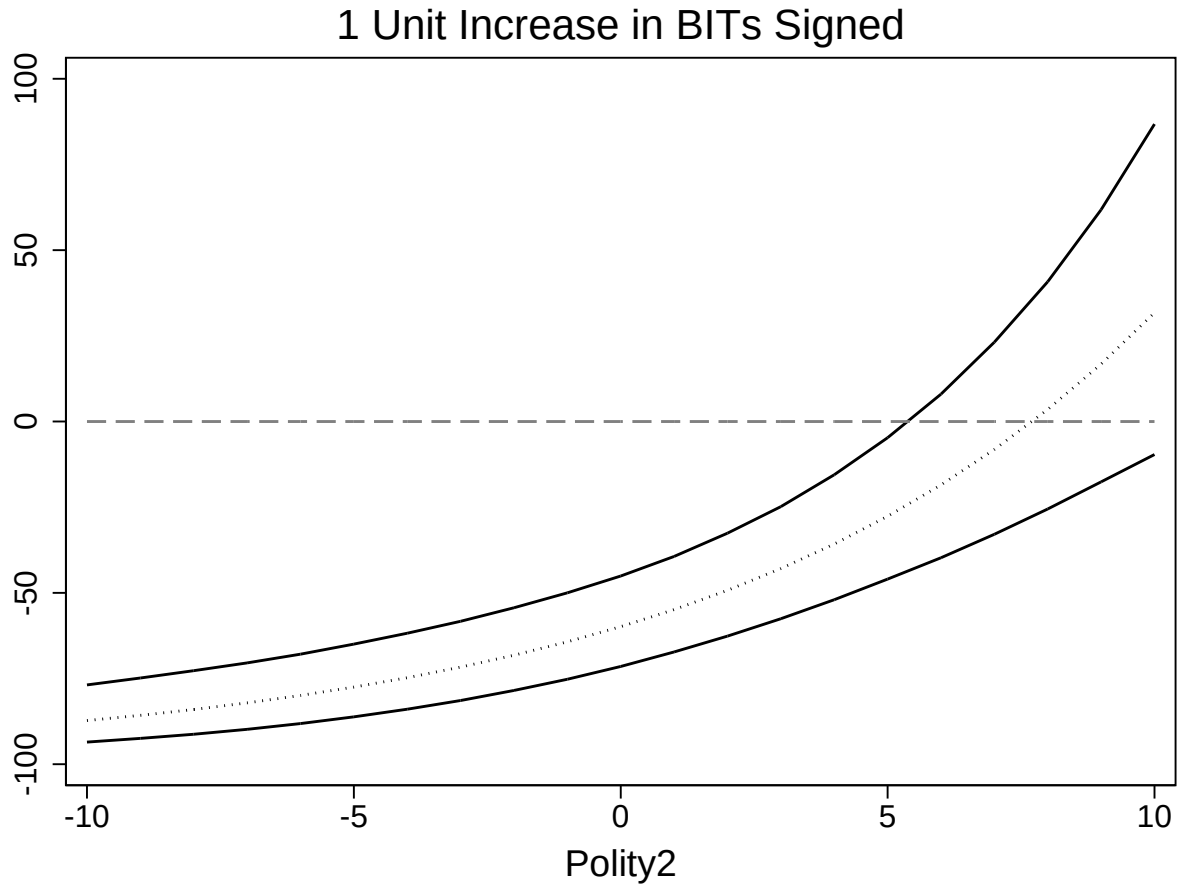


Figure 1: Estimated Leader Failure Rates by Year for Different Levels of BITs Signed (Ln)

Figure 2: % Change in Hazard



Note: Solid lines represent the 95% confidence intervals around the simulated estimates (dotted line).

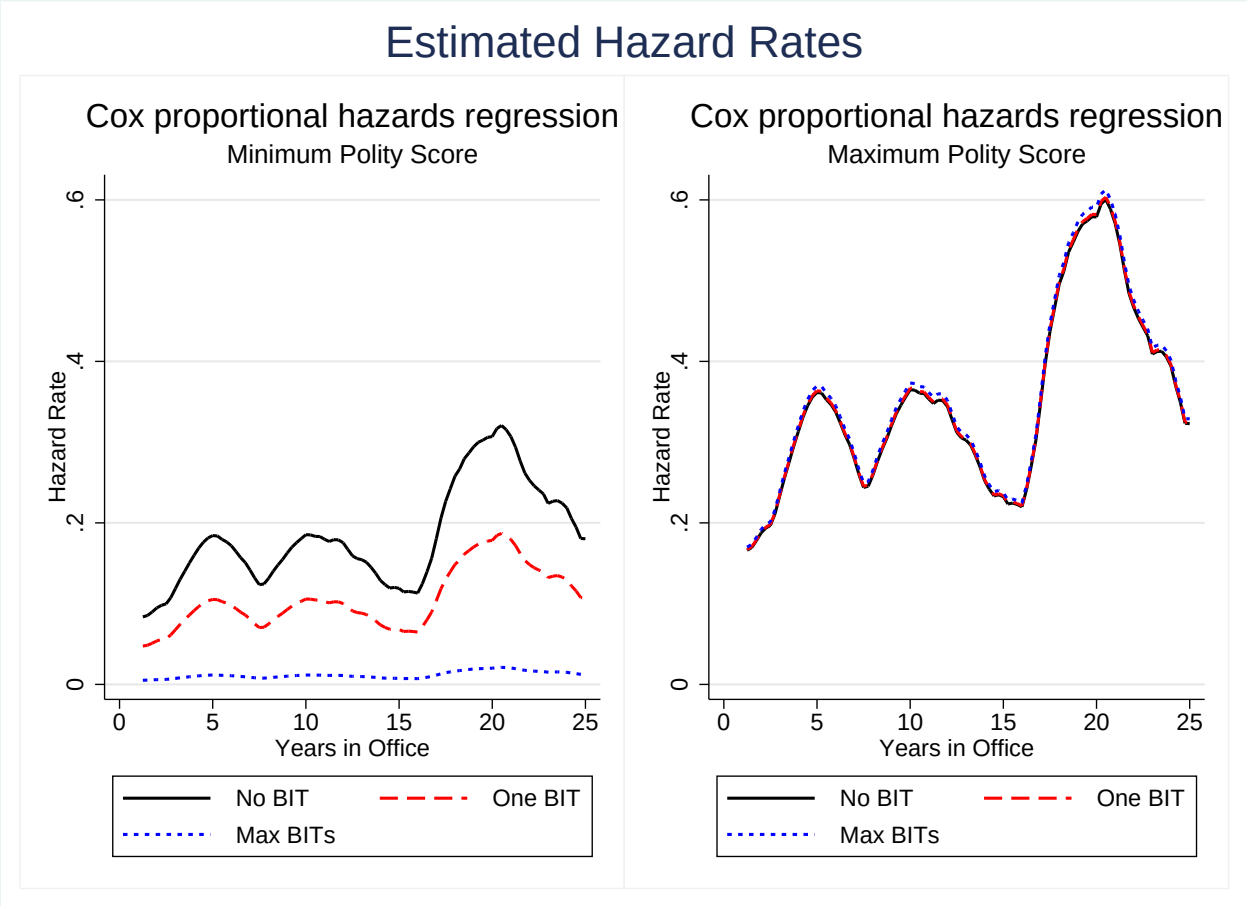


Figure 3: Estimated Leader Failure Rates by Year for Different Levels of BITs Signed (Ln) - Matched sample

Table 1: **Summary Statistics**

Variable	Mean	Std. Dev.	Min.	Max.	N
BITs signed (leader tenure)	3.299	8.277	0	95	7574
BITs signed (leader tenure) (Ln)	0.707	1.024	0	4.564	7574
Polity2	-0.662	6.972	-10	10	7417
Population (Ln)	15.825	1.527	11.689	21.024	7335
GDPpc (Ln)	7.222	1.272	3.913	11.314	6130
Growth (% of GDP)	3.826	7.195	-51.031	106.28	6185
Aid (Ln)	19.286	1.515	9.903	23.980	6598
Oil and Gas Prod. (Ln)	10.551	10.616	0	27.03	7227
PTAs signed (leader tenure)	0.172	0.423	0	2.485	7574
BITs signed (country, $l-1$) (Ln)	0.922	1.247	0	4.859	7473

The unit is leader-year. *BITs signed* is the cumulative number of BITs signed by the leader up until that point. The maximal value of 95 *BITs signed* refers to Egypt's Mubarak over his entire tenure.

Table 2: **Average Number of BITS Signed by a Given Leader**

Regime Type	**Mean Number of BITs**	**Std. Dev.**	**Min**	**Max**
Autocracy	3.28	9.61	0	63
Anocracy	2.88	8.90	0	95
Democracy	2.87	6.07	0	51

The unit is leader tenure. A leader is scored as democratic if her *polity2* score is ≤ -5. A leader is scored as autocratic if her *polity2* score is ≥ 5. All other leaders are scored as heading anocracies. We report the total number of BITs signed by each leader in the period.)

Table 3: **Cox Proportional Hazards Estimates**

	(1)	(2)	(3)	(4)
BITs signed (leader tenure) (Ln)	-0.23***	-0.34***	-0.380***	-0.537***
	(0.04)	(0.06)	(0.077)	(0.095)
Polity2	0.04***	0.03***	0.002	-0.003
	(0.01)	(0.01)	(0.007)	(0.010)
BITs signed × Polity2	0.03***	0.04***	0.033***	0.035***
	(0.01)	(0.01)	(0.009)	(0.011)
GDPpc (Ln)		0.02		-0.075
		(0.06)		(0.063)
Growth (% of GDP)		-0.04***		-0.041***
		(0.01)		(0.005)
Trade (% of GDP)		-0.00		-0.002*
		(0.00)		(0.001)
Population (Ln)		0.06		0.037
		(0.05)		(0.056)
Oil and Gas Prod. (Ln)		-0.00		-0.001
		(0.01)		(0.007)
PTAs signed (leader tenure)		0.05		0.004
		(0.11)		(0.109)
Foreign Aid (Ln)		-0.03		-0.027
		(0.04)		(0.042)
BITs signed (country, $l-1$) (Ln)		-0.05		0.003
		(0.04)		(0.040)
Time-varying regressors				
BITs signed (leader tenure) (Ln)			0.012**	0.025***
			(0.005)	(0.007)
Polity2			0.009***	0.008***
			(0.001)	(0.001)
BITs signed × Polity2			-0.000	0.001
			(0.001)	(0.001)
Observations	7313	5219	7313	5219
Countries	143	133	143	133
# of subjects	1180	924	1180	924
# of failures	1029	780	1029	780
Frailty parameter	0.16	0.20	0.23	0.24

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 4: **Cox Frailty Proportional Hazards Estimates – Matched Data**

	(1)	(2)	(3)	(4)
BITs signed (leader tenure) (Ln)	-0.26***	-0.39***	-0.388***	-0.635***
	(0.06)	(0.07)	(0.099)	(0.113)
Polity2	0.05***	0.04***	0.004	-0.004
	(0.01)	(0.01)	(0.010)	(0.012)
BITs signed × Polity2	0.04***	0.04***	0.031***	0.037***
	(0.01)	(0.01)	(0.012)	(0.013)
GDPpc (Ln)		0.04		-0.758***
		(0.07)		(0.350)
Growth (% of GDP)		-0.04***		-0.053***
		(0.01)		(0.009)
Trade (% of GDP)		-0.00		-0.003*
		(0.00)		(0.001)
Population (Ln)		0.09		-0.813**
		(0.06)		(0.358)
Oil and Gas Prod. (Ln)		-0.00		-0.001
		(0.01)		(0.008)
PTAs signed (leader tenure)		0.03		-0.020
		(0.12)		(0.119)
Foreign Aid (Ln)		-0.03		-0.022
		(0.05)		(0.052)
BITs signed (country, $l-1$) (Ln)		0.01		0.105**
		(0.04)		(0.049)
Time-varying regressors				
BITs signed (leader tenure) (Ln)			0.014*	0.015*
			(0.007)	(0.008)
Polity2			0.010***	0.009***
			(0.001)	(0.001)
BITs signed × Polity2			0.000	0.000
			(0.001)	(0.001)
Observations	4922	4326	4922	4326
Countries	129	126	129	126
# of subjects	773	734	773	734
# of failures	665	608	665	608
Frailty parameter	0.26	0.25	0.32	0.25

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 5: **IV Probit Estimates**

	Autocracies		Democracies	
	(1)	(2)	(3)	(4)
Outcome Equation				
BITs signed (leader tenure) (Ln)	-0.97***	-0.95***	-0.15	-0.31
	(0.31)	(0.36)	(0.20)	(0.23)
GDPpc (Ln)	0.19*	0.17	-0.01	0.02
	(0.10)	(0.11)	(0.06)	(0.07)
Growth (% of GDP)	-0.02***	-0.03***	-0.02***	-0.02***
	(0.01)	(0.01)	(0.01)	(0.01)
Trade (% of GDP)	-0.00	-0.00	0.00	-0.00
	(0.00)	(0.00)	(0.00)	(0.00)
Population (Ln)	0.07	0.05	0.04	0.03
	(0.07)	(0.06)	(0.06)	(0.05)
Oil and Gas Prod. (Ln)	0.00	0.00	-0.00	0.00
	(0.01)	(0.01)	(0.01)	(0.01)
PTAs signed (leader tenure)	0.97**	0.51	-0.14	-0.17
	(0.39)	(0.34)	(0.12)	(0.11)
Foreign Aid (Ln)	0.01	0.05	0.02	0.04
	(0.06)	(0.07)	(0.04)	(0.04)
BITs signed (country, $l-1$) (Ln)	0.10	-0.05	0.04	0.06
	(0.10)	(0.08)	(0.04)	(0.05)
Cubic time pol.	✓	✓	✓	✓
Region FE	✓	✓	✓	✓
Year FE		✓		✓
Selection Equation				
UNESCO Sign (Ln)	0.19***	0.19***	0.29***	0.26***
	(0.07)	(0.07)	(0.08)	(0.07)
GDPpc (Ln)	0.16**	0.16**	0.10*	0.14***
	(0.08)	(0.07)	(0.05)	(0.05)
Growth (% of GDP)	-0.00	-0.00	-0.00*	-0.00
	(0.00)	(0.00)	(0.00)	(0.00)
Trade (% of GDP)	-0.00	-0.00	0.00	-0.00
	(0.00)	(0.00)	(0.00)	(0.00)
Population (Ln)	0.04	0.03	0.12**	0.07*
	(0.05)	(0.04)	(0.05)	(0.04)
Oil and Gas Prod. (Ln)	0.00	0.00	-0.01	0.00
	(0.01)	(0.01)	(0.00)	(0.00)
PTAs signed (leader tenure)	1.05***	0.70***	0.41***	0.27***
	(0.15)	(0.14)	(0.10)	(0.09)
Foreign Aid (Ln)	0.05	0.09***	0.02	0.02
	(0.03)	(0.03)	(0.03)	(0.03)
BITs signed (country, $l-1$) (Ln)	0.22***	0.08	0.13***	0.01
	(0.05)	(0.06)	(0.03)	(0.04)
Cubic time pol.	✓	✓	✓	✓
Region FE	✓	✓	✓	✓
Year FE		✓		✓
ρ	0.65**	0.52*	0.04	0.08
	(0.28)	(0.27)	(0.14)	(0.15)
Observations	2017	1902	2073	2015
Clusters	317	317	541	541
Log-Likelihood	-2,497.41	-2,169.53	-3,248.52	-2,966.29

Robust standard errors clustered at the leader level in parentheses.

Autocracies: *polity2* score ≤ -5. Democracies: *polity2* score ≥ 5.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 6: **Cox Proportional Hazards Estimates**

	(1)	(2)	(3)	(4)
BITs signed (leader tenure) (Ln)	0.08	-0.01	0.20**	0.05
	(0.05)	(0.06)	(0.09)	(0.11)
Civilian dictatorship	-0.58***	-0.60***	0.37**	0.51***
	(0.12)	(0.15)	(0.15)	(0.19)
Military regime	-0.10	-0.01	0.84***	0.84***
	(0.11)	(0.12)	(0.13)	(0.15)
Monarchy	-1.00***	-0.87***	0.16	0.31
	(0.22)	(0.29)	(0.29)	(0.37)
BITs × Civ. Dictatorship	-0.33***	-0.31***	-0.44***	-0.41**
	(0.10)	(0.11)	(0.15)	(0.17)
BITs × Military Regime	-0.37***	-0.41***	-0.45**	-0.40*
	(0.12)	(0.13)	(0.18)	(0.20)
BITs × Monarchy	-0.41**	-0.73***	-1.09**	-5.21**
	(0.20)	(0.28)	(0.45)	(2.20)
GDPpc (Ln)		0.14**		0.16**
		(0.06)		(0.07)
Growth (% of GDP)		-0.04***		-0.04***
		(0.01)		(0.01)
Trade (% of GDP)		-0.00		-0.00
		(0.00)		(0.00)
Population (Ln)		0.07		0.03
		(0.06)		(0.06)
Oil and Gas Prod. (Ln)		-0.01		-0.01
		(0.01)		(0.01)
PTAs signed (leader tenure)		0.10		0.09
		(0.11)		(0.12)
Foreign Aid (Ln)		0.01		0.01
		(0.04)		(0.04)
BITs signed (country, $l-1$) (Ln)		-0.00		0.05
		(0.04)		(0.04)
Time-varying regressors				
BITs signed (leader tenure) (Ln)			-0.05***	-0.04***
			(0.01)	(0.02)
Civilian Dictatorship			-0.26***	-0.29***
			(0.02)	(0.03)
Military Regime			-0.28***	-0.26***
			(0.02)	(0.03)
Monarchy			-0.27***	-0.26***
			(0.03)	(0.04)
BITs × Civ. Dictatorship			0.06***	0.07***
			(0.02)	(0.02)
BITs × Military Regime			0.07***	0.05***
			(0.02)	(0.02)
BITs × Monarchy			0.08***	0.19***
			(0.02)	(0.06)
Observations	6547	4830	6547	4830
Countries	143	134	143	134
# of subjects	1115	905	1115	905
# of failures	968	758	968	758
Frailty parameter	0.19	0.26	0.24	0.29

Standard errors in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 7: **Summary statistics: Credit Ratings & Economic Risks**

Variable	Mean	Std. Dev.	Min.	Max.	N
S&P Rating	6.308	3.879	0	16	1111
Inst. Investor Rating	31.516	17.445	4.05	91.5	2215
Contract intensive money (CIM) [in %]	73.851	16.805	17.504	100	4617
BITs signed (Ln)	0.261	0.515	0	2.89	6300
Polity2	-1.09	6.927	-10	10	6191
GDPpc (Ln)	7.213	1.251	3.913	11.314	5218
GDP (Ln)	23.08	1.792	18.461	29.213	5228
Filing	0.046	0.316	0	12	6300
PTA/Inv.	0.063	0.292	0	5	6300
Trade (% of GDP)	72.505	48.903	0.309	531.737	5213

Table 8: **Regime Type, Creditworthiness & Economic Risk and BITs**

	Autocracies		Democracies	
	Panel A: S&P Ratings			
	(1)	(2)	(3)	(4)
S&P Ratings$_{t-1}$	-0.14	-0.35***	-0.13***	-0.20***
	(0.08)	(0.11)	(0.05)	(0.03)
Δ BITs signed (Ln)	0.33**	0.36***	0.10**	0.04
	(0.15)	(0.11)	(0.05)	(0.04)
BITs signed$_{t-1}$ (Ln)	0.36**	0.39**	0.12*	0.01
	(0.16)	(0.15)	(0.06)	(0.07)
Observations	146	144	687	642
Countries	16	15	58	55
R^2	0.38	0.62	0.29	0.43
	Panel B: II Ratings			
	(1)	(2)	(3)	(4)
II Rating$_{t-1}$	-0.17***	-0.14***	-0.11***	-0.16***
	(0.04)	(0.03)	(0.02)	(0.02)
Δ BITs signed (Ln)	0.12	0.02	0.08	0.05
	(0.21)	(0.22)	(0.14)	(0.15)
BITs signed$_{t-1}$ (Ln)	0.89***	0.75***	0.06	-0.05
	(0.27)	(0.27)	(0.24)	(0.25)
Observations	584	539	998	955
Countries	59	56	72	69
R^2	0.34	0.33	0.37	0.43
	Panel C: Contract Intensive Money (CIM)			
	(1)	(2)	(3)	(4)
CIM$_{t-1}$	-0.24***	-0.28***	-0.17***	-0.20***
	(0.03)	(0.05)	(0.02)	(0.02)
Δ BITs signed (Ln)	0.34	0.53**	0.05	0.13
	(0.23)	(0.24)	(0.17)	(0.14)
BITs signed$_{t-1}$ (Ln)	0.30	0.53*	0.07	0.26
	(0.32)	(0.31)	(0.30)	(0.18)
Observations	1900	1465	1569	1446
Countries	84	76	84	81
R^2	0.17	0.22	0.14	0.19
Controls		✓		✓
Country FE	✓	✓	✓	✓
Year FE	✓	✓	✓	✓

Robust standard errors clustered at the country level in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 9: **BITs & Cumulative Abnormal Returns**

	Cumulative Abnormal Returns							
	Estimation Window							
	-45 through -10		-45 through -30		-60 through -10		-60 through -30	
	Aut.	Dem.	Aut.	Dem.	Aut.	Dem.	Aut.	Dem.
	Panel A: 1-day Window							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
BIT	4.370**	-2.015	4.128**	-2.124	4.354**	-1.997	4.245**	-1.849
(1-day window)	(1.488)	(2.944)	(1.447)	(2.805)	(1.472)	(2.939)	(1.442)	(2.866)
Observations	153	358	153	358	153	358	153	358
R^2	0.62	0.16	0.62	0.14	0.62	0.16	0.62	0.15
	Panel B: 2-day Window							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
BIT	4.203**	-0.886	3.854**	-1.098	4.158**	-0.883	3.981**	-0.742
(2-day window)	(1.441)	(3.018)	(1.387)	(2.789)	(1.412)	(2.968)	(1.364)	(2.829)
Observations	153	358	153	358	153	358	153	358
R^2	0.63	0.15	0.62	0.11	0.63	0.15	0.63	0.13
	Panel C: 3-day Window							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
BIT	3.638**	-0.236	3.186**	-0.658	3.537**	-0.187	3.319**	-0.058
(3-day window)	(1.366)	(3.124)	(1.301)	(2.775)	(1.320)	(3.067)	(1.260)	(2.861)
Observations	153	358	153	358	153	358	153	358
R^2	0.64	0.17	0.64	0.12	0.65	0.17	0.64	0.15
	Panel D: 4-day Window							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
BIT	3.369**	-0.237	2.834**	-0.735	3.229**	-0.138	2.884**	-0.011
(4-day window)	(1.209)	(3.549)	(1.152)	(3.075)	(1.156)	(3.470)	(1.075)	(3.191)
Observations	153	358	153	358	153	358	153	358
R^2	0.66	0.19	0.64	0.14	0.66	0.19	0.65	0.17
Controls	✓	✓	✓	✓	✓	✓	✓	✓

Robust standard errors clustered at the country level in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$
Controls include: *Polity*2, GDP (Ln), GDP growth, and Trade (% of GDP).