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# The effect of economic crises on the emergence of investor-state arbitration cases

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## Abstract

The number of investor-state arbitration disputes has been on the rise since the mid 1990s. Their determinants are still not fully understood. This study empirically examines the effects of economic crises on investor-state arbitration claims, based on international investment agreements (IIAs). We use a unique dataset containing 961 investor-state arbitration claims covering 132 host (defendant) and 75 home (claimant) countries over the 1986-2017 period. We find that episodes of economic crises are positively and significantly associated with the number of investor-state arbitration cases and we uncover evidence that the type of economic crisis matters. In addition, the positive impact of economic crises on arbitration cases is inversely related to the rule of law in a host country. These results are consistent with the view that governments are prioritizing policy actions aiming at mitigating the negative impact of economic crises over compliance with their obligations in IIAs. From a policy perspective, our results suggest that besides strengthening the rule of law domestically, the IIA system should be reformed with a focus on avoiding a vicious circle, thus shortening the recovery period after economic crises.

Keywords: Economic crises / International Economic Law / Investment Agreements / International Arbitration / International Relations

JEL Codes: G01 Financial Crises / F21 International Investment and Long-Term Capital Movements / F55 International Institutional Arrangements / K33 International Law

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## 1. Introduction

It is well known that shocks like crises exert negative impacts on the growth of investment in a country (Alesina and Perotti, 1996; Aizenman et al 2013, Gutiérrez and Philippon 2017; Dibiasi et al. 2018), and inward foreign direct investment (FDI) in particular. For example, global FDI declined by 14% between 2007/8 and even more strongly in 2009. (UNCTAD 2009, p. xix) FDI is generally considered an important external source of finance, although its relative importance has declined somewhat over the last decade. This belief is generally strong particularly in countries, which lack domestic investment and technology, which can be explained by their insufficient institutional and legal environment to a large extent (Hanson, 2010).

While the possibility of positive effects from FDI inflows is heavily contested (see e.g., the meta-analysis on *productivity spillovers* by Demena and Bergerijk, 2017), more and more countries have concluded international investment agreements (IIAs) as part of their FDI attraction strategy (see e.g., Elkins et al. 2004; Jandhyala et al. 2011). IIAs signal a willingness of host country governments to commit to obligations vis-à-vis foreign investors in the light of information asymmetries and dynamic inconsistencies.<sup>1</sup> These lead to a credibility problem on the side of a host government and will have a serious impact on investment decisions by foreign investors. Given a lack of credibility, an efficient investment, which would otherwise have taken place, may not be carried out at all or be carried out in a non-optimal way (too small or too large). IIAs are a possible remedy for this problem.

With the consequences of the economic and financial crisis 2008/9 hardly digested in many economies, governments are still struggling with appropriate measures to prevent future crises, inter alia by resorting to international treaties and agreements. (Ferrantino, 2006; Sacerdoti 2013) For example, “for developing countries in need of development capital, particularly in the wake of the 1980s debt crisis, Bilateral Investment Treaties (BITs)<sup>2</sup> have become an attractive way to solidify confidence in potential foreign investors regarding nationalization, expropriation, creeping confiscation through regulatory changes<sup>3</sup> or performance requirements like local content rules.” (Anderson, 2017) Put differently, a country’s willingness to sign a BIT “... was caused by the fact that

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<sup>1</sup> First, information asymmetry arises due to the fact that information about the true intentions of a government may be private, i.e. “when observers lack information about the beliefs and values that are motivating a government to pursue (...)” a certain policy (Tomz, 1997, p. 2). Second, a dynamic inconsistency problem arises from the conduct of democratic governments which need to hold elections from time to time and tend to discount the long-term in favor of the short-term effects, especially in developing countries (Büthe and Milner, 2008, p. 743)

<sup>2</sup> The vast majority of IIAs has been concluded on a bilateral (Bilateral Investment Treaties, BITs) level, a trilateral level (e.g. NAFTA) or regional level (e.g. Energy Charter Treaty).

<sup>3</sup> The risk of adverse regulatory changes ranks persistently as a top investor concern, as reported in the World Bank’s (2014) political risk survey.

BITs introduced a mechanism through which developing countries could compete for investment.“ (Guzman 1998)

Yet, making bilateral treaties was by no means confined to developing countries only. Assuming that international relations are inherently conflictual in nature, one may conclude that governments trying to attract FDI reveal a certain degree of preparedness to comply with agreements in force. Particularly, countries with scarce capital and poor governance are thought to use BITs as a signal, as they compete heavily for FDI with a large number of alternative locations. (Guzman, 1998)

Besides a set of substantial provisions (investors' rights), BITs include procedural provisions (*inter alia* Investor State Dispute Settlement, ISDS), which allows for investor-state arbitration (and in some cases, in addition, state to state international arbitration) in case of a perceived violation of the rights secured to investors. Investor-state arbitration is a mechanism designed to solve conflicts between foreign investors and host country governments over the rights of investors (Simmons 2014; Sauvant 2008) either in addition to the local judicial system (local courts) or by circumventing it (arbitration tribunals). Indeed, while the initial focus of IIAs was on protecting foreign property against unlawful expropriations, foreign investors “increasingly use international investment law as a means to challenge a broad range of host states' regulatory policies, including, but not limited to, measures adopted to protect the environment, to promote public health, to implement national energy policies, and to combat economic crises.” (Sabanogullari 2016, p. 26)

As a frequently mentioned example, Argentina faces several investor-state arbitration cases in the wake of its economic crisis in 2000-1. (Hopwood, 2018) It is important to note that Argentina is a prominent case<sup>4</sup>, but it is by far not the only case of a crisis-shaken host country experiencing an increase in the number of international arbitration cases. More recent investor-state arbitration cases in the context of crises relate to the sovereign debt crisis in Peru (2016, Hopwood 2018), Cyprus (2011-2013, *ibidem*) and Greece (Kelly, 2018; Argyropoulou 2018), and the financial crisis in Spain and Italy (foremost in the renewable energy sector; Garcia-Castrillon 2017). It seems that a few policy measures (or even a single one) may suddenly spark a large number of arbitration cases. Argentina faced 5

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<sup>4</sup> The details of the cases (claims, outcomes etc.) are reported elsewhere (see e.g., Burke-White, 2008; Martin, 2012; Ginsburg, 2013; Lavopa, 2015; Kelly, 2018). The cases related to Argentina raise a lot of issues, just to mention here that the findings of arbitral tribunals have not been unanimous. (Johnson and Sachs, 2018) Two features are worth mentioning, which bear some relevance for other investor-state arbitration cases in different crisis contexts. First, Norton (2012), like many others, argues that the decision of ICSID (International Centre for the Settlement of Investment Disputes), which determined “that its tribunals have jurisdiction over these claims ... has created a path to increased ICSID involvement in future sovereign debt restructurings and has raised the question of the consequences for the current European debt crisis.” (p. 291) This is remarkable as investments in Argentina covered by the respective IIAs were to a large extent portfolio investment rather than FDI. Secondly – and closely related – it raises the issue of investor-state arbitration in mass claims under IIAs and BITs in particular. (Nakajima 2018)

arbitration cases before the 2001 crisis with the number of cases soaring to 40 in the years thereafter; Spain faced 2 arbitration cases until 2016 and has suddenly been confronted with 43 arbitration cases within two years, apparently related to a singly regulatory policy turn.

In total, more than 950 arbitration cases are known to date. Given that even the filing of an arbitration claim may lead to negative reputation effects (e.g. Allee and Peinhardt, 2011; Aisbett et al. 2017; Pelc and Kerner 2018, Minhas and Remmer, 2018) arbitration claims could contribute to missing the stated policy objective of IIAs to attract investment. In addition, arbitration claims are by no means evenly distributed across countries. Especially countries in Latin America as well as in Central and Eastern Europe report claims filed against them. Therefore, an important question arises: which economic, political and institutional factors contribute to the perceived non-compliance of governments with the agreements they have concluded?

Surprisingly few studies delve empirically into the factors that result in the development in the number of international arbitration disputes. And, those empirical studies that are available put a focus on the role of bad governance in international arbitration. We contribute to this sparse literature by analyzing whether economic crises increase the number of investor-state disputes -- a relationship that has been largely neglected so far but which finds substantial interest in qualitative analyses and in writings on international law.

By conducting count data regression analysis, we establish empirically the significance of economic crises as determinants of arbitral disputes. We use a sample of 961 investor-state arbitration claims for bilateral home (75)--host (132) country pairs over the period 1986-2017. We find that episodes of economic crises are positively and significantly associated with the number of investor-state arbitration cases. We also uncover indications that the type of economic crisis has an impact on the strength and timing of the association between crises and claims. In addition, the positive impact of economic crises on arbitration cases is inversely related to the rule of law in a host country.

We proceed as follows: In section 2 we outline the conceptual basis of the study and we derive testable hypotheses. In section 3 we briefly review related literature, and in section 4 we describe our empirical methodology as well as the variables and data used in the analysis. We discuss main results of the analysis in section 5 and conclude the study with section 6.

## 2. Conceptual Background and Hypotheses

Factors affecting the prospect of compliance and non-compliance of governments to their commitments under international law are detailed in various strands of the literature dealing with IIA compliance (see Hirsh, 2009, for an overview). Basically, international legal rules alter governments' interests in compliant behavior as costs and benefits of non-compliant behavior are shaped by these rules (Simmons, 2000; Bonnichta et al., 2017, ch. 5).

From a rational choice perspective on international relations, national governments "calculate the positive and negative effects of compliance / non-compliance with a particular investment treaty and, consequently, adopt the strategy that best serves their interests." (Hirsh, 2009, p. 865) This includes the possibility of violating an IIA and risking arbitral disputes.<sup>5</sup>

We share Hirsh's (2009) and Freeman's (2013) position which says that the willingness of governments to violate IIAs is determined by the economic conditions that countries face. The basic argument rests upon the assumption that in time of crisis host governments perceive the benefits from policy intervention ("economic reform") to be high and – in case these policy interventions breach an IIA – the arising costs to be rather low.

Most of the literature dealing with the relationship between economic crisis and economic reform has long argued that economic crises trigger a number of different policy responses. For example, Nelson (1994) describes acute economic crises as a facilitating factor for policy action not least as a strong popular desire for containment of the emergency is generated. Likewise, Dupont et al. (2016) stress that in times of economic crisis "political, economic and social domestic actors use all available institutionalized channels [...] in order to push for the adoption of immediate, and sometimes radical, policy responses to the crisis." (p. 143).

Drazen (2010) summarizes basic political-economy approaches to sketch why economic crises trigger reforms: (i) crises draw the attention of voters and policy makers alike to the need of economic reform; (ii) crises also speed up the implementation of reform as they (a) may shift the power dispersion in the political sphere and make interest groups "more amenable to reform" (ibidem, p. 13) and (b) because the deterioration of the status quo makes groups more willing to accept the uncertainties associated with reform.

The crisis-begets-reform literature distinguishes between macro-stabilization measures and structural economic reforms (stage-1 and stage-2 reforms; see Nelson, 1994 and Mahmalat and Curran, 2018).

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<sup>5</sup> An interesting alternative to outright violations would be to "seek to violate certain investment treaties' provisions in a less transparent manner (e.g. discrimination against foreign investors) and avoid the harmful consequences." (Hirsh 2009, p. 869)

Policy interventions for macro-stabilization respond to macroeconomic instabilities like high inflation, strong devaluations of the currency or deep recessions. These stage-1 reforms include, for example, fiscal and monetary austerity measures, a devaluation of the currency, exchange rate and price controls and trade liberalizations. These types of policy interventions are administratively easy as transaction costs of design and implementation are low. In addition, macro-economic turbulence exerts its negative impact on a broad scale. This makes influential interest groups amenable to reform (Rodrick, 1996) and, thus, macro-stabilization will be implemented rather quickly. Stage-1 reforms are often implemented via emergency laws. A close link between the emergence of an economic crisis and the introduction of macro-stabilization policies has been established empirically (e.g., Drazen and Easterly, 2001; Alesina et al., 2006; Mahmalat and Curran, 2018).

Structural economic (stage-2) reforms respond to more microeconomic challenges (Rodrik, 1996). They comprise *inter alia* financial-sector and labor-market reforms, the privatization of social security, health care reforms or the introduction of a revised corporate law (e.g., Nelson 1994; Mahmalat and Curran, 2018). Such reforms imply a change in entitlements and are subject to extensive political debate (Agnello et al., 2015; Lora and Olivera, 2004). Hence, adopting structural reforms is likely to take more time than macro-stabilization. Apart from the influence of banking and debt crisis on financial sector reform, the impact of economic crises on structural reform is empirically also less clear (e.g., Campos et al., 2010; Mahmalat and Curran, 2018).<sup>6</sup>

All in all, the crisis-begets-reform literature suggests intensified policy interventions in the aftermath of an economic crisis, especially for macro-stabilization. As severe macroeconomic turmoil “hurts pretty much everyone” (Rodrik, 1996), the immediate benefits of governments from implementing reform measures are high even if these measures may violate IIAs. In addition, foreign investors could also become scapegoats for host governments and may be blamed to have brought on the crisis (Freeman, 2013). Political benefits from implementing policy measure that hurt predominantly foreign investors but benefit a large number of individuals should be high (Bonnitcha et al, 2017, ch. 5).

Host countries also take the costs of breaching an IIA into consideration. These costs accrue *inter alia* in the form of reputational effects mentioned above and monetary costs (legal fees) and fines<sup>7</sup> due to

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<sup>6</sup> For an interesting case study of the aftermath of the Financial Crisis of 2008 see Drazen (2010).

<sup>7</sup> Bonnitcha et al. (2017, p. 17) suggest that financial sanctions are preferred, as “an alternative default remedy would be restoring compliance of the host state’s laws and regulations with its international obligation, as is the case in the trade regime. But compelling a state to comply with investment treaty obligations is arguably a more intrusive remedy than ordering it to pay compensation.” Thus, the “fundamental economic argument used to justify compensation requirements is that government decision-makers fail to fully value (internalize) the economic costs of their actions that fall on investors (Bonnitcha and Aisbett 2013).

international arbitration. Bonnitca et al. (2017, Tab. 1.3) report cases where arbitration tribunals awarded foreign investors compensations of hundreds of millions of US-Dollars. Additional costs may arise as well. For example, “in 2012, the U.S. suspended Argentina's preferential trade status due to its failure to comply with two investment arbitration awards.” (Chaisse and Donde, 2018)

But costs of these types are highly uncertain, and they will occur only later. Therefore, the discount factor applied by decision makers to future costs matters.<sup>8</sup> High discounting of future costs increases the willingness of governments to implement policy measures which ease severe macro-economic turmoil but may lead to arbitral disputes. Indeed, in times of crisis, discount factors of decision makers tend to be rather low. Hirsh (2009) observes that “states which encounter a major crisis (whether economic, security, or political) are more concerned with present exigencies and have lower discount rates regarding future incentives. Investment treaties are therefore more likely to be breached during major crisis.” (ibidem, p. 869) Likewise, Ostrom (1990) states that discount rates are affected by the levels of physical and economic security. In case of high uncertainty and turmoil, decision-makers tend to discount future returns heavily when traded off against increasing the likelihood of surviving the turmoil at present (ibidem, p. 35). In addition, recent experimental evidence on decision-making also suggests high discounting of costs. People tend to exhibit preferences biased towards the present (e.g., Tomer, 2017, ch. 5) and in case they are confronted with long-term challenges and opportunities they “systematically underweight the costs of action in favor of its desirability and thus are prone to wishful thinking.” (Krebs and Rapport, 2012, p. 2)

However, it is questionable if host country decision-makers are fully aware of the consequences (ie., costs) of breaching an IIA. Empirical survey evidence implies rather low levels of awareness regarding the content of IIAs as well as the risk of arbitration claims by foreign investors (Bonnitca et al., 2017, ch. 6; Jandhyala et al. 2011; van Harten 2010). Put differently, host government officials may not fully understand the extent of potential costs of breaching an IIA. This implies that even in case decision-makers had high discount factors, they will not give up present benefits to achieve an end to which they assign little value (Krebs and Rapport, 2012).<sup>9</sup> From this reasoning we conclude that governments perceive the present value of costs from breaching IIAs as low.

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<sup>8</sup> The discount factor measures how much weight a decision-maker attaches to future income / cost streams. It captures the general tendency toward impatience (e.g., Krebs and Rapport, 2012).

<sup>9</sup> Furthermore, a government's time-horizon may be too short to fully internalize future costs arising from breaching an IIA. For instance, Blake (2013) stresses “[i]f a government anticipates losing power in the near future with little prospect of returning to power, its time horizon will necessarily be short. In such cases, a government will be less concerned about having to confront changing circumstances. Any political and economic costs that are incurred in the future when institutional commitments limit policy responses to changing conditions will be paid by future governments.” (ibidem, p. 806)



All things considered, from a benefit-costs perspective the willingness of host governments to implement policy measures which may breach IIAs is high in times of economic crisis. This view is consistent with Ballan (2018), who stresses that in times of economic crises “a state’s regulatory agencies are expected to pursue immediate and effective measures in order to minimize the scope of the economic crisis and its costs. Yet, nationalizing a bank or revising a contract in vital sectors may contradict international obligations arising from investment agreements.” (p. 4) It is also consistent with the findings of Islam (2018, Ch. 6.3.), who reports and describes a number of arbitral awards where the investment disputes arose as a consequence of a host country’s actions to address an economic crisis.<sup>10</sup>

It is important to note that economic reform measures, especially of the macro-stabilization type, tend to be broad-based, covering many economic sectors and companies.<sup>11</sup> This gives rise to the possibility of a large number of foreign investors being affected by these measures – and hence potentially a *large number of similar arbitration cases* in case of violations of IIAs. Against this background we state our first hypothesis tested in the empirical section of the paper as follows:

*H1: Episodes of economic crises are positively and significantly associated with the number of investor-state arbitration cases a host country faces.*

This realist perspective on international relations (Hirsh, 2009) discusses compliance / non-compliance with IIAs solely from the viewpoint of governments as defendants in international arbitration disputes. However, it is also crucial to consider the willingness of foreign investors (claimants) to bring an arbitration case to court. As argued – and shown empirically – by Freeman (2013), a host country’s institutional capacity for protecting property rights is of crucial importance in this respect.

As Freeman (2013) notes, foreign investors see international arbitration as a last resort. International arbitration is not only costly, it is also capable of destroying a firm’s relationship with the host government. Investors often try “to resolve disputes with host governments without having to resort to arbitration if possible.” (ibidem, p. 58)

Domestic institutions are a potential alternative to international arbitration. Perceiving the decisions of domestic courts as impartial, transparent and fair is a necessary condition for foreign investors to

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<sup>10</sup> Scherer (2010, p. 220ff) includes a list of individual cases thought to be crisis-related.

<sup>11</sup> Among the policy measures taken are controls of capital outflows, nationalizations of firms or changes in ordered utility rates (also see section 4.2b).

opt for the domestic route of dispute settlement. . Put differently, the rule of law in a host country has an impact on in using international arbitration. In countries with a strong rule of law, foreign investors will be less inclined to revert to international arbitration to protect their property rights.

The rule of law not only determines the willingness of foreign investors to use international arbitration. According to the liberal approach to international relations (Hirsh, 2009), it also shapes the opportunity of host countries to violate international law (Freeman, 2013). In an environment of a strong rule of law, independent domestic institutions (including courts) are more likely to protect investors' contractual and property rights, because these institutions set constraints for host government conduct (Hirsh, 2009).

From both, the foreign firm and the host government perspective, the rule of law in a country should *per se* be negatively associated with international arbitration cases. We hypothesize that increasing strengths of a country's rule of law also moderate the positive impact of economic crises on international arbitration for two reasons: First, in case of a strong rule of law foreign investors may opt for the domestic route of dispute settlement. Yet, there are two important limitations to this argument, hence its validity remains ultimately an empirical question: (i) it may occur that not all issues arising between a host country and a foreign investor can be taken to domestic courts, simply because they are not regulated in the domestic law of the host country; and (ii) an investor facing the choice between an IIA and the domestic route will opt for the former in case the perceived probability of winning a case is higher, for example because of the large room of interpretation of some BIT clauses. Second, in case of a strong rule of law host governments have less space to breach IIAs even in times of crisis. From this reasoning we derive our second hypothesis:

*H2: The positive impact of economic crises on arbitration cases is inversely related to the rule of law in a host country: The stronger the rule of law in a host country, the lower the impact of economic crises.*

### **3. Review of Related Empirical Literature**

According to Freeman (2013), a combination of opportunity, defined as those factors that make investor-state arbitrations *possible*, and *willingness*, defined as the willingness to violate an IIA and to file a case at an international tribunal, respectively, lead to four broad types of causal factors that should explain the occurrence of investment treaty arbitration (ibidem, p. 59):

1. The host country's exposure to treaty-based arbitral claims (opportunity)
2. The incentives of foreign investors to pursue arbitral claims (willingness)
3. The incentives of host states to engage in disputable behavior (willingness)
4. Constraints on host state behavior (opportunity).

We hypothesize that economic crises increase the willingness of governments to engage in disputable behavior and thus, economic crises are subsumed in category 3. Despite the large number of individual investor- state arbitration cases which are thought to be directly or indirectly connected to economic or political crises, quantitative empirical studies on determinants of investor-state arbitration claims do not, with one exception (i.e., Dupont et al., 2016), focus on economic crises as drivers of investor-state arbitration claims.<sup>12</sup>

Rather, quantitative empirical studies mainly investigate the importance of the level of democratization and the strengths of the rule of law as drivers of international arbitration cases. According to Freeman (2013) the institutional capacity of a host country determines "how disputes between foreign investors and states arise in the first place and how such disputes subsequently get transformed into arbitral disputes." (ibidem, p. 58) Institutional capacity shapes both, the opportunity of governments to engage in disputable behavior and the willingness of firms to bring a claim to an arbitration claim court.

Several studies do indeed find strong evidence for a negative association between the number of arbitral claims and a host country's institutional capacity, measured via the strengths of the rule of law, the extent of corruption or the degree of property rights protection (e.g., Freeman, 2013; Dupont et al., 2015; Dupont et al., 2016). Williams (2015) and Williams (2018) isolate a positive correlation between the number of arbitral disputes and the level of democratization of a host country.<sup>13</sup> Williams

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<sup>12</sup> However, some studies include variables capturing the state of the economy in the set of control variables (see below).

<sup>13</sup> Li (2016) also explains arbitral disputes *inter alia* with the level of democratization among the set of independent variables. Li (2016) uses this regression as an intermediate step in forecasting overall expected cost of compensation payments. The author is only interested in coefficient stability rather than isolating robust associations between variables (Li, 2016, p. 81). Simmons (2014) *inter alia* also empirically investigates arbitrations claims. She uses a dynamic random effects approach to model associations of the log of arbitrations as dependent variable and *inter alia* the log of GDP growth as an indicator for the business cycle. Using the log of arbitrations drops zero observations (and is likely to introduce sample selection issues) and using the log of GDP growth eliminates negative growth rates in GDP from the estimations. Apart from the cumulative number of BITs signed, Simmons (2014) does not include any institutional or political variables in her model. In addition, the random effects estimator does not lead to consistent estimates in dynamic models. Berge (2018) focuses on

(2015, 2018) explains the positive correlation with more democratic governments being motivated by “ideological concerns or pressure from key constituencies in their dealing with foreign investors.” (2015, p. 209) This means that democratic institutions, domestic audiences like interest groups or voters “put pressure on policy-makers to take actions which harm investors’ interests, and which in turn may trigger an investment arbitration.” (2018, p. 15) By postulating a non-linear relationship, Kim (2017) sheds new light on the association between the number of arbitral disputes and the level of democratization. Kim (2017) finds that host governments’ risk of facing international arbitration claims is highest at intermediate levels of democracy. He argues that this is the case due to a combination of relatively high regulatory risk and a relatively weak rule of law at intermediate levels of democratization when compared to autocracies as well as full democracies.

Dupont et al. (2016) is the only study that explicitly aims to isolate the role of economic crises for the number of international arbitration claims. These authors interpret economic crises as one of two manifestations of political risk. The second type of political risk materializes in form of a weak rule of law. They apply ordered logit and negative binomial estimators and show results with contemporaneous and lagged GDP growth as indicator for economic crisis. From their analysis Dupont et al. (2016) conclude that while bad governance (weak rule of law, high levels of corruption) shows a statistically significant association with investment arbitration disputes, economic crises do not. However, Dupont et al. (2016) also put a question mark to their finding concerning the role of economic crises by stating that “the choice of GDP growth as indicator of possible severe economic conditions is clearly overly simplistic”. (p. 151)

A few further papers include macroeconomic conditions among their set of control variables. Freeman (2013) argues that a slumping domestic economy might increase the risk of noncompliant behavior on the part of the host government by shortening its time horizon. He uses two crisis indicators: (i) growth in GDP and (ii) a dummy variable indicating that a country abandons a fixed exchange-rate regime due to a currency crisis. The latter variable aims to control for the situation in Argentina in 2002. For neither variable Freeman (2013) is able to isolate a statistically significant association with the number of arbitral disputes a country faces.

Williams (2015) includes the log of inflation rate in her regressions and reports a positive association of this variable with the number of arbitration cases. Yayi (2017) focusses on the impact of common historical ties on arbitral disputes for which he finds strong evidence of a positive association. He also

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the legal content of IIAs and investor claims for arbitration. The study is not concerned with economic or political crises as a driver of investor-state arbitration. For these reasons we do not include these studies in our review.

includes growth in GDP among explanatory variables and concludes that this variable is not consistently significant across the empirical specifications he estimates.

Taking everything into account, the existing empirical literature is consistent with the view that investor-state arbitration claims are predominantly a phenomenon in countries with bad governance, in particular a weak rule of law. Economic crises do not play a major role, neither in the conceptual set-up of related studies nor in their statistical analyses. This neglect of a link between economic crises and investor-state arbitration claims is unexpected in the light of case studies for individual countries (see, e.g., Islam, 2018, ch. 6.3) and existing systematic qualitative analyses by scholars in international law (e.g., van Aaken and Kurtz, 2009).

The established irrelevance of economic crises for investor-state arbitration claims may *inter alia* rest on the lack of meaningful operationalizations of economic crises episodes in prior studies (i.e., growth in GDP and log of inflation rate). The crisis-begets-reform literature stresses how important it is to use indicators which are capable of clearly pinpointing severe macro-economic turmoil (i.e., economic crisis). From this literature we also know about the difficulty to isolate clear episodes of economic crisis, not least due to the fact that what constitutes a crisis in one country may constitute normal circumstances in other countries (e.g., Mahmalat and Curran, 2018). We agree with Dupont et al. (2016) that the measures used in the surveyed papers are overly simplistic. Therefore, one addition of our research consists in analyzing the links between the occurrence of economic crises and the emergence of investor-state arbitration claims using (various) appropriate measures for severe macro-economic turmoil.

#### 4. Empirical Methodology , Variables and Data

##### 4.1. Empirical Methodology

Arbitration cases are dyadic in nature. This opens the possibility to model statistical associations over a variety of dimensions. We assume that the number (counts) of arbitration cases a country-dyad records in a particular year,  $cases_{ijt}$ , follows a conditional Poisson distribution with expectation given in equation 1 (see, e.g., Wooldridge, 2010, ch. 18):

$$E \left[ \frac{cases_{ijt}}{\alpha_{ij}, \vartheta_t, X_{ijt}, Z_{it}, W_{jt}} \right] = \exp(\gamma_{ij} + \vartheta_t + X'_{ijt}\beta_1 + Z'_{it}\beta_2 + W'_{jt}\beta_3) \quad (1)$$

where  $i$  = host (defendant) country,  $j$  = home country (of claimant firm),  $ij$  = country-dyad;  $t$  = year (1996, ...2017)<sup>14</sup>;  $cases_{ijt} = (0, 1, \dots, 9)$ ;  $\gamma_{ij}$  and  $\vartheta_t$  are dyad- and year-fixed effects.  $X'_{ijt}$ ,  $Z'_{it}$  and  $W'_{jt}$  include variables that are associated with  $cases_{ijt}$  and that vary across time and country-dyads ( $ijt$ ), across time and host countries ( $it$ ) and time and home countries ( $jt$ ), respectively.

Using dyad-fixed effects implies that we control for time invariant dyad-specific variables. We believe that controlling for such unmeasured factors is important for our application. From the constructive approach to international relations (Hirsh, 2009) we infer that host country  $i$  and home country  $j$  may share social values including the perception of what represents a breach of an IIA, which, in turn, may determine the willingness to sue a host country. In addition, historical ties and common cultural traits may make it easier to find alternative modes of dispute settlement (like diplomatic intervention by home governments). From the gravity-based literature on the determinants of FDI we know that the distance between host and home country matters. The geographically closer two countries  $i$  and  $j$  are, the more important is FDI of country  $j$  for host country  $i$  and the more important is host country  $i$  for investors from home country  $j$ . Geographical closeness may determine the willingness to breach an IIA with country  $j$  (reputational effect) and also the willingness to sue host country  $i$  in case of a breach (longer-lasting interest in country  $i$  as a host country). Common historical ties, a common official language and geographical closeness should also be paired with increased knowledge about a host country's quality of property rights protection. Factors like these are *inter alia* captured by country-dyad fixed effects. Dyadic-fixed effects capture the impact of NAFTA-membership on arbitral disputes. This is important given that there is a substantial number of arbitral claims between NAFTA members (also see Williams, 2018).

Country-dyad fixed effects also absorb host- and home-country fixed effects. We therefore implicitly control for the political regime in a country or the position of a country in the world economy and in world politics, as long as these factors are stable over time. Controlling for such factors is important, as more democratic regimes - *ceteris paribus* - are more inclined to comply with IIAs (liberal approach to international relations; Hirsh, 2009) and as the costs arising from retaliation measures of home countries of investors depend on the position of the home / host country in the global economy. Home-country fixed effects also capture the fact that some home countries may structurally provide investors with "a particular broad set of options available to address a concern with foreign governments [...]." (Dupont et al., 2016, p. 149).

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<sup>14</sup> Data on arbitration cases start in 1987. However, due to missing data on key explanatory variables we use arbitration cases from 1996 only. We lose 12 arbitral disputes.

The fixed-effects Poisson estimator is robust to a variety of misspecifications like deviations from the Poisson distribution or time dependence between  $cases_{ijt}$  and  $cases_{ijt-k}$ , but a fully robust variance-covariance estimator is required in such instances (Wooldridge, 2010, pp. 763). However, the fixed-effects Poisson estimator neglects information contained in country-dyads, which never record an arbitration case (“pacific dyads”). As Beck and Katz (2001) note, this implies that pacific dyads lack arbitration cases because of some unmodeled idiosyncratic features of these dyads. Put differently, variables contained in  $X'_{ijt}$ ,  $Z'_{it}$  and  $W'_{jt}$  are irrelevant for explaining the absence of arbitration cases in pacific dyads.

To deal with this issue, we present regression results based on the entire sample in a sensitivity-analysis (i.e., by excluding dyad-fixed effects from equation 1). The entire sample includes many country-dyads which never record an arbitral dispute. For such situations the Zero-Inflated Negative Binominal estimator (ZINB) makes substantive sense (e.g., Long, 1997). The ZINB estimator copes with zeros-inflation by assuming that zero counts arise in two ways (Cameron and Trivedi, 2005, p. 681): (1) as a realization of a binary process (e.g., Logit) which models that a country-dyad never records an arbitration case and (2) as a realization of a count process (i.e., Negative Binomial) given that a country-dyad experiences at least one arbitration case over the sample period.

We assume that the ZINB model has the following conditional expectation (see, Cameron and Trivedi, 2009, p. 587):

$$E \left[ \frac{cases_{ijt}}{\alpha_{ij}, \vartheta_t, X_{ijt}, M_{ijt}, Z_{it}, W_{jt}} \right] = \left\{ 1 - G_1 \left( \frac{0}{\vartheta_t, M_{ijt}} \right) \right\} \exp(\vartheta_t + X'_{ijt}\beta_1 + Z'_{it}\beta_2 + W'_{jt}\beta_3) \quad (2)$$

where  $\left\{ 1 - G_1 \left( \frac{0}{\vartheta_t, M_{ijt}} \right) \right\}$  is the probability that the Logit process variable equals 1 (i.e., probability of never recording an arbitration case). In our application of the ZINB estimator the Negative Binomial process includes the independent variables also contained in equation 1. Dyad-fixed effects are substituted by ten regional dummy variables for host countries (included in  $Z'_{it}$ ) as well as bilaterally defined variables capturing the bilateral distance between capital cities and variables indicating the presence of a common official language in  $i$  and  $j$  and common historical ties of  $i$  and  $j$  (included in  $X'_{ijt}$ ).

The Logit process includes time-fixed effects and a dummy variable signaling that a Bilateral Investment Treaty ( $BIT_{ijt}$ ) is in force in year  $t$ . Freeman (2013) stresses that  $BIT_{ijt}$  is a natural

candidate for modelling the probability of never experiencing an arbitral dispute. Without a BIT in force, the opportunities for foreign investors to file arbitral claims against a host country are diminished. BITs are the prime vehicle of foreign investors to sue host countries. In the Logit process we also include  $Time_{ijt}$ , and its square  $Time_{ijt}^2$ , which capture the years between arbitration cases. This is done to deal with the possibility of time dependence in the binary process (see Beck et al, 1998; Carter and Signorino, 2010).

To test hypothesis H2 we add an interaction term between our proxy variables for economic crisis and the rule of law in a host country to equation (1).

$$E \left[ \frac{cases_{ijt}}{\alpha_{ij}, \vartheta_t, X_{ijt}, Z_{it}, W_{jt}} \right] =$$

$$\exp(\gamma_{ij} + \vartheta_t + X'_{ijt}\beta_1 + Z'_{it}\beta_2 + W'_{jt}\beta_3 + \beta_4 EconomicCrisis_{it} * Rule of Law_{it})(3)$$

As a continuous (Rule of Law) and a binary variable (Economic Crisis) are interacted, the coefficient on the interaction term,  $\beta_4$ , can be directly interpreted as interaction effect (Shang et al., 2018).<sup>15</sup> The influential work of Brambor et al. (2006) suggests that it is advisable to calculate and graphically visualize the impact of economic crisis on the endogenous variable at various values of the interacting variable. This might reveal interesting non-linearities in the economic crisis effect even in case the interaction term *per se* is statistically insignificant.

## 4.2. Variables and Data

### a) Arbitration Cases

Data on arbitration cases<sup>16</sup> are drawn from two sources. Data until 2014 are compiled by Wellhausen (2016). We add data for the years 2015 – 2017 using UNCTAD’s Investment Arbitration database. In

<sup>15</sup> This is not only a marked contrast to Logit or Probit estimators, but also to Poisson regressions where two binary variables are interacted. (See Greene, 2010 and Shang et al., 2018, for a discussion.)

<sup>16</sup> It should be noted that a considerable share of BITs include “umbrella” clauses, which extend the protection provided in BITs beyond investments to investor-state contracts. In line with other empirical studies, this suggests inclusion of investor-state arbitration cases arising from investor – state contracts in addition to cases based on FDI.



addition, we include all those cases up to 2014, which the latter database includes but which are not contained in Wellhausen (2016).

Figure 1 shows that treaty-based arbitration cases start to emerge in 1987. Around 1996, a steep and lasting surge sets in and they become a phenomenon host countries have to reckon with. The surge in arbitration cases happened with a time lag after the increase in BITs signed and put in force from the 1990s onwards (see, e.g., UNCTAD, 2018b, Fig. III.3. and Fig. III.4).

[Figure 1 here]

Tables A1 and A2 detail the distribution of arbitration cases over host and home countries.<sup>17</sup> The tables imply that 961 investor-state arbitration cases from 75 home (claimant) and 132 host (defendant) countries over the 1987 to 2017 period are available. In some years a host country may face more than one arbitral complaint from one particular home country. Thus, the number of instances with at least one arbitration case in a country-dyad and year is lower than 961. The corresponding number is 815.

Table A1 signals that individual countries in South- and Latin America are frequently targets of arbitral claims, with Argentina facing the most arbitral disputes followed by Venezuela. Figure 2 shows that the region with the most arbitral disputes (312) is that of Eastern Europe & post-Soviet Union followed by Latin America (254). Western European & North American countries are confronted with 112 disputes in total.

[Figure 2 here]

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<sup>17</sup> Note that these numbers are slightly different from those available on UNCTAD's homepage. According to UNCTAD (UNCTAD 2018a), UNCTAD compiles this information on the basis of public sources. UNCTAD's statistics do not cover investor-state cases that are based exclusively on investment contracts, national investment law or cases in which a party has signaled its intention to submit a claim to ISDS but has not commenced the arbitration. Annual and cumulative case numbers are continuously adjusted as a result of verification and may not match case numbers reported in previous years. We use information from UNCTAD's homepage available in April 2018.

The most important home countries of claimants are the United States of America and the Netherlands (cf. Table A2).<sup>18</sup> As Figure 3 details, the vast majority of arbitral disputes are filed by foreign investors from Western European and North American countries (752).

[Figure 3 here]

b) Economic Crisis Variables

Several different - but often interrelated - types of economic crises have been described in the literature (e.g., Reinhart and Rogoff, 2010, ch. 1; Claessens and Kose, 2014). Soaring rates of inflation, heavily depreciating currencies and negative growth rates in real GDP are common indicators signaling severe macro-economic turmoil (i.e., economic crisis). Governments react to such events in a variety of ways like price freezes, the nationalization and operational restructuring of companies, granting financial support to (domestic) companies, introduction of controls on capital outflows or changing ordered public utility rates (e.g., Edison and Reinhart, 2000; IMF, 2003; Claessens et al, 2014; Dupont et al, 2016; Islam, 2018, ch. 6.3). As outlined in section 2, we claim that macro-stabilization policy interventions of these types, in turn, are the basis of international arbitration disputes.

Most studies testing the crisis-begets-reform hypothesis *inter alia* use inflation-, currency- or real economic growth-based indicators of economic crisis (e.g., Drazen and Easterly, 2001; Pitlik and Wirth, 2003; Agnello et al., 2015; and Mahmalat and Curran, 2018 for a synthesis) and hence these are also applied in the present study. Thereby, we separate inflation rate-, exchange rate- and real economic growth rate-based indicators of economic crises into two broad categories (see, Mahmalat and Curran, 2018 for a discussion):

- (i) “Conventional” crisis measures which are derived based on deviations from threshold values of the underlying macroeconomic variables, and
- (ii) “Relative” crisis measures which, to a certain extent, take recent changes in the macro-economic environment in a host country into account. Relative measures aim to cope with the possibility that reaching a specific threshold value might imply severe turmoil in countries that are used to solid macro-economic conditions. However, for countries with

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<sup>18</sup> As home countries, Belgium and Luxembourg are merged into “BELLUX” as they share the same Bilateral Investment Treaties.

traditionally weak macro-economic performance, jumping the threshold value in year t might not be an appropriate barometer for the occurrence of an economic crisis.<sup>19</sup>

We define conventional crisis indicators as follows:

1.  $C\_Inflation\_Rate\_Crisis\_it = 1$  if the inflation rate for country i in year t is > 20 percent (see, Reinhart and Rogoff, 2010, ch. 1; Agnello et al., 2015) and 0 otherwise.
2.  $C\_Exchange\_Rate\_Crisis\_it = 1$  if in year t a host country's currency depreciates by on average by more than 15 percent against the US-Dollar (see, Reinhart and Rogoff, 2010, ch. 1; Agnello et al., 2015) and 0 otherwise;<sup>20</sup>
3.  $C\_Economic\_Growth\_Crisis\_it = 1$  if the growth rate of real GDP for country i in year t is < 0 and 0 otherwise (see, e.g., Bjørnskov, 2016).

The relative economic crisis measures applied in this paper consider whether a host country's macro-economic situation changes substantially compared to the prior year. We use the following operationalizations of episodes of relative economic crises:

4.  $R\_Inflation\_Rate\_Crisis\_it = 1$  if the inflation rate for country i in year t is > 20 percent and the change in the inflation rate from t-1 to t is > 100 percent (see, Mahmalat and Curran, 2018 for a similar operationalization used by Tornell, 1998);
5.  $R\_Exchange\_Rate\_Crisis\_it = 1$  if in year t a host country's currency depreciates by on average by more than 15 percent against the US-Dollar and the change in the growth rate of the exchange rate from t-1 to t is > 100 percent;
6.  $R\_Economic\_Growth\_Crisis\_it = 1$  (i) if the growth rate of real GDP for country i in year t is < 0 after at least two consecutive years of positive economic growth rates (see Bjørnskov, 2016); in addition, this variable has entry 1 (ii) if real economic growth is already negative in t-1 but the drop in the economic growth rate from t-1 to t is > 100 percent.<sup>21</sup>

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<sup>19</sup> Put differently, while a crisis might be perceived as severe in one country, it might represent normality in another country. Relative crises indicators aim to cope with this aspect.

<sup>20</sup> To avoid losing the USA,  $Exchange\_Rate\_Crisis\_it$  variables are evaluated against the Euro for the USA.

<sup>21</sup> For instance, if real economic growth is -1 percent in t-1 but it is -5 percent in t, then considering only part (i) of the  $R\_Economic\_Growth\_Crisis\_it$  definition would lead to entry 0 for t; however, by also considering part (ii) we assign entry 1 to  $R\_Economic\_Growth\_Crisis\_it$ . A substantial further drop of a negative economic growth rate is thus considered as episode of economic crisis.

Relative crisis definitions are even stricter than those of conventional measures. We, thus, see fewer episodes of economic crisis when using relative crisis measures (cf. Table 1).<sup>22</sup>

In addition to these three measures we use an indicator for the occurrence of sovereign debt crises in the analysis. This is justified for a number of reasons:

- (i) Sovereign debt default often signals deeper macro-economic problems, like a sustained lack of economic activity, which leads *inter alia* to low tax revenues. For example, Neri and Ropele (2015) conclude that the European sovereign debt crisis of 2008 “made credit conditions significantly worse and weighed on economic activity and unemployment.” (p. 4) This is explained by the deterioration in sovereign creditworthiness, which makes bank funding costlier and more difficult to obtain as problems in financial institutions disrupt credit allocation, worsen capital flight and deepen the crisis (IMF 2003).
- (ii) Sovereign debt-crises often lead to large capital outflows (i.e., capital flight of domestic and foreign investors) and to the implementation of capital outflow controls (e.g., IMF, 2003) from which investor-state arbitration cases may emerge. More generally, like in case of the inflation, currency and real economic growth crises policy measures carried out in the wake of sovereign debt crises have a high probability to violate rights of foreign direct investors. For example, Waibel (2007) lists six justifications why debt restructuring violates the fair and equitable treatment standard (FET) in BITs – together with a number of other absolute standards like indirect expropriation or free capital transfer.
- (iii) Besides foreign direct investors, in view of sovereign debt crises being an indicator of structural problems of a country’s financial markets<sup>23</sup>, some policy interventions in the aftermath of a sovereign debt default may ultimately hit foreign portfolio investors as well. Indeed, investor-state arbitration cases exist where an ICSID arbitration tribunal declared its jurisdiction concerning financial asset holders’ mass claims. Moreover, a legitimate and reasonable argument has been put forward concerning the possibility that the next major sovereign debt crisis may result in many more states facing claims under their investment arbitration regime (Hopwood, 2018, p. 61). A large literature has evolved around the issue of investor- state arbitration where the investors are organized by vulture funds (e.g. Waibel 2007; Kelly 2018; Megliani 2018 with reference to highly indebted poor countries; Boggio 2018).

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<sup>22</sup> For instance, if in year  $t$  the inflation rate is  $> 20$  percent in country  $i$ , but it is similar in  $t-1$ ,  $C\_Inflation\_Rate\_Crisis\_it$  has entry 1 but  $R\_Inflation\_Rate\_Crisis\_it$  has entry 0.

<sup>23</sup> Indeed, systemic banking crises frequently coincide with or precede sovereign debt crises (Laeven and Valencia, 2018).

- (iv) The timing of debt default and restructuring can be exactly determined and thus there is no ambiguity concerning the start of a sovereign debt default and the date of debt restructuring. This is an advantage over the purely data-driven definitions of economic crises.<sup>24</sup>

In conclusion, sovereign debt defaults and debt restructuring measures may trigger investor-state arbitration cases in the “traditional form” of claims by foreign firms but also increasingly a “new type” of arbitration driven by portfolio investors. It is therefore important to include this type of economic crisis in an analysis of investor-state arbitration.

Sovereign debt crises (*Sov\_Debt\_Crisis\_(it)*) are operationalized by combining the information provided in Laeven and Valencia (2012 and 2018) on the year of sovereign default and on the year of sovereign debt restructuring. *Sov\_Debt\_Crisis\_(it)* has entry 1 if the government defaults on its outstanding debt obligations in a given year *t* or if it restructures the outstanding debt in year *t* (or both).

Compared to the other types of economic crises considered, sovereign debt crises are rather infrequent (cf. Table 1). This infrequency of sovereign debt default and debt restructuring makes *Sov\_Debt\_Crisis\_(it)* akin to the relative crisis measures defined above. *Sov\_Debt\_Crisis\_(it)* isolates single years of crisis after many years of no debt default or restructuring. Put differently, entry 1 of *Sov\_Debt\_Crisis\_(it)* implies a considerable deterioration in the macro-economic situation in a country when evaluated against this country’s own macro-economic past. As a relatively rare event, it makes our approach “conservative” in the sense that in case we determine an association with arbitration claims this strengthens our argument that economic crises and claims are related.

Finally, we also derive an “overall crises indicator” based on empirical results for individual crisis indicators. Specifically, we first determine whether the conventional or the relative measure for the same type of crisis leads to a lower value of the Akaike Information Criterion (AIC).<sup>25</sup> Then, we construct *Overall\_Crisis\_(it)* which has entry 1 whenever at least one of the four crisis measures (either the conventional or the relative economic growth, inflation or exchange rate-based measure depending on AIC and the measure for sovereign debt crisis) has entry 1 in a specific year.

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<sup>24</sup> See Bjørnskov (2016) on data-related problems in isolating real economic growth crisis especially in less developed countries.

<sup>25</sup> AIC can be used to compare non-nested models based on a same estimation sample (same number of observations).

[Table 1 here]

We include the various economic crisis indicators with a one-year (t-1) and a two-year (t-2) lag in our empirical models. Firstly, this reflects the fact that it takes some time for foreign investors to file a claim (e.g., Williams, 2015). Secondly, it signifies that in order to cope with macro-economic turmoil, governments might need some time to implement policy measures which, in turn, are the basis for arbitration claims of foreign firms.<sup>26</sup>

### c) Control Variables

Besides the various indicators of economic crises and dyad- and year-fixed effects we employ a rich set of control variables. These control variables capture both the willingness and the opportunity of host governments to implement disputable policy measures and of foreign firms to bring arbitral claims before an arbitration council. Table 2, which is based on Freeman (2013), provides an overview.

[Table 2 here]

### i. **Variables in $X'_{ijt}$**

The main variable contained in  $X'_{ijt}$  is  $BIT_{ijt}$ , which signals that a Bilateral Investment Treaty is in force in year t. This variable determines the opportunity of foreign investors to bring an arbitration before an arbitration council.<sup>27</sup>

In ZINB regressions, which do not include dyad-fixed effects, we use the bilateral distance between capital cities ( $\text{Log\_Distance\_Capital\_Cities}_{(ijt)}$ ) instead, a common official language dummy variable ( $\text{Common\_Language}_{(ijt)}$ ), and a dummy variable indicating a prior colonial relationship between i and j ( $\text{Colonial\_Relationship}_{(ijt)}$ ). As noted above, we include  $\text{Time}_{ijt}$  and  $\text{Time}_{ijt}^2$  in the Logit part of the ZINB regressions.  $\text{Time}_{ijt}$  has entry zero in the year after an instance of arbitration is recorded and it increases linearly until the next instance arises in a country-dyad.

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<sup>26</sup> As outlined in section 2, compared to macro-stabilization measures, structural reform measures undergo a more involved decision-making process. Arbitration cases based on the former type of crisis measures may arise relatively soon after a crisis, while arbitration cases in response to the latter may arise with greater time lag.

<sup>27</sup> We admit that BITs *per se* may have different legal content along several dimensions (e.g., Berge, 2018). However, due to the Most Favored Nation clause more favorable provisions from other IIAs can be “imported” to any BIT. Thus, a fine-grained disaggregation of BITs along legal dimensions is not of predominant importance for our application, while the inclusion of  $BIT_{ijt}$  is.

*ii. Variables in  $Z'_{it}$*

Domestic institutions provide alternative avenues for foreign investors to enforce their property rights. We use the rule of law indicator (Rule\_of\_Law\_(it)) developed by Kaufmann et al. (2011) to capture the quality of domestic institutions. In addition, we add a variable that signifies the quality of regulation (Quality\_of\_Regulation\_(it)) advanced by the same authors. This variable measures the incidence of market-unfriendly policies and inadequate bank supervision as well as perceptions of the burdens imposed by excessive regulation in areas such as foreign trade and business development (Teorell et al., 2017). As Quality\_of\_Regulation\_(it) is highly correlated with Rule\_of\_Law\_(it), we use the residuals from a regression of Quality\_of\_Regulation\_(it) on Rule\_of\_Law\_(it) and, thus, use the part of quality of regulation which is unrelated to the rule of law in our analysis (see, Bénassy-Quéré et al., 2007).

Higher values of Rule\_of\_Law\_(it) and of Quality\_of\_Regulation\_(it) indicate better domestic institutions. We expect a negative association of these variables with the number of arbitral disputes. A weak rule of law is paired with both, opportunities for disputable behavior of governments as well as the willingness of foreign investors to sue host governments (see Freeman, 2013). As the quality of regulation, which is measured by the Kaufmann et al. (2011) index, points out the incidence of market-unfriendly policies, lower values of Quality\_of\_Regulation\_(it) should also be associated with a higher willingness of firms to bring cases to tribunals (also see Dupont et al., 2016).

We also include a measure of GDP per capita (Log\_GDP\_per\_Capita\_(it)) to estimate the quality of domestic institutions in a country. We expect low economic development to be related to higher opportunities for disputable behavior of governments.

The link between economic crises and arbitration cases is based on the assumption that in the wake of an economic crisis host governments implement policy measures which breach stipulations in IIAs. The possibilities of policy change, however, depend on the political constraints decision-makers face. Governments facing greater political constraints are less likely to implement policy measures that trigger arbitral disputes (Williams, 2015 and 2018). We use the Polcon3 index (Henisz, 2002) to capture veto points and the (in)feasibility of policy change (Infeasibility\_Policy\_Change\_(it)). Higher values of Polcon3 indicate more veto points. We expect a negative association of Infeasibility\_Policy\_Change\_(it) with the number of arbitration cases.

On the one hand, having conducted Foreign Direct Investment in a host country (Log\_FDI\_Stock\_(it)) usually forms the basis for foreign investors to file arbitration claims. Hence, the more FDI a country hosts, the larger is the potential for arbitral claims (Freeman, 2013). On the other hand, a large stock

of FDI may imply that a host country heavily relies on this source of capital. In turn, the willingness of a government to breach an IIA may be low (e.g., Williams, 2015). Therefore, the sign of  $\text{Log\_FDI\_Stock}_{(it)}$  is ambiguous *a priori*.

Besides BITs, foreign investors frequently invoke the Energy Treaty Charter as the basis for their arbitral claims. This requires that a country has signed and put in force this treaty.  $\text{Energy\_Charter\_Treaty}_{(it)}$ , a binary variable with entry 1 in case a country is a member of the treaty, aims to model this possibility. We expect this variable to have a positive association with arbitral claims.

Arbitral claims may also arise in the wake of wars, armed conflicts and changes in the political regime. These events may lead to a policy change which, in turn, may trigger arbitral disputes (e.g., Campos et al, 2010; Bonnichta et al, 2017, ch. 1). We model such instances of “political crises” using three binary variables: One indicates episodes of wars ( $\text{War}_{(it)}$ ) and another signifies years with minor armed conflicts ( $\text{Minor\_Armed\_Conflicts}_{(it)}$ ). Episodes of war are defined as years with at least 1000 battle-related deaths. Years with minor conflicts see between 25 and 999 battle-related deaths (Eck and Pettersson, 2018). The third political crisis-related variable indicates years with a change in the political regime ( $\text{Regime\_Change}_{(it)}$ ). As noted by Dupont et al. (2016), regime changes may put foreign investors at risk of expropriation.  $\text{Regime\_Change}_{(it)}$  has entry 1 in the first year in which a new regime is established (Marshall et al., 2017).

In ZINB regressions we include ten regional dummy variables for host countries. The definition of regions is the one developed by Wahman et al. (2013).

### *iii. Variables in $W'_{jt}$*

$\text{Cumulated\_Cases\_Home}_{(jt)}$  counts the cumulated number of arbitration cases which emerge from a particular home country. It aims to capture the awareness of foreign investors from a particular home country of the possibility to bring a case against a particular host country before an arbitration council.<sup>28</sup>

Tables A3 and A4 include descriptive statistics and pairwise correlation coefficients for the variables used in the empirical analysis. Table A5 details data sources.

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<sup>28</sup> The increasing awareness of foreign investors of the possibility of arbitration claims is, to a certain extent, also captured by year-fixed effects. These effects *inter alia* capture the time trend in arbitral disputes.



## 5. Regression Results

Poisson estimates are easy to interpret. In case the variables are used in logarithmic form (i.e., Log\_GDP\_per\_Capita (it) and Log\_FDI\_Stock (it)), Poisson coefficients directly represent elasticities. Remaining coefficients can, with slight modifications, be interpreted as semi-elasticities. For this aim coefficients of continuous variables need to be multiplied by 100. Coefficients of discrete variables, including the economic crises variables used, need to be transformed by  $100(\exp(\text{coefficient})-1)$  in order to derive semi-elasticities.

### 5.1 The role of economic crises

#### a) Do economic crises matter for the number of arbitration cases?

Table 3 includes results using the various crises definitions provided in section 4. Columns (1) to (3) are based on conventional and Columns (4) – (6) on relative crisis indicators. Column (7) shows findings for Sov\_Debt\_Crisis (it).

Table 3 demonstrates that episodes of economic crises are positively and significantly associated with the number of investor-state arbitration cases. Hence, this evidence supports our first hypothesis, and it is consistent with the view that governments are inclined to violate their international commitments enshrined in IIAs (which affects a few foreign investors) in favor of interventions to mitigate the consequences of crises (which affect the whole economy).

A comparison of conventional versus relative crisis measures reveals some differences as to the signs and significance of the results. Coefficients are somewhat larger for relative crisis measures. However, Economic\_Growth\_Crisis\_(it) is only significant in its conventional form. To arrive at preferred specifications, which we use throughout the remainder of the paper, we use the AIC to choose between conventional and relative crisis indicators of the same group (i.e., inflation-, exchange rate- and economic growth-based measures). Except for economic growth crises, the relative measures give lower AIC values. Preferred specifications are, thus, those shown in Columns (2), (4) and (6).

In Column (8) we show findings based on an “overall crisis indicator”, Overall\_Crisis\_(it). This variable has entry 1 in year  $t$  in case at least one of the crisis indicators in Columns (2), (4), (6) and (7) has entry 1 and entry 0 otherwise. From Column (8) we see that in the event of any type of economic crisis, on average the number of investor-state arbitration cases goes up *ceteris paribus* by 31% ( $t-1$ ) and 50% ( $t-2$ ). While an increase in cases by 31% and 50% appears high at first glance, one needs to bear in

mind that the mean value of total cases per country-dyad in the estimation sample is low (0.09; cf. Table A3). Assuming that a host country has IIAs in force with each of the 74 remaining home countries, a semi-elasticity of 50% implies that the number of arbitration claims increases by  $0.09 \cdot 0.5 \cdot 74$ , that is by about 3 cases, after two years. The corresponding value for t-1 is 2 claims more.

[Table 3 here]

b) Do various types of economic crises matter differently?

Table 3 allows us to examine the differential impact of crises on arbitration cases. Differential impacts depending on the type of crisis are expected,

- (i) because different types of economic crises call for different types of policy interventions, each having its own impact on investors in the economy. Generally, the more closely policy interventions concern property rights secured by IIAs, the larger the probability of a violation and the larger the probability that the violation leads to arbitration. Yet, many other determining factors may play a role, e.g. the strength of a foreign investor vis-à-vis the host government via informal strategies, which may be particularly pronounced if an investor is a large multinational firm and the investment itself is large, e.g. a mining company's influence on a local government. Moreover, differential impacts are likely
- (ii) due to the timing of policy measures in the wake of an economic crisis. While emergency measures will be adopted in a timely manner (lag 1 should be sufficient), structural reform decision and implementation takes more time and therefore lag 2 of the crisis measures may matter more.

As can be seen, we should expect the impact of various types of economic crises to differ by strength (semi-elasticity) as well as regarding the timing of their association with arbitration claims. While we are not able to provide clear-cut conceptual guidelines to the answer which type of crisis should matter most or which should unfold its impact immediately, we suspect that inflation- and currency-related crises lead to fast implementation of emergency policy measures like controls of capital outflows, prize freezes and changes in ordered utility rates. These policy measures do not imply changes in entitlements and should thus not be subject to extensive political debates, which delay policy implementation. In contrast, especially real economic growth crises but also sovereign debt

crises may signal more structural problems which call for more structural economic reforms and, hence, lengthy political processes causing implementation lags.

Our results indeed indicate a more immediate impact of inflation crises (144% increase; Column (4)) and exchange rate crises (57%; Column (6)) on the expected value of the number of arbitration cases compared to the impact of economic growth crises (43%; Column (2)) and sovereign debt crises (114% increase; Column (7)), which are significant with a time lag of 2 periods. Although admittedly it is difficult to hypothesize precisely which type of economic crisis matters at what point in time, in the light of the above reasoning our empirical results do not seem implausible.

### *5.2 What about the role of control variables?*

The specifications estimated and displayed in Table 3 include a set of control variables. Together with the variables of main interest, these controls are thought to reflect the dimensions of “opportunity” and “willingness” shown in Table 2.

Starting with „opportunity“ from the investor’s perspective, which reflects the formal and informal regulations that make a claim possible, BITs in force and membership of the Energy Charter Treaty are our proxies for IIAs (with others, like NAFTA-membership, being captured in dyad-fixed effects). Both types of IIAs matter, primarily BITs (most of which include some ISDS clause directly as a precondition to file a claim). This result has already been well established by related studies (see section 3). A BIT in force (Table 3, Column (8)) increases the number of arbitration cases by almost 575 percent. Presumably as the Energy Charter Treaty is sector-specific and compared to BITs there is a difference in the regional coverage (the Energy Charter Treaty is based primarily on European and Asian membership), its impact is weaker when compared to BIT\_(it-1).

A larger FDI stock, if at all, has a weak positive impact on the number of arbitration cases and thus supports Freeman’s (2013) claim that the more FDI a country hosts, the larger is the potential for arbitral claims.

The sharp increase in arbitration cases, and the fact that public awareness of IIAs has risen in general and among investors in particular have led us to expect a positive association of Cumulated\_Cases\_Home\_(it) with the number of arbitration cases. Yet, its effect reported in Table 3 is negative and significant. It does not vary much across the types of crises (semi-elasticity ranging between -1.2 and -1.6). Rather than capturing awareness of investors, this variable may reflect shifts in the importance of home countries over time. The negative effect of Cumulated\_Cases\_Home\_(it) signifies a shift in the importance of certain countries as claimants’ home base. This shift is consistent

with the view that bilateral FDI flows, and hence the likelihood of arbitration cases to arise, from “non-traditional” home countries increase in importance over time.

The “willingness” to pursue an arbitral claim from the investor’s point of view is represented by indicators of “rule of law” and “quality of regulation” in the host country. It seems quite conceivable that the preparedness of the foreign investor to circumvent the local judicial system and to jump directly to arbitration is higher in an environment of local courts which are perceived as biased, the lack of certain issues which constitute violations of investors’ rights in the domestic law of the host country and other weaknesses of the judicial system. An increase in the rule of law index by one unit reduces the number of arbitration cases by about 100 percent. A lower quality of regulation (i.e., excessive regulations as well as frequent changes thereof) increases the willingness of affected investors actually filing a claim. A reduction of the number of arbitration cases between 64 and 85 percent resulting from an increase in the quality of the regulation index by one unit is suggested in Table 3.

In addition, the mirror image, the “opportunity” from the point of view of the host country’s government, supports the assertion of a larger exposure of the host country to arbitral claims. The significant negative association of political constraints (“Infeasibility\_Policy\_Change\_(it)”) and the number of arbitration cases seems plausible, as in political systems that are characterized by many veto-points the probability of implementing disputable policy measures should be lower. With regard to the level of development of a host country, it is interesting to note that a lower GDP per capita does not seem to lead to increases in the number of arbitration cases. On the one hand, the level of development is strongly related to other institutional factors (see Table A4). On the other hand, from a substantive point of view, the obligations in BITs across country dyads, independently of the level of development of the host country, are similar and so are the measures, host governments need to undertake in the course of an economic crisis.

Finally, the “willingness” of the host country to violate its commitments may depend on factors akin to economic crises, namely political crises. Episodes of war (War\_(it)) are positively related to arbitration cases. This variable also shows a statistically significant impact in the majority of specifications estimated. Lastly, we find that regime changes and minor armed conflicts do not matter regarding the number of arbitral disputes.

In sum, the conceptual framework developed by Freeman (2013) proves useful to reflect “opportunity” and “willingness” for the analysis. Judging by the resulting signs and the statistical significance the factors chosen in our analysis seem to reflect both dimensions well.

### 5.3 Are key results robust to changes in specification and methodology?

We perform three kinds of sensitivity analyses. First, we use the ZINB estimator instead of the dyad-fixed effects Poisson estimator (Table 4) in order to account for the presence of zeros-inflation in the underlying sample. Second, we conduct a jackknife analysis with respect to the country included in our sample (Table 5). A further sensitivity check adds two related institutional variables, i.e. perceived corruption and the level of democracy, to the empirical model (Table 6).

#### a) Results from ZINB

The related literature *inter alia* applies the ZINB estimator to investigate arbitration claims (e.g., Freeman, 2013; Williams, 2015). We prefer the dyad-fixed effects estimator as it accounts for a number of time-invariant factors which might affect arbitration claims and which cannot be considered explicitly in the regressions. In addition, the sample used by the ZINB estimator includes a large number of country pairs which never record an arbitration case. This might simply be due to the fact that there are little or no bilateral FDI flows within those dyads. However, due to serious data limitations with respect to bilateral FDI data, we are not able to control explicitly for the amount of FDI within a country dyad. This data problem is of lesser concern in the case of the dyad-fixed effects Poisson estimator, as dyads which never record an arbitration claim are dropped from the analysis.

Table 4 shows the results for specifications similar to those displayed in Table 3. Note, we only show results using preferred economic crises indicators as suggested by the AIC (cf. Table 3). As we use BIT<sub>(ijt)</sub> in both parts of the estimations semi-elasticities cannot be derived from the underlying regression coefficients. For a substantive interpretation of the results, we stick to incidence rate ratios (IRR), defined as  $IRR = \exp(\text{coefficient})$ . Likewise, for interpretation, Logit coefficients can be transformed into odds ratios.<sup>29</sup>

Turning to the upper part of Table 4, coefficients concerning our main variables of interest support results shown in Table 3. For example, Column (5) highlights that the expected number of arbitration cases increases by a factor of 1.29 if an economic crisis emerges in t-1, and by a factor of 1.57 if an

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<sup>29</sup> Count process regression coefficients are defined as the log of [(expected number of cases in case X = 1) divided by (expected number of cases in case X = 0)]. Exponentiation of the coefficients gives [(expected number of cases in case X = 1) divided by (expected number of cases in case X = 0)] which is the IRR. Thus, if  $IRR > 1$ , an increase of X from 0 to 1 increases the expected number of cases by a factor equal to the IRR. For odds ratios a similar interpretation applies.

economic crisis emerges in  $t-2$ . Furthermore, the findings of differences in strength and in the timing across the various crisis indicators are confirmed.

Based on an extended sample coverage, again a strong rule of law as well as high quality regulation reduce the expected number of claims. FDI stock now shows a significant positive association with the number of arbitration claims, while  $War_{(it)}$  loses its statistical significance. The gravity-type variables show a significant relationship with arbitration claims. The signs imply that the closer the cultural ties, the larger the number of claims, while the opposite tendency is established for geographical distance. It is likely that, to a certain extent, these variables capture the impact of bilateral FDI-flows on arbitration claims. Regional dummy-variables indicate that especially Eastern European and post-Soviet Union countries as well as Latin American countries face international arbitral disputes, which is consistent with the information contained in Figure 2.

An interesting result emerges regarding  $BIT_{(ijt)}$ . While it is highly statistically and economically significant for the Logit process (lower panel of Table 4) it loses its significance for the count process. Thus, a BIT in force is important for the opportunity to bring a claim to an international tribunal, but it is of lesser importance for the number of claims recorded in a country-dyad.

[Table 4 here]

#### b) Country-Jackknife Analysis

It is a major concern in this type of analysis that individual countries drive the sign and significance of some of our results. We check the robustness of our findings with respect to country inclusion. To this end we re-estimate the specification shown in Table 3, Column (8) by dropping the ten most important defendant countries in arbitral disputes (cf. Table A1) one by one from our sample. Table 5 contains the results for the coefficients on  $Overall\_Crisis_{(it-1)}$  (i.e.,  $\_b1$ ) and  $Overall\_Crisis_{(it-2)}$  (i.e.,  $\_b2$ ), respectively. Coefficients never turn negative and also keep their statistical significance. They are also robust with respect to size. The p-values (i.e.,  $\_p$ ) indicate that the null hypothesis  $H_0: \_b1 = \_b2 = 0$  is always rejected. From this analysis we conclude that results in Table 3, Column (8) are robust to dropping individual countries.

[Table 5 here]

c) Adding Corruption Perception and Level of Democracy

When we add corruption perception or the level of democracy to the specification in Table 3, Column (8), our substantive conclusions remain valid. Corruption\_(it) is measured by using the Transparency International Corruption Perception Index, which ranges between 0 and 100 (highly clean) (variable tpi\_cpi in Teorell et al., 2017), and Democracy\_(it) is operationalized via Freedom House's imputed polity variable which ranges between 0 and 10 (most democratic) (variable fh\_polity2 in Teorell et al., 2017).

Democracy\_(it) and Corruption\_(it) show a negative association with the number of arbitral disputes. These results confirm the predictions of the liberal approach to international relations, which assumes that more democratic countries are more likely to comply with IIAs (Hirsh, 2009). Results are also in line with Freeman (2013), yet contradict Williams (2015, 2018).

As a consequence of the inclusion of these variables, the variables capturing the quality of regulation and the feasibility of policy change lose their statistical significance. This is not unexpected as Democracy\_(it) and Corruption\_(it) are highly correlated with the other institutional variables included in the analysis. Note that the number of observations substantially drops in case we add Corruption\_(it) to the model, which is another reason why we do not consider this variable in our main specifications.

We also check the hypothesis of an inverted U-shaped relationship between democracy and the number of arbitration cases put forward by Kim (2017). As shown in the last column of Table 6, we cannot find support for this argument.

[Table 6 here]

*5.4 Is the impact of economic crises on arbitration cases related to the rule of law in a host country?*

Given the fact that the rule of law has a strong and robust effect on the number of arbitration cases, we next investigate the possibility that the above result, i.e. economic crises matter for arbitration cases, is not uniform across host countries. Table 7 shows the findings of adding an interaction term between Overall\_Crisis\_(it-1) and Overall\_Crisis\_(it-2), respectively, and Rule\_of\_Law\_(it-1) to the specification shown in Table 3, Column (8). While the coefficients of the interaction terms show the expected negative sign, i.e., a stronger rule of law reduces the impact of an economic crisis on the

number of arbitral disputes, both coefficients fall short of statistical significance. Also, the coefficient on the interaction term with Overall\_Crisis\_(it-2) is relatively small in size.

[Table 7 here]

However, as argued by Brambor et al. (2006) a graphical visualization of the interaction effects at various values of the interacting variable might reveal interesting non-linearities in the economic crisis effect even in case the interaction term falls short of statistical insignificance. Turning to Figure 4, we see that Hypothesis 2 of an inverse relationship is not implausible, especially for Overall\_Crisis\_(it-1). Figure 4 shows the range of values of the rule of law index on the horizontal axis.<sup>30</sup> The minimum value of the index in our sample is -2.13 and the maximum value of the index is 2.10 (cf. Table A3). In the left panel the effect (coefficient) of Overall\_Crisis\_(it-1) on the number of arbitration cases is shown. The panel demonstrates what Table 6 already suggested, namely that the crisis coefficient decreases quantitatively with an increasing rule of law index. Importantly, the coefficient turns statistically insignificant for values of the rule of law index above about 0.4. As shown by the underlying histogram,<sup>31</sup> a substantial amount of sample observations falls in the range of insignificance.

In contrast, the right panel of Figure 4 for Overall\_Crisis\_(it-2) demonstrates only a weak moderating effect of the rule of law. Given that different types of economic crises impact on arbitral disputes with different time lags (cf. Table 3) these findings are consistent with the view that a strong rule of law moderates the impact of inflation- and exchange-rate crises on arbitral disputes, while the impact of sovereign debt crises and real economic growth crises is not moderated. Why this is the case certainly needs further academic scrutiny.

[Figure 4 here]

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<sup>30</sup> Table A6 shows IRRs, and their statistical significance in case Rule\_of\_Law\_(it-1) is evaluated at various values (incl. MIN, 75%. Median, Mean, 25% percentile, MAX).

<sup>31</sup> See Berry et al (2012) on the usefulness of histograms for plotting interaction effects.



## 6. Conclusions and Discussion

Severe macroeconomic turmoil, i.e. economic crises, frequently induce governments to implement policy measures, for example controls of capital outflows, changes in ordered public utility rates or nationalizations of firms, to stabilize the economy. Foreign investors may perceive some of these measures to be in violation of IIAs and, consequently, file a claim at an international arbitration tribunal.

Against this background we investigate empirically whether economic crises have a positive association with the number of arbitral disputes (Hypothesis 1) and whether this impact is moderated by the strength of the rule of law in a host country (Hypothesis 2). The existing quantitative empirical literature puts a focus on institutional capacity (bad governance) and has not as yet established a role for economic crises in investor-state arbitration. We argue that one reason for this is the usage of overly simplistic measures for economic crises in the related literature (also see, Dupont et al., 2016).

Conceptually, economic crises increase the willingness of governments to implement disputable policy measures. A strong rule of law should reduce both, the willingness of foreign investors to file an arbitration claim and the opportunity of governments to implement disputable policy measures. From our analysis we conclude that, contrary to established empirical evidence, economic crises matter for the number of arbitration cases. In one application (Table 3, Column 8) we find that an economic crisis may increase the number of claims by as many as 5 after 2 years. In addition, the effect of crises on arbitration cases varies across host countries, depending on their institutional quality. Host countries with a strong rule of law need not fear more arbitral disputes in the wake of an economic crisis. This finding is consistent with the view that foreign investors are less willing to use international arbitration against host countries with strong domestic institutions and / or that host governments working under a strong rule have fewer opportunities to violate international agreements.

Concerning countries characterized by a *weaker* rule of law index, it seems plausible that they not only have a higher likelihood of facing economic crises, but also a higher risk of violating the rule of law due to their weaker institutional structure. Their policy interventions must be carefully designed by considering commitments vis-à-vis foreign investors, if governments do not want to risk additional<sup>32</sup> arbitration cases. In other words, while these governments may face less restrictions from their domestic institutional and legal framework, they should obey their international obligations enshrined in IIAs in order to avoid having to face economic crises and arbitration cases at the same time.

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<sup>32</sup> Additional in the sense of their already higher propensity to face arbitration cases in normal times but also in the sense of “in addition to a crisis”.

All in all, our results indicate that economic crisis-induced policy changes create conflicts with international obligations in IIAs, leading to investor-state arbitration claims, which are not evenly spread across countries or time. Countries with weak domestic institutions are those with the strongest need to signal to foreign investors that they play by the market rules (Rodrik, 1998). Our results imply that these countries are not able to achieve this goal, at least when judged against their vulnerability to arbitral disputes. Our results also suggest that IIAs fulfill a key function to provide foreign investors with means of enforcement of their rights in an environment of domestic institutional deficiencies (Freeman, 2013).

Our findings also imply that IIAs restrict the room for maneuver of governments especially in times when policy interventions are most needed. Governments face tough choices during times of economic crises. Not stabilizing an unstable economy is likely to be paired with high and immediate economic, social and political costs. Breaching an IIA has potentially negative reputational consequences in the competition for international investment and eventually results in substantial costs in the long run.

From a policy perspective a straightforward conclusion emerges from our results: IIAs are not a substitute for deficiencies in the rule of law and the institutional environment in host countries. To avoid arbitral disputes in general and in the wake of economic crises in particular, countries need to strengthen their institutional capacity. However, this is “not something that can be established overnight.” (Freeman, 2013, p. 76)

An alternative possibility is to reform the IIA regime with a focus on giving governments more room for maneuver in crisis times (“flexibility”), thus avoiding the vicious circle of the attraction of FDI via IIAs and the loss of FDI via negative reputation effects on new FDI from investor-state arbitration claims. For example, the G20 have recently reiterated their aims of investment policies with particular reference to strengthening investor protection and arbitration as well as preserving the right to regulate.<sup>33</sup>

Yet, as real world contracts (and treaties) are necessarily incomplete, no BIT will be able to avoid the trade-off suggested by the incomplete contracts theory<sup>34</sup> between a precise wording and broad coverage of possible future scenarios, which strengthens commitment, and the flexibility to account for unforeseeable issues arising in the future. Recent treaties (including model treaties) have shown a

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<https://investmentpolicyhub.unctad.org/Upload/Documents/Annex%20III%20G20%20Guiding%20Principles%20for%20Global%20Investment%20Policymaking.pdf>, see also Johnson et al. (2018); Aisbett et al. (2018)

<sup>34</sup> See van Aaken (2010) for an application of incomplete contracts theory to international investment law.

clear tendency to include more detailed definitions of terms and clauses, which have given rise to concern in the past (like the fair and equitable treatment standard), making recent IIAs much longer in terms of text.

Our results suggest that an IIA regime reform should put an emphasis on the element of flexibility. However, the evidence presented in this paper does not favor the exclusion of ISDS from IIAs altogether, nor does it suggest the inclusion of a general exception clause into BITs for times of economic crises. These steps would exempt the host country government from liabilities under the respective BIT in order to prevent further arbitration cases. There must be a possibility for investors to hold governments accountable for their actions. After all, “a crisis is just an extreme instance of policy failure” (Rodrik, 1996, p. 27) and, thus, even in the event of an international / global crisis, a national government has some responsibility. Governments do not only react to economic crises, they also play a key role in generating them. In the light of this discussion, van Aaken’s claim dating back to 2010 that “a balance needs to be found between commitment and flexibility” is still valid.

Governments which are not inclined to abandon IIAs at all may react to the threat of large compensation payments by sourcing rainy day funds. This is also advisable more generally: First, as the majority of BITs does not prescribe time limits for filing claims<sup>35</sup>, this may create an incentive on the part of investors to delay claims and to wait for a first mover to file a claim and for an arbitral tribunal to issue a decision, which will ultimately reduce the followers’ risk of filing a claim. Second, decisions on arbitration claims often take many years of deliberation. Third, even if governments decide to terminate BITs or to renegotiate them to exclude the possibility of international arbitration, one must bear in mind that protections granted by BITs are applicable for many years after termination.

Finally, in any reform step, one should bear in mind that rulings of arbitration tribunals play an important role in international investment law. Hence, should the current IIA system prevail, it is up to these tribunals to apply “a more balanced approach to distributing the risks of economic crises between host states and foreign investors.” (Schill, 2007, p. 286)

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<sup>35</sup> Some BITs stipulate a time limit: For example, Article 9, paragraph 7 of China–Republic of Korea BIT (2007, <https://investmentpolicyhub.unctad.org/IIA/country/42/treaty/924>) states: “Notwithstanding the provisions of paragraph 3 of this Article, an investor may not make a claim pursuant to paragraph 3 of this Article if more than three years have elapsed from the date on which the investor first acquired, or should have first acquired, knowledge that the investor had incurred loss or damage.” Note, however, that a claimant may attempt to overcome any time limitation period by using a treaty’s Most Favored Nation provision, if applicable.

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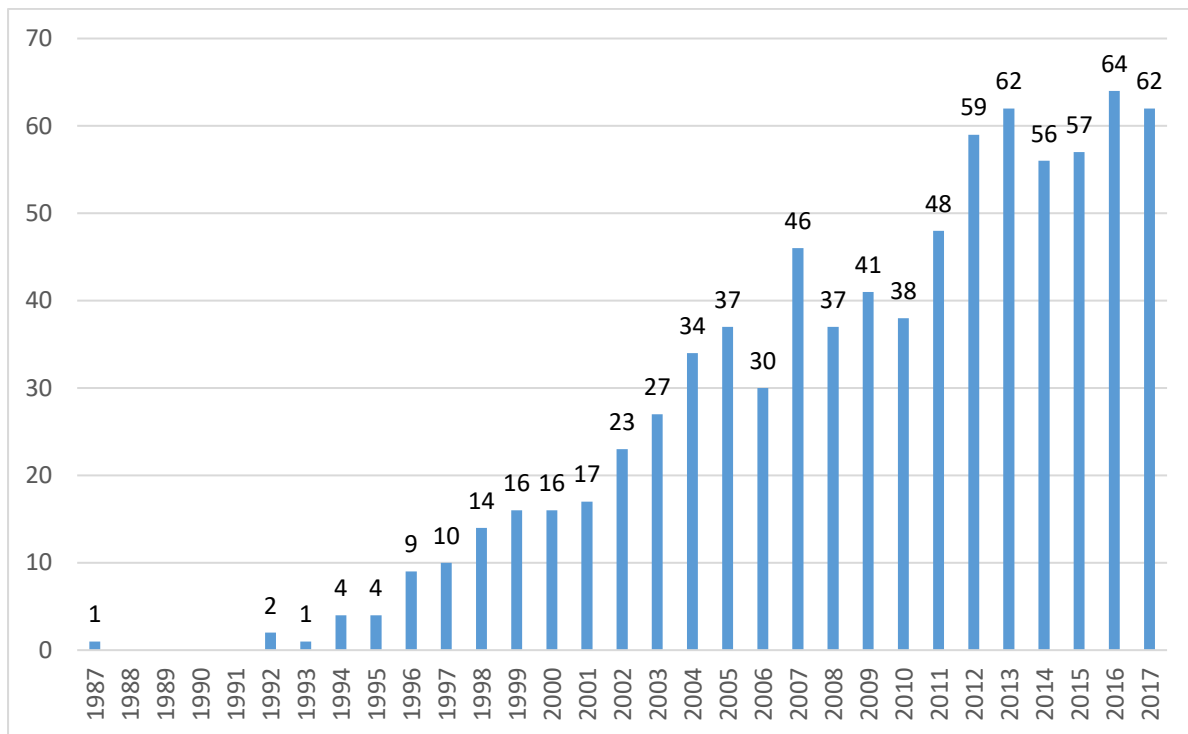
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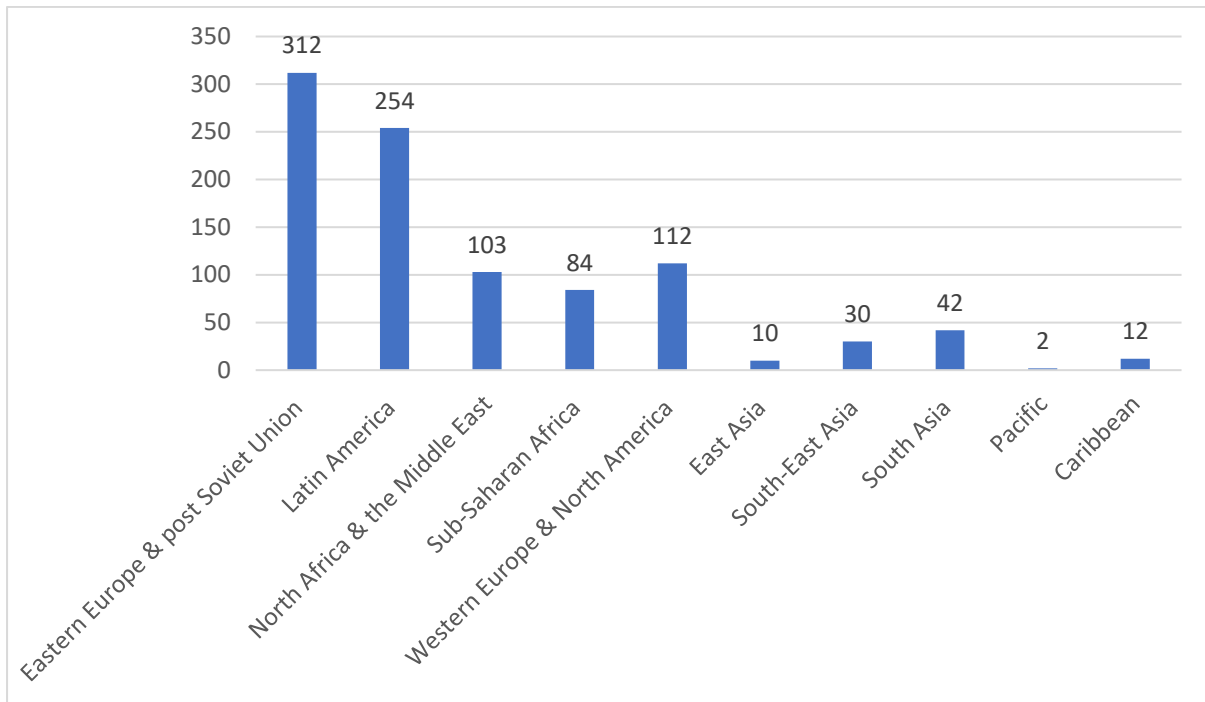
## 8. Figures and Tables

**Figure 1: Number of Dyads with at least one Arbitral Case over 1987 – 2017**



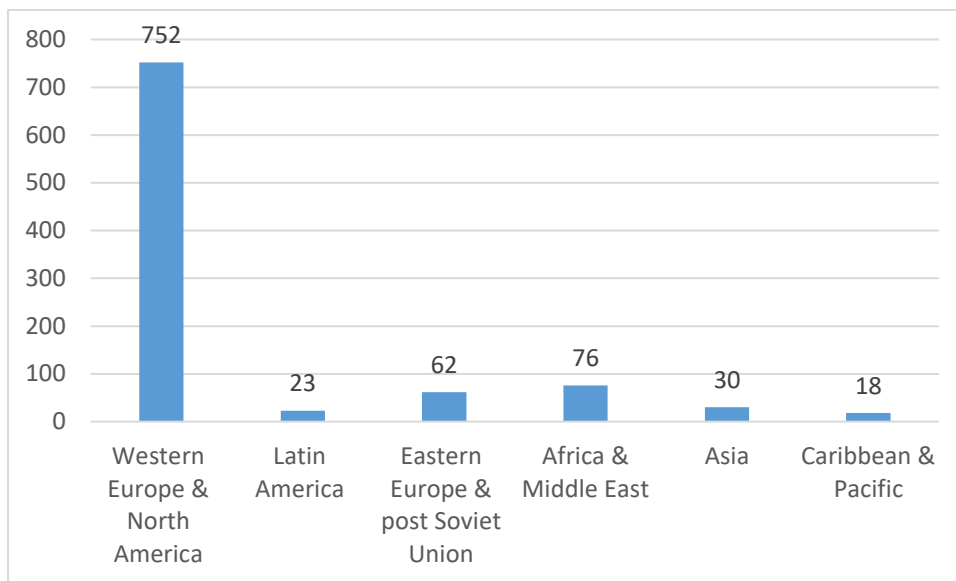
Notes: Treaty-based arbitration cases start in 1987; however, they are a phenomenon host countries have to reckon with as of around 1996 when a steep and lasting surge sets in (also see Freeman, 2013); total sum of instances of arbitral disputes is 815 and total sum of cases is 961.

**Figure 2: Number of Cases across Host Regions over 1987 – 2017**



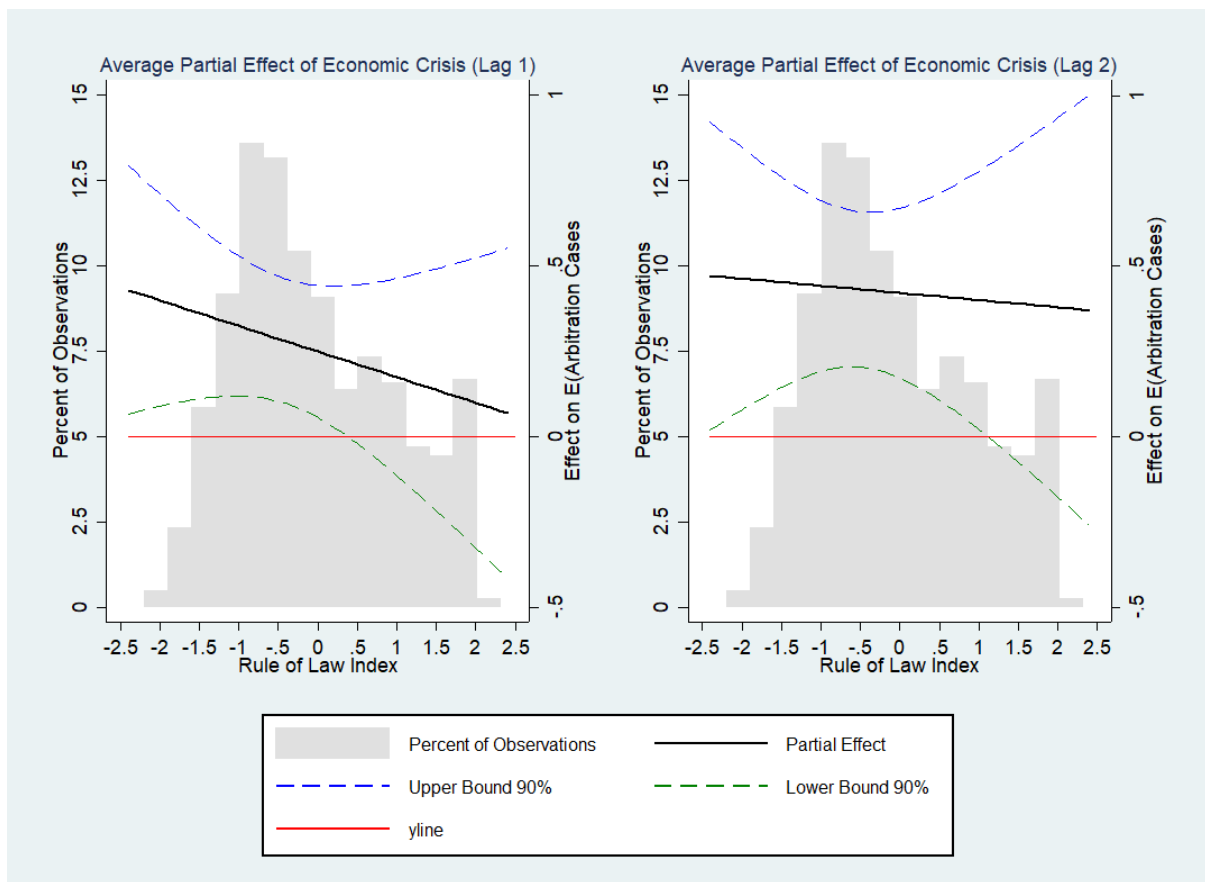
Note: Total sum of arbitration cases is 961 over the 1987 – 2017 period.

**Figure 3: Number of Cases across Home Regions over 1987 – 2017**



Note: Total sum of arbitration cases is 961 over the 1987 – 2017 period.

**Figure 4: Moderating Effect of Rule of Law on Economic Crisis Impact**



Notes: The plots show the coefficients (not semi-elasticities) of Overall\_Crisis (it-1) and Overall\_Crisis (it-2) when Rule\_of\_Law (it-1) is evaluated at values ranging from -2.10 to 2.13. Higher values imply stronger rule of law. Table A6 shows corresponding IRRs (i.e.,  $\exp(\text{coef})$ ) for Overall\_Crisis (it-1) plus their statistical significance.

**Table 1: Descriptive Statistics for Economic Crisis Variables**

<b>Economic Crisis Variable</b>	<b>Obs</b>	<b>Mean</b>	<b>Std.Dev</b>	<b>Min</b>	<b>Max</b>
<b>Conventional Crisis Indicators</b>					
C_Inflation_Rate_Crisis_(it-1)	9455	0.085	0.278	0	1
C_Inflation_Rate_Crisis_(it-2)	9455	0.104	0.305	0	1
C_Exchange_Rate_Crisis_(it-1)	9512	0.161	0.367	0	1
C_Exchange_Rate_Crisis_(it-2)	9512	0.170	0.376	0	1
C_Economic_Growth_Crisis_(it-1)	9517	0.118	0.322	0	1
C_Economic_Growth_Crisis_(it-2)	9517	0.124	0.330	0	1
<b>Relative Crisis Indicators</b>					
R_Inflation_Rate_Crisis_(it-1)	9455	0.017	0.129	0	1
R_Inflation_Rate_Crisis_(it-2)	9455	0.020	0.140	0	1
R_Exchange_Rate_Crisis_(it-1)	9512	0.096	0.294	0	1
R_Exchange_Rate_Crisis_(it-2)	9512	0.092	0.290	0	1
R_Economic_Growth_Crisis_(it-1)	9517	0.088	0.283	0	1
R_Economic_Growth_Crisis_(it-2)	9517	0.089	0.284	0	1
<b>Sovereign Debt Crisis Indicator</b>					
Sov_Debt_Crisis_(it-1)	9491	0.018	0.132	0	1
Sov_Debt_Crisis_(it-2)	9491	0.017	0.131	0	1
<b>Overall Crisis Indicator</b>					
Overall_Crisis_(it-1)	9527	0.194	0.395	0	1
Overall_Crisis_(it-2)	9527	0.199	0.400	0	1

Note: Overall\_Crisis\_(it) is a combination of preferred economic crisis indicators as detailed in the main text and in the Notes to Table 3.

**Table 2: Regressor Variables included in the Analysis**

Foreign Investor's View	Expected Sign	Host Government's View	Expected Sign
<b>Opportunity</b>		<b>Opportunity</b>	
(1) Bilateral Investment Treaty (BIT_in_Force_ijt)	+	(5) Weak Rule of Law (Rule_of_Law_(it))	-
(2) Member of Energy Charter (Energy_Charter_(it))	+	(6) Political Constraints (Infeasibility_Policy_Change_(it))	-
(3) Foreign Direct Investment in i (Log_FDI_Stock_(it))	?	(7) GDP per Capita (Log_GDP_CAP_(it))	-
(4) Investor Awareness of Cases (Cumulated_Cases_Home_(jt))	+		
<b>Willingness</b>		<b>Willingness</b>	
(8) Quality of Regulation (Quality_of_Regulation_(it))	-	(9) Economic Crises (see Table 1)	+
(5) Weak Rule of Law (Rule_of_Law_(it))	-	(10) Economic Crises (see Table 1)	
		(10a) Major Armed Conflicts (War_(it))	+
		(10b) Minor Armed Conflicts (Minor_Conflicts_(it))	+
		(10c) Regime Switch (Regime_Change_(it))	+

Note: Own compilation based on Freeman (2013).



**Table 3: Main Estimation Results for Number of Cases**

	(Con1)	(Con2)	(Con3)	(Rel1)	(Rel2)	(Rel3)	(Sovereign)	(Overall)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<b>Conventional Crisis Definition</b>								
C_Inflation_Rate_Crisis (i,t-1)	0.398** (0.195)							
C_Inflation_Rate_Crisis (i,t-2)	-0.174 (0.161)							
C_Economic_Growth_Crisis (i,t-1)		0.155 (0.124)						
C_Economic_Growth_Crisis (it-2)		0.356** (0.152)						
C_Exchange_Rate_Crisis (it-1)			0.324** (0.129)					
C_Exchange_Rate_Crisis (it-2)			-0.136 (0.115)					
<b>Relative Crisis Definition</b>								
R_Inflation_Rate_Crisis (it-1)				0.886*** (0.289)				
R_Inflation_Rate_Crisis (it-2)				0.272 (0.300)				
R_Economic_Growth_Crisis (it-1)					0.145 (0.145)			
R_Economic_Growth_Crisis (it-2)					0.068 (0.178)			
R_Exchange_Rate_Crisis (it-1)						0.454*** (0.152)		
R_Exchange_Rate_Crisis (it-2)						0.149 (0.142)		
<b>Sovereign Debt Crisis Indicator</b>								
Sov_Debt_Crisis (it-1)							-0.215 (0.175)	
Sov_Debt_Crisis (it-2)							0.760*** (0.156)	
<b>Overall Crisis Indicator</b>								
Overall_Crisis (it-1)								0.270** (0.111)
Overall_Crisis (it-2)								0.427***

								(0.119)
Rule_of_Law (it-1)	-0.998*** (0.292)	-1.038*** (0.289)	-1.039*** (0.292)	-0.959*** (0.299)	-1.041*** (0.291)	-1.012*** (0.290)	-0.967*** (0.293)	-1.049*** (0.286)
Quality_of_Regulation (it-1)	-0.697** (0.314)	-0.680** (0.316)	-0.698** (0.319)	-0.695** (0.323)	-0.727** (0.321)	-0.682** (0.326)	-0.716** (0.326)	-0.641** (0.313)
Log_GDP_per_Capita (it-1)	-0.164 (0.501)	0.035 (0.476)	-0.192 (0.513)	-0.032 (0.495)	-0.168 (0.503)	-0.194 (0.512)	-0.157 (0.512)	0.100 (0.477)
Log_FDI_Stock (it-1)	0.220 (0.161)	0.252 (0.159)	0.287* (0.170)	0.192 (0.152)	0.264 (0.162)	0.321* (0.171)	0.263 (0.165)	0.300* (0.161)
BIT_in_Force (ijt-1)	1.859*** (0.456)	1.895*** (0.454)	1.879*** (0.460)	1.861*** (0.456)	1.882*** (0.458)	1.888*** (0.461)	1.891*** (0.455)	1.909*** (0.453)
Energy_Charter_Treaty (it-1)	1.010** (0.492)	1.031** (0.496)	1.046** (0.492)	1.011** (0.491)	1.034** (0.493)	0.980** (0.491)	1.168** (0.579)	0.970** (0.494)
Infeasibility_Policy_Change (it-1)	-0.598* (0.333)	-0.605* (0.329)	-0.593* (0.331)	-0.539 (0.331)	-0.620* (0.325)	-0.658** (0.333)	-0.714** (0.333)	-0.641* (0.339)
War (it-1)	0.459* (0.245)	0.422* (0.245)	0.484** (0.241)	0.386 (0.253)	0.474* (0.246)	0.493** (0.237)	0.526** (0.238)	0.396 (0.248)
Minor_Armed_Conflicts (it-1)	-0.085 (0.200)	-0.123 (0.196)	-0.125 (0.196)	-0.098 (0.202)	-0.099 (0.195)	-0.127 (0.196)	-0.120 (0.196)	-0.156 (0.197)
Regime_Change (it-1)	-0.118 (0.219)	-0.098 (0.217)	-0.044 (0.215)	-0.130 (0.221)	-0.084 (0.217)	-0.062 (0.217)	-0.066 (0.211)	-0.154 (0.221)
Cumulated_Cases_Home (jt-1)	-0.012*** (0.003)	-0.012*** (0.004)	-0.013*** (0.004)	-0.012*** (0.003)	-0.013*** (0.004)	-0.013*** (0.004)	-0.012*** (0.004)	-0.012*** (0.003)
AIC	4203.303	<b>4231.481</b>	4233.378	<b>4194.670</b>	4242.948	<b>4229.441</b>	4215.901	4218.885
N	9455	9517	9512	9455	9517	9512	9491	9527

\* p<0.10, \*\* p<0.05, \*\*\* p<0.01; Columns (1) to (3) are based on conventional (threshold-based) crisis indicators; Columns (4) – (6) are based on relative crisis indicators; results from a conditional dyad-fixed effects estimator with time-fixed effects shown; cluster-robust standard errors in (); regression coefficients are displayed; for continuous variables 100\*coefficient gives the semi-elasticity; 100\*(exp(coefficient) - 1) should be used for interpretation of results for binary variables, which also results in a semi-elasticity interpretation; AIC can be used to compare non-nested models based on same estimation sample (same number of observations); **preferred models are indicated by AIC value in bold**; Overall\_crisis\_(it) is a dummy variable with entry 1 in case at least one of the crisis indicators in Columns (2), (4), (6) and (7) has entry 1 and 0 otherwise; regression results indicate that economic crisis matters for expected value of arbitration cases; thereby inflation and exchange rate crisis lead rather quickly to the filing of arbitration cases, while the impact of sovereign debt crises and real economic growth crises lead to arbitration cases with greater time lag.

**Table 4: Sensitivity Check 1: Results from Zero-Inflated Negative Binomial Estimator**

	(ZINB1)	(ZINB2)	(ZINB3)	(ZINB4)	(ZINB5)
R_Inflation_Rate_Crisis (it-1)	0.694*** (0.268)				
R_Inflation_Rate_Crisis (it-2)	0.255 (0.317)				
C_Economic_Growth_Crisis (it-1)		0.192 (0.126)			
C_Economic_Growth_Crisis (it-2)		0.418*** (0.147)			
R_Exchange_Rate_Crisis (it-1)			0.376*** (0.139)		
R_Exchange_Rate_Crisis (it-2)			0.158 (0.137)		
Sov_Debt_Crisis (it-1)				-0.053 (0.217)	
Sov_Debt_Crisis (it-2)				0.701*** (0.201)	
Overall_Crisis (it-1)					0.252** (0.109)
Overall_Crisis (it-2)					0.453*** (0.117)
Rule_of_Law (it-1)	-0.540*** (0.102)	-0.502*** (0.097)	-0.505*** (0.097)	-0.535*** (0.104)	-0.471*** (0.096)
Quality_of_Regulation (it-1)	-0.663*** (0.149)	-0.609*** (0.152)	-0.632*** (0.149)	-0.622*** (0.148)	-0.569*** (0.151)
Log_GDP_per_Capita (it-1)	-0.078 (0.084)	-0.125 (0.082)	-0.112 (0.082)	-0.088 (0.085)	-0.148 (0.083)
Log_FDI_Stock (it-1)	0.290*** (0.041)	0.296*** (0.040)	0.287*** (0.041)	0.291*** (0.040)	0.298*** (0.041)
BIT_in_Force (ijt-1)	-0.542 (0.315)	-0.519 (0.292)	-0.532 (0.313)	-0.547 (0.312)	-0.518 (0.292)
Energy_Charter_Treaty (it-1)	0.199 (0.177)	0.190 (0.172)	0.205 (0.176)	0.204 (0.176)	0.196 (0.171)
Infeasibility_Policy_Change (it-1)	0.256 (0.248)	0.163 (0.245)	0.212 (0.249)	0.210 (0.244)	0.131 (0.245)
War (it-1)	0.092 (0.201)	0.086 (0.202)	0.160 (0.195)	0.201 (0.195)	0.085 (0.202)
Minor_Armed_Conflicts (it-1)	-0.058 (0.148)	-0.047 (0.146)	-0.077 (0.146)	-0.070 (0.147)	-0.063 (0.145)
Regime_Change (it-1)	-0.046 (0.209)	-0.057 (0.207)	-0.029 (0.209)	0.027 (0.208)	-0.100 (0.205)
Log_Distance_Capital_Cities (ijt)	-0.609*** (0.054)	-0.605*** (0.054)	-0.611*** (0.053)	-0.608*** (0.054)	-0.601*** (0.053)
Common_Language (ijt)	0.379*** (0.145)	0.396*** (0.142)	0.380*** (0.143)	0.374*** (0.144)	0.405*** (0.142)
Colonial_Relationship (ijt)	1.019*** (0.156)	1.006*** (0.156)	1.011*** (0.153)	1.007*** (0.155)	0.995*** (0.154)
Cumulated_Cases_Home (jt-1)	0.026*** (0.002)	0.026*** (0.002)	0.026*** (0.002)	0.026*** (0.002)	0.026*** (0.002)
Eastern Europe and post-Soviet Union (it)	1.251*** (0.379)	1.320*** (0.375)	1.227*** (0.363)	1.240*** (0.377)	1.296*** (0.360)
Latin America (it)	1.904*** (0.362)	1.957*** (0.361)	1.894*** (0.347)	1.845*** (0.364)	1.947*** (0.345)
North Africa & the Middle East (it)	0.666 (0.388)	0.774** (0.388)	0.682 (0.374)	0.679 (0.388)	0.800** (0.372)
Sub-Saharan Africa (it)	0.940** (0.403)	1.002** (0.400)	0.897** (0.393)	0.935** (0.404)	0.957** (0.388)

Western Europe and North America (it)	0.679 (0.438)	0.748 (0.433)	0.702 (0.427)	-0.696 (0.437)	0.726 (0.422)
East Asia (it)	0.107 (0.522)	0.221 (0.523)	0.140 (0.512)	0.107 (0.523)	0.244 (0.511)
South-East Asia (it)	0.662 (0.439)	0.788 (0.435)	0.697 (0.425)	0.669 (0.436)	0.774 (0.424)
South Asia (it)	1.153*** (0.447)	1.254*** (0.447)	1.154*** (0.433)	1.135** (0.436)	1.297*** (0.433)
Pacific (it)	0.232 (1.282)	0.120 (1.352)	0.148 (1.302)	0.238 (1.275)	0.120 (1.353)
Constant	-3.142** (1.234)	-2.900** (1.349)	-2.773** (1.327)	-2.957** (1.385)	-2.758 (1.413)
<hr/>					
Prob(always zero)					
BIT_in_Force (ijt-1)	-3.129*** (0.346)	-3.087*** (0.333)	-3.104*** (0.346)	-3.114*** (0.346)	-3.088*** (0.333)
Time (ijt)	0.643*** (0.084)	0.632*** (0.082)	0.633*** (0.081)	0.638*** (0.081)	0.630*** (0.082)
Time^2 (ijt)	-0.015*** (0.002)	-0.014*** (0.002)	-0.014*** (0.002)	-0.015*** (0.002)	-0.014*** (0.002)
Constant	-3.010** (1.454)	-2.768 (1.592)	-2.837 (1.557)	-2.796 (1.628)	-2.713 (1.687)
<hr/>					
Log( $\alpha$ )	0.640*** (0.225)	0.561** (0.234)	0.599*** (0.229)	0.605*** (0.229)	0.525** (0.235)
AIC	8276.884	8309.141	8317.170	8317.94	8301.505
N	391935.000	393240.000	393095.000	392080	393530.000

\*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ ; Count and Prob (always zero) regressions contain time-fixed effects; it is assumed that BIT in Force (t-1) determines Prob (always zero cases); Logit regression also includes years between cases (linear and squared) as advised by Beck et al. (1998); Caribbean is base region; cluster-robust standard errors in (); Log( $\alpha$ ) > 0 indicates overdispersion; Economic Crisis variables in this table are those with the higher AIC in Table 1 (i.e., Columns 2, 4 and 6 of Table 1) as well as Columns 7 and 8 of Table 1; coefficients of continuous variables in the NB2 part (upper part of the table) cannot be interpreted as semi-elasticities as the two ZINB parts share common regressors (Cameron and Trivedi, 2008, p. 587); interpretation of coefficients can be based on incidence rate ratios (IRR), respectively, defined as  $\exp(\text{coefficient})$ ; for instance, in Column 5 for Rule\_of\_Law(it-1) the effect is  $\exp(-0.471) = 0.62$ ; an increase in the rule of law index by one reduces the number of arbitration cases by a factor of 0.62; for Overall\_Crisis (it-1) the result is  $\exp(0.252) = 1.29$  this means that – ceteris paribus - in case of an economic crisis in t-1, the expected number of arbitration cases (in t) increases by a factor of 1.29 compared to a situation without economic crisis; the coefficients from of BIT in Force in the (Prob (always zero cases)) equation transforms into an odds ratio of  $\exp(-3.1) = 0.045$ . Thus, the odds of never seeing a case in a dyad in case a BIT is in force are much smaller than in case no BIT is in force in a particular country-dyad.

**Table 5: Sensitivity Check 2: Results from a Host-Country-Jackknife Analysis**

ARG_b1	0.21	EGY_b1	0.29	POL_b1	0.27
ARG_b2	0.24	EGY_b2	0.42	POL_b2	0.42
ARG_p	0.02	EGY_p	0.00	POL_p	0.00
CAN_b1	0.22	ESP_b1	0.32	RUS_b1	0.25
CAN_b2	0.43	ESP_b2	0.32	RUS_b2	0.45
CAN_p	0.00	ESP_p	0.00	RUS_p	0.00
CZE_b1	0.23	IND_b1	0.29	VEN_b1	0.20
CZE_b2	0.43	IND_b2	0.43	VEN_b2	0.44
CZE_p	0.00	IND_p	0.00	VEN_p	0.00
ECU_b1	0.26	MEX_b1	0.24	UKR_b1	0.25
ECU_b2	0.40	MEX_b2	0.45	UKR_b2	0.46
ECU_p	0.00	MEX_p	0.00	UKR_p	0.00

Notes: This table shows results of a country jackknife analysis; the country code shows the country excluded from the regression (empirical model as displayed in Column 8 of Table 3); resulting coefficients are marked as b1 and b2; b1 = coefficient on Overall\_Crisis (t-1); b2 = coefficient on Overall\_Crisis (t-2); \_p is p-value of test  $H_0: b1 = b2 = 0$ ; the null hypothesis is always rejected; the table shows that our main results contained in Column 8 of Table 3 are robust to dropping of individual countries (as host and home country) from the sample; choice of countries is based on the number of arbitration cases the country is involved in; the countries excluded are the ones facing most arbitration cases (cf. Table A1).

**Table 6: Sensitivity Check 3: Corruption and Democracy as Additional Regressors**

	(Corruption)	(Democracy)	(Democracy Squared)
Overall_Crisis (it-1)	0.257** (0.120)	0.246** (0.111)	0.251** (0.111)
Overall_Crisis (it-2)	0.455*** (0.121)	0.414*** (0.119)	0.418*** (0.119)
Rule_of_Law (it-1)	-1.144*** (0.329)	-0.969*** (0.300)	-0.937*** (0.306)
Quality_of_Regulation (it-1)	-0.532 (0.339)	-0.570* (0.312)	-0.581* (0.308)
Corruption (it-1)	-0.695** (0.325)		
Democracy (it-1)		-0.102* (0.060)	0.083 (0.228)
Democracy_Squared (it-1)			-0.017 (0.021)
GDP_per_Capita (it-1)	-0.261 (0.544)	-0.033 (0.493)	-0.001 (0.494)
Inward_FDI_Stock (it-1)	0.469*** (0.160)	0.322* (0.165)	0.320** (0.162)
BIT_in_Force (ijt-1)	1.707*** (0.504)	1.873*** (0.455)	1.875*** (0.455)
Energy_Charter_Treaty (it-1)	0.504 (0.533)	0.950* (0.495)	0.969** (0.492)
Infeasibility_Policy_Change (it-1)	-0.582 (0.354)	-0.551 (0.340)	-0.581* (0.345)
War (it-1)	0.426 (0.278)	0.433* (0.240)	0.422* (0.241)
Minor_Armed_Conflicts (it-1)	-0.108 (0.204)	-0.186 (0.196)	-0.202 (0.196)
Regime_Change (it-1)	-0.125 (0.240)	-0.171 (0.223)	-0.195 (0.222)
Cumulated_Cases_Home (jt-1)	-0.014*** (0.004)	-0.012*** (0.003)	-0.012*** (0.003)
AIC	3902.057	4180.950	4182.031
N	7989	9384	9384

Notes: The underlying specification is the one displayed in Column (8) of Table 3; Corruption\_(it) is measured by using Transparency International Corruption Perception Index, which ranges between 0 and 100 (highly clean) (variable tpi\_cpi in Teorell et al., 2017); Democracy\_(it) is operationalized via Freedom House's imputed polity variable which ranges between 0 and 10 (most democratic) (variable fh\_polity2 in Teorell et al., 2017).

**Table 7: Interaction between Economic Crisis and Rule of Law**

	(Lag1)	(Lag2)
Overall_Crisis (it-1)	0.250** (0.117)	0.268** (0.111)
Overall_Crisis (it-2)	0.424*** (0.120)	0.421*** (0.127)
Rule_of_Law (it-1)	-1.012*** (0.291)	-1.037*** (0.294)
Overall_Crisis (it-1) X Rule_of_Law (it-1)	-0.075 (0.096)	
Overall_Crisis (it-2) X Rule_of_Law (it-1)		-0.021 (0.105)
Quality of Regulation (it-1)	-0.634** (0.313)	-0.641** (0.313)
Log_GDP_per_Capita (it-1)	0.077 (0.482)	0.092 (0.472)
Log_FDI_Stock (it-1)	0.298* (0.161)	0.300* (0.160)
BIT_in_Force (ijt-1)	1.902*** (0.454)	1.906*** (0.453)
Energy_Charter_Treaty (it-1)	0.974** (0.494)	0.973** (0.494)
Infeasibility_Policy_Change (it-1)	-0.637* (0.341)	-0.640* (0.340)
War (it-1)	0.382 (0.251)	0.393 (0.247)
Minor_Armed_Conflicts (it-1)	-0.157 (0.197)	-0.157 (0.197)
Regime_Change (it-1)	-0.169 (0.223)	-0.154 (0.221)
Cumulated_Cases_Home (jt-1)	-0.012*** (0.003)	-0.012*** (0.003)
AIC	4220.276	4220.832
N	9527	9527

\* p<0.10, \*\* p<0.05, \*\*\* p<0.01; results from a conditional dyad-fixed effects estimator with time-fixed effects shown; cluster-robust standard errors in (); 465 clusters are used in the calculation of standard errors; Overall Crisis variable as defined in the Notes to Table 3; Overall\_Crisis (it-k) X Rule\_of\_Law (it-1) are the interaction effects between Rule\_of\_Law (it-1) and Overall\_Crisis (it-1) and Overall\_Crisis (it-2), respectively; regression coefficients are displayed; for continuous variables 100\*coefficient gives the semi-elasticity; 100\*(exp(coefficient) – 1) should be used for interpretation of results for binary variables, which also results in a semi-elasticity interpretation; while the coefficient on the interaction terms is statistically insignificant, Figure 4 implies that the crisis impact on E(arbitration Cases) varies in a meaningful way over values of Rule\_of\_Law (it-1).

## 9. Appendix

**Table A1: Cases per Host Country**

Hosts	1	2	3	4	5	6	7	8	9	Total Cases	Host	Total Cases
ALB	9	0	0	0	0	0	0	0	0	9	ARG	61
ARE	3	0	0	0	0	0	0	0	0	3	VEN	48
ARG	23	4	4	2	2	0	0	0	0	61	ESP	42
ARM	1	1	0	0	0	0	0	0	0	3	CZE	37
AUS	2	0	0	0	0	0	0	0	0	2	MEX	32
AUT	1	0	0	0	0	0	0	0	0	1	EGY	30
AZE	3	0	0	0	0	0	0	0	0	3	ECU	28
BDI	4	0	0	0	0	0	0	0	0	4	CAN	27
BEL	2	0	0	0	0	0	0	0	0	2	POL	27
BEN	1	0	0	0	0	0	0	0	0	1	RUS	27
BFA	1	0	0	0	0	0	0	0	0	1	IND	25
BGD	4	0	0	0	0	0	0	0	0	4	UKR	22
BGR	9	0	0	0	0	0	0	0	0	9	KAZ	19
BHR	1	0	0	0	0	0	0	0	0	1	PER	18
BIH	4	0	0	0	0	0	0	0	0	4	USA	18
BLZ	2	1	0	0	0	0	0	0	0	4	HUN	16
BOL	13	1	0	0	0	0	0	0	0	15	BOL	15
BRB	1	0	0	0	0	0	0	0	0	1	SVK	14
CAF	3	0	0	0	0	0	0	0	0	3	KGZ	13
CAN	11	5	2	0	0	0	0	0	0	27	ROU	13
CHL	5	0	0	0	0	0	0	0	0	5	HRV	12
CHN	3	0	0	0	0	0	0	0	0	3	MDA	12
CIV	1	0	0	0	0	0	0	0	0	1	LBY	11
CMR	3	0	0	0	0	0	0	0	0	3	TKM	11
COD	9	0	0	0	0	0	0	0	0	9	CRI	10
COG	2	0	0	0	0	0	0	0	0	2	GEO	10
COL	5	0	0	0	0	0	0	0	0	5	TUR	10
CPV	2	0	0	0	0	0	0	0	0	2	UZB	10
CRI	10	0	0	0	0	0	0	0	0	10	ALB	9
CYP	4	0	0	0	0	0	0	0	0	4	BGR	9
CZE	21	5	2	0	0	0	0	0	0	37	COD	9
DEU	3	0	0	0	0	0	0	0	0	3	DZA	9
DNK	1	0	0	0	0	0	0	0	0	1	ITA	9
DOM	3	1	0	0	0	0	0	0	0	5	JOR	9
DZA	7	1	0	0	0	0	0	0	0	9	LVA	9
ECU	13	6	1	0	0	0	0	0	0	28	PAK	9
EGY	23	2	1	0	0	0	0	0	0	30	IDN	8
ESP	22	3	0	0	1	0	0	0	1	42	PAN	8
EST	4	0	0	0	0	0	0	0	0	4	SRB	8
ETH	3	0	0	0	0	0	0	0	0	3	LTU	7
FRA	1	0	0	0	0	0	0	0	0	1	CHL	5
GAB	3	0	0	0	0	0	0	0	0	3	COL	5



GBR	1	0	0	0	0	0	0	0	0	1
GEO	8	1	0	0	0	0	0	0	0	10
GHA	3	0	0	0	0	0	0	0	0	3
GIN	2	1	0	0	0	0	0	0	0	4
GMB	2	1	0	0	0	0	0	0	0	4
GNQ	0	1	0	0	0	0	0	0	0	2
GRC	4	0	0	0	0	0	0	0	0	4
GRD	3	0	0	0	0	0	0	0	0	3
GTM	3	0	0	0	0	0	0	0	0	3
GUY	1	0	0	0	0	0	0	0	0	1
HND	3	0	0	0	0	0	0	0	0	3
HRV	9	0	1	0	0	0	0	0	0	12
HUN	14	1	0	0	0	0	0	0	0	16
IDN	8	0	0	0	0	0	0	0	0	8
IND	13	6	0	0	0	0	0	0	0	25
IRN	1	0	0	0	0	0	0	0	0	1
IRQ	2	0	0	0	0	0	0	0	0	2
ITA	7	1	0	0	0	0	0	0	0	9
JOR	7	1	0	0	0	0	0	0	0	9
KAZ	17	1	0	0	0	0	0	0	0	19
KEN	2	0	0	0	0	0	0	0	0	2
KGZ	13	0	0	0	0	0	0	0	0	13
KHM	1	0	0	0	0	0	0	0	0	1
KNA	1	0	0	0	0	0	0	0	0	1
KOR	3	0	0	0	0	0	0	0	0	3
KWT	1	0	0	0	0	0	0	0	0	1
LAO	5	0	0	0	0	0	0	0	0	5
LBN	5	0	0	0	0	0	0	0	0	5
LBR	2	0	0	0	0	0	0	0	0	2
LBY	7	0	0	1	0	0	0	0	0	11
LCA	1	0	0	0	0	0	0	0	0	1
LKA	4	0	0	0	0	0	0	0	0	4
LSO	2	0	0	0	0	0	0	0	0	2
LTU	4	0	1	0	0	0	0	0	0	7
LVA	9	0	0	0	0	0	0	0	0	9
MAR	0	1	0	0	0	0	0	0	0	2
MDA	10	1	0	0	0	0	0	0	0	12
MDG	5	0	0	0	0	0	0	0	0	5
MEX	20	4	0	1	0	0	0	0	0	32
MKD	4	0	0	0	0	0	0	0	0	4
MLI	1	0	0	0	0	0	0	0	0	1
MMR	1	0	0	0	0	0	0	0	0	1
MNE	5	0	0	0	0	0	0	0	0	5
MNG	4	0	0	0	0	0	0	0	0	4
MOZ	2	0	0	0	0	0	0	0	0	2
MUS	2	0	0	0	0	0	0	0	0	2
MYS	3	0	0	0	0	0	0	0	0	3
NER	1	0	0	0	0	0	0	0	0	1

DOM	5
LAO	5
LBN	5
MDG	5
MNE	5
PHL	5
TZA	5
VNM	5
BDI	4
BGD	4
BIH	4
BLZ	4
CYP	4
EST	4
GIN	4
GMB	4
GRC	4
LKA	4
MKD	4
MNG	4
SLV	4
TUN	4
URY	4
YEM	4
ARE	3
ARM	3
AZE	3
CAF	3
CHN	3
CMR	3
DEU	3
ETH	3
GAB	3
GHA	3
GRD	3
GTM	3
HND	3
KOR	3
MYS	3
OMN	3
PRY	3
SAU	3
SEN	3
SVN	3
ZWE	3
AUS	2
BEL	2
COG	2

NGA	2	0	0	0	0	0	0	0	0	2	CPV	2
NIC	2	0	0	0	0	0	0	0	0	2	GNQ	2
OMN	3	0	0	0	0	0	0	0	0	3	IRQ	2
PAK	9	0	0	0	0	0	0	0	0	9	KEN	2
PAN	5	0	1	0	0	0	0	0	0	8	LBR	2
PER	14	2	0	0	0	0	0	0	0	18	LSO	2
PHL	5	0	0	0	0	0	0	0	0	5	MAR	2
PNG	2	0	0	0	0	0	0	0	0	2	MOZ	2
POL	23	2	0	0	0	0	0	0	0	27	MUS	2
PRT	1	0	0	0	0	0	0	0	0	1	NGA	2
PRY	3	0	0	0	0	0	0	0	0	3	NIC	2
ROU	13	0	0	0	0	0	0	0	0	13	PNG	2
RUS	13	4	0	0	0	1	0	0	0	27	TGO	2
RWA	1	0	0	0	0	0	0	0	0	1	THA	2
SAU	3	0	0	0	0	0	0	0	0	3	UGA	2
SDN	1	0	0	0	0	0	0	0	0	1	AUT	1
SEN	3	0	0	0	0	0	0	0	0	3	BEN	1
SLV	2	1	0	0	0	0	0	0	0	4	BFA	1
SRB	8	0	0	0	0	0	0	0	0	8	BHR	1
SSD	1	0	0	0	0	0	0	0	0	1	BRB	1
SVK	8	3	0	0	0	0	0	0	0	14	CIV	1
SVN	3	0	0	0	0	0	0	0	0	3	DNK	1
SYC	1	0	0	0	0	0	0	0	0	1	FRA	1
SYR	1	0	0	0	0	0	0	0	0	1	GBR	1
TGO	2	0	0	0	0	0	0	0	0	2	GUY	1
THA	2	0	0	0	0	0	0	0	0	2	IRN	1
TJK	1	0	0	0	0	0	0	0	0	1	KHM	1
TKM	8	0	1	0	0	0	0	0	0	11	KNA	1
TTO	1	0	0	0	0	0	0	0	0	1	KWT	1
TUN	4	0	0	0	0	0	0	0	0	4	LCA	1
TUR	8	1	0	0	0	0	0	0	0	10	MLI	1
TZA	5	0	0	0	0	0	0	0	0	5	MMR	1
UGA	2	0	0	0	0	0	0	0	0	2	NER	1
UKR	20	1	0	0	0	0	0	0	0	22	PRT	1
URY	4	0	0	0	0	0	0	0	0	4	RWA	1
USA	9	3	1	0	0	0	0	0	0	18	SDN	1
UZB	8	1	0	0	0	0	0	0	0	10	SSD	1
VEN	29	6	1	1	0	0	0	0	0	48	SYC	1
VNM	5	0	0	0	0	0	0	0	0	5	SYR	1
YEM	4	0	0	0	0	0	0	0	0	4	TJK	1
ZAF	1	0	0	0	0	0	0	0	0	1	TTO	1
ZWE	3	0	0	0	0	0	0	0	0	3	ZAF	1
Cases	715	148	48	20	15	6	0	0	9	<b>961</b>		
Instance Cases	715	74	16	5	3	1	0	0	1	<b>815</b>		
Host Countries										<b>132</b>		

**Table A2: Cases by Home Country**

Homes	1	2	3	4	5	6	7	8	9	Total Cases	Home	Total Cases
ARE	4	1	0	0	0	0	0	0	0	6	USA	173
ARG	5	0	0	0	0	0	0	0	0	5	NLD	92
AUS	4	0	0	0	0	0	0	0	0	4	GBR	79
AUT	18	0	1	0	0	0	0	0	0	21	DEU	59
BELLUX	33	3	0	0	1	0	0	0	0	44	FRA	53
BHR	1	0	0	0	0	0	0	0	0	1	CAN	51
BMU	1	0	0	0	0	0	0	0	0	1	ESP	50
BOL	1	0	0	0	0	0	0	0	0	1	BELLUX	44
BRB	5	1	0	0	0	0	0	0	0	7	ITA	35
CAN	36	6	1	0	0	0	0	0	0	51	TUR	30
CHE	23	0	0	0	0	0	0	0	0	23	CHE	23
CHL	3	2	0	0	0	0	0	0	0	7	AUT	21
CHN	6	0	0	0	0	0	0	0	0	6	CYP	21
COL	1	0	0	0	0	0	0	0	0	1	RUS	20
CRI	1	0	0	0	0	0	0	0	0	1	GRC	16
CYM	1	0	0	0	0	0	0	0	0	1	UKR	12
CYP	17	2	0	0	0	0	0	0	0	21	SWE	9
CZE	5	0	0	0	0	0	0	0	0	5	MUS	8
DEU	37	5	1	0	0	0	0	0	1	59	BRB	7
DNK	4	0	0	0	0	0	0	0	0	4	CHL	7
EGY	3	0	0	0	0	0	0	0	0	3	JOR	7
ESP	38	6	0	0	0	0	0	0	0	50	NOR	7
EST	1	0	0	0	0	0	0	0	0	1	ARE	6
FIN	1	0	0	0	0	0	0	0	0	1	CHN	6
FRA	37	4	1		1	0	0	0	0	53	KWT	6
GBR	60	6	1	1	0	0	0	0	0	79	POL	6
GIB	1	0	0	0	0	0	0	0	0	1	ARG	5
GRC	16	0	0	0	0	0	0	0	0	16	CZE	5
HKG	2	0	0	0	0	0	0	0	0	2	IND	5
HRV	3	0	0	0	0	0	0	0	0	3	ISR	5
HUN	1	0	0	0	0	0	0	0	0	1	PRT	5
IND	5	0	0	0	0	0	0	0	0	5	AUS	4
IRL	1	0	0	0	0	0	0	0	0	1	DNK	4
IRN	2	0	0	0	0	0	0	0	0	2	KAZ	4
ISR	5	0	0	0	0	0	0	0	0	5	KOR	4
ITA	26	3	1	0	0	0	0	0	0	35	MYS	4
JOR	4	0	1	0	0	0	0	0	0	7	PAN	4
JPN	3	0	0	0	0	0	0	0	0	3	SGP	4
KAZ	4	0	0	0	0	0	0	0	0	4	ZAF	4
KOR	4	0	0	0	0	0	0	0	0	4	EGY	3
KWT	6	0	0	0	0	0	0	0	0	6	HRV	3
LBN	3	0	0	0	0	0	0	0	0	3	JPN	3
LIE	1	0	0	0	0	0	0	0	0	1	LBN	3
LTU	3	0	0	0	0	0	0	0	0	3	LTU	3
LVA	2	0	0	0	0	0	0	0	0	2	QAT	3

MDA	1	0	0	0	0	0	0	0	0	1	HKG	2
MEX	2	0	0	0	0	0	0	0	0	2	IRN	2
MLT	2	0	0	0	0	0	0	0	0	2	LVA	2
MUS	6	1	0	0	0	0	0	0	0	8	MEX	2
MYS	4	0	0	0	0	0	0	0	0	4	MLT	2
NLD	67	9	1	1	0	0	0	0	0	92	OMN	2
NOR	7	0	0	0	0	0	0	0	0	7	SAU	2
OMN	2	0	0	0	0	0	0	0	0	2	SVN	2
PAN	4	0	0	0	0	0	0	0	0	4	BHR	1
PER	1	0	0	0	0	0	0	0	0	1	BMU	1
POL	4	1	0	0	0	0	0	0	0	6	BOL	1
PRT	5	0	0	0	0	0	0	0	0	5	COL	1
QAT	1	1	0	0	0	0	0	0	0	3	CRI	1
RUS	17	0	1	0	0	0	0	0	0	20	CYM	1
SAU	2	0	0	0	0	0	0	0	0	2	EST	1
SDN	1	0	0	0	0	0	0	0	0	1	FIN	1
SGP	4	0	0	0	0	0	0	0	0	4	GIB	1
SRB	1	0	0	0	0	0	0	0	0	1	HUN	1
SVN	2	0	0	0	0	0	0	0	0	2	IRL	1
SWE	9	0	0	0	0	0	0	0	0	9	LIE	1
THA	1	0	0	0	0	0	0	0	0	1	MDA	1
TUN	1	0	0	0	0	0	0	0	0	1	PER	1
TUR	21	1	1	1	0	0	0	0	0	30	SDN	1
TWN	1	0	0	0	0	0	0	0	0	1	SRB	1
UKR	2	2	0	0	0	1	0	0	0	12	THA	1
USA	102	20	6	2	1	0	0	0	0	173	TUN	1
UZB	1	0	0	0	0	0	0	0	0	1	TWN	1
VEN	1	0	0	0	0	0	0	0	0	1	UZB	1
VGB	1	0	0	0	0	0	0	0	0	1	VEN	1
ZAF	4	0	0	0	0	0	0	0	0	4	VGB	1
Cases	715	148	48	20	15	6	0	0	9	<b>961</b>		
Instance Cases	715	74	16	5	3	1	0	0	1	<b>815</b>		
Home Countries										<b>75</b>		

**Table A3: Descriptive Statistics**

Variable		Mean	Std. Dev.	Min	Max	Variable		Mean	Std. Dev.	Min	Max
Cases (ijt)	overall	0.09	0.36	0.00	9.00	Energy_Charter_Treaty (it-1)	overall	0.19	0.39	0.00	1.00
	between		0.12	0.05	1.24		between		0.35	0.00	0.90
	within		0.34	-1.14	8.43		within		0.16	-0.72	0.90
Instance_case (ijt)	overall	0.08	0.27	0.00	1.00	Infeasibility_Policy_Change (it-1)	overall	0.33	0.21	0.00	0.73
	between		0.07	0.05	0.81		between		0.16	0.00	0.71
	within		0.26	-0.73	1.03		within		0.13	-0.16	0.92
Rule_of_Law (it-1)	overall	-0.22	0.82	-2.13	2.10	War (it-1)	overall	0.04	0.21	0.00	1.00
	between		0.79	-1.71	1.93		between		0.11	0.00	0.86
	within		0.19	-1.04	0.67		within		0.17	-0.81	1.00
Quality_of_Regulation (it-1)	overall	0.06	0.36	-1.55	1.16	Minor_Armed_Conflicts (it-1)	overall	0.17	0.37	0.00	1.00
	between		0.32	-0.82	0.83		between		0.29	0.00	1.00
	within		0.18	-0.72	0.77		within		0.24	-0.78	1.12
Log_GDP_per_Capita (it-1)	overall	8.34	1.27	4.81	11.07	Regime_Change (it-1)	overall	0.07	0.25	0.00	1.00
	between		1.24	5.44	10.95		between		0.13	0.00	1.00
	within		0.22	6.32	9.15		within		0.21	-0.58	1.02
Log_FDI_Stock (it-1)	overall	9.55	2.06	2.24	15.67	Cumulated_Cases_Home (jt-1)	overall	19.49	31.11	0.00	167.00
	between		1.79	3.61	14.92		between		23.40	0.00	96.83
	within		0.99	5.12	12.19		within		20.44	-59.98	102.02
BIT_in_Force (ijt-1)	overall	0.70	0.46	0.00	1.00	Time (ijt)	overall	13.20	8.73	0.00	32.00
	between		0.39	0.00	1.00		between		5.12	0.76	29.00
	within		0.24	-0.25	1.56		within		7.14	-11.23	31.20

N= 9527; n = 465; T-bar = 20.5

**Table A4: Pairwise Correlations**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
(1) Rule_of_Law (it-1)	1.00										
(2) Quality_of_Regulation (it-1)	0.04	1.00									
(3) Log_GDP_per_Capita (it-1)	0.67	0.25	1.00								
(4) Log_FDI_Stock (it-1)	0.45	0.14	0.66	1.00							
(5) BIT_in_Force (ijt-1)	0.04	0.01	0.09	0.13	1.00						
(6) Energy_Charter_Treaty (it-1)	0.13	0.12	0.19	0.07	0.13	1.00					
(7) Infeasibility_Policy_Change (it-1)	0.40	0.22	0.30	0.27	0.09	0.04	1.00				
(8) War (it-1)	-0.15	-0.03	-0.13	-0.03	-0.02	-0.08	-0.03	1.00			
(9) Minor_Armed_Conflicts (it-1)	-0.18	-0.12	-0.24	0.11	-0.01	-0.13	0.06	0.11	1.00		
(10) Regime_Change (it-1)	-0.21	-0.03	-0.19	-0.16	-0.06	-0.04	-0.22	0.11	0.00	1.00	
(11) Cumulated_Cases_Home (jt-1)	-0.04	0.04	0.01	0.11	0.01	-0.07	0.02	-0.05	-0.01	-0.05	1.00

**Table A5: Data Sources**

<b>Variable</b>	<b>Data Source</b>
Cases (ijt)	Wellhausen (2016) and UNCTAD's Investment Arbitration database
Rule_of_Law (it-1)	Teorell et al., (2017): variable: wbg_i_rle (Kaufmann et al., 2011)
Quality_of_Regulation (it-1)	Derived using data from Teorell et al., (2017): variables wbg_i_rqe and wbg_i_rle (see main text)
Log_GDP_per_Capita (it-1)	Teorell et al., (2017): variable: wdi_gdpcapcon2010 (WDI Database)
Log_FDI_Stock (it-1)	UNCTAD's Foreign Direct Investment Database
BIT_in_Force (ijt-1)	UNCTAD's International Investment Agreements Database
Energy_Charter_Treaty (it-1)	International Energy Charter Organisation (data provided on their homepage)
Infeasibility_Policy_Change (it-1)	Teorell et al., (2017): variable: h_Polcon3 (Henisz, 2002)
War (it-1)	Derived using data from Uppsala Conflict Data Program (UCDP), UCDP/PRIO Armed Conflict Dataset; conflicts with intensity = 2
Minor_Armed_Conflicts (it-1)	Derived using data from Uppsala Conflict Data Program (UCDP), UCDP/PRIO Armed Conflict Dataset; conflicts with intensity = 1
Regime_Change (it-1)	Derived using data from Teorell et al., (2017): variable p_durable (Marshall et al., 2017)
Cumulated_Cases_Home (jt-1)	Derived from data on Cases (ijt)
Time (ijt)	Derived from data on Cases (ijt)
Log_Distance_Capital_Cities (ijt)	CEPII Distance dataset
Common_Language (ijt)	CEPII Language dataset
Colonial_Relationship (ijt)	CEPII Language dataset
Host_Region (it)	Teorell et al., (2017): variable: ht_region (Wahman et al., 2013)
Inflation_rate_Crisis (it)	Derived using data from Teorell et al., (2017): variables: wdi_inflation and imf_infch (WDI and IMF Databases)
Exchange_rate_Crisis (it)	Derived using data from Teorell et al., (2017): variable: pwt_xr (Penn World Tables) and Worldbank Global Economic Monitor data: variable: DPANUSSPB
Economic_Growth_Crisis (it)	Derived using data from Teorell et al., (2017): variable: wdi_gdpgr (WDI Database)
Sov_Debt_Crisis (it)	Derived using Laeven and Valencia (2012) database on Systemic Banking Crises

**Table A6: Incidence Rate Ratios (IRR) for Interaction Model**

<b>Rule_of_Law (it-1) value</b>	<b>IRR</b>	<b>Std. Error</b>	<b>z-value</b>	<b>p-value</b>
2.10 (MAX)	1.10	0.29	0.35	0.73
1	1.19	0.21	1.00	0.32
0.37 (75%)	1.25	0.17	1.66	0.10
0	1.28**	0.15	2.13	0.03
-0.22 (Mean)	1.30**	0.15	2.38	0.02
-0.35 (Median)	1.32**	0.15	2.50	0.01
-0.85 (25%)	1.36***	0.16	2.66	0.01
-1	1.38**	0.17	2.62	0.01
-2.13 (MIN)	1.51**	0.30	2.06	0.04

Note: This table shows the corresponding IRR values of Overall\_Crisis (it-1) (defined as  $\exp(\text{coef})$ ), including their statistical significance, to Figure 4.