Reputations, Foreign Direct Investment, and Contract Breach

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Abstract

Reputational concerns can constrain states from violating foreign investors' property rights. However, who values its reputation more—a state with an already stellar or damaged reputation? Via a formal model, I argue that better reputations increase the temptation to exploit the trust they generate. Empirically, the problem is that the theory expects correlation and causation to pull in opposite directions because non-reputational mechanisms also constrain states' temptations. These states have good reputations but cannot exploit them. Naive comparisons should find better reputations to correlate negatively with expropriation, contrasting my argument. As a solution, I consider how natural disasters affect reputation dynamics and argue that states with better reputations are more likely to breach due to disasters. I test this implication by leveraging the exogenous occurrence of disasters and find that reputations significantly moderate the effect of disasters on breach, consistent with expectations. Reputational enforcement is inefficient, losing effectiveness with improved reputations.

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1 Introduction

The primary obstacle states face in attracting foreign direct investment (FDI) is a commitment problem (Johns 2021). States often promise favorable conditions to attract foreign investors, but once investments are made, they may renege on these promises, infringing on investors' property rights. Between 1990-2015, over 700 such cases were brought to international arbitration courts (Wellhausen 2016). These violations, or breaches of contract, range from forceful ownership change to "creeping expropriation," which includes a broad set of behavior by governments where they selectively use laws and regulations at the expense of foreign firms (Graham, Johnston, and Kingsley 2018; Jensen et al. 2019).

Reputational concerns help mitigate commitment problems by deterring states from violating contracts (Allee and Peinhardt 2011; Betz and Pond 2019; Johns 2021; Johns and Wellhausen 2016; Jensen and Johnston 2011). Breaching contracts can lead to a loss of future investment, as it signals risk to potential investors. Thus, states are incentivized to cultivate reputations for upholding foreign investors' rights. However, the impact of a state's current reputation on its likelihood to breach remains poorly understood. Is a state with a stellar or tarnished reputation more concerned about maintaining it? Which is more likely to break its commitments? More broadly, how does a state's reputation shape its incentives to breach?

Given that the international realm is anarchical, lacking strong contract-enforcing institutions, reputations are a core enforcement mechanism in international cooperation (Guzman 2008; Simmons 2000; Tomz 2007). Answering these questions is critical not just for understanding states' treatment of foreign investors but also for a broader grasp of the mechanisms and limitations associated with international reputational enforcement.

To address these questions, I analyze a formal model of contract breach and reputations, and assess its empirical implications. In the model, reputational concerns emerge because foreign investors are uncertain about states' breach temptations. On the one hand, breaching might be profitable for a state—I label these states *opportunistic* types. On the other hand, notwithstanding the potential gains, there might be sufficiently high costs associated with breach to negate the temptation—I label these states *commitment* types. Prior research has identified various non-reputational mechanisms that can constrain states' breach temptations, potentially making them commitment types. Examples include domestic institutions (Biglaiser and Staats 2012; Jensen 2008; Li and Resnick 2003); international law (Arias, Hollyer, and Rosendorff 2018); dealings with International Monetary Fund (IMF) (Biglaiser, Lee, and Staats 2016; Shim 2022); and the socio-economic links between foreign firms and local entities (Frye 2002; Johns and Wellhausen 2016, 2021; Pyle 2011).

If a state is a commitment type, it might enjoy a good reputation, but whether it protects investors is independent of reputational concerns; its hands are already tied via other mechanisms. Therefore, the focus of reputational enforcement is the opportunistic types, the behavior of which can change depending on reputational concerns. Investors' uncertainty about whether a state is tempted to breach—its type—enables states to influence investors' beliefs favorably with their actions; those beliefs constitute states' reputations. Investors use their beliefs about state temptations to predict state behavior and the risk of breach, and make investment decisions accordingly.

A novel aspect of this model is that the influence of non-reputational mechanisms can fluctuate: states' types can change over time. Research shows that a state's historical behavior might not reliably predict current practices due to factors like changes in national or industrial priorities, government composition, or macroeconomic conditions (Johns and Wellhausen 2016; Jung, Owen, and Shim 2021; Jensen et al. 2019; Pinto and Pinto 2008; Wellhausen 2015). Allowing states' types to change over time captures these dynamics by recognizing that a state's past actions provide only a noisy signal of its current type. Investors are aware that a state's reputation—the investors' beliefs about whether a state is a commitment type—pertains to a moving target.

The main result is that, in equilibrium, improving an opportunistic state's reputation increases its willingness to engage in contrary behavior: reneging on its commitments and breaching contracts. This happens because as reputations improve, the rewards for upholding foreign investors' rights via generating trust among potential investors become less significant. The smaller the group of investors who perceive investment as risky, the fewer the benefits from maintaining a good reputation. Conversely, the opportunity costs of sustaining commitments rise with better reputations. This increased trust provides states more leeway and potentially more lucrative opportunities to breach. As a result, it becomes increasingly challenging to incentivize states to protect investors' rights today with the promise of future FDI inflows.

States' behavior reflects this growing breach temptation that comes with improved reputations because rebuilding damaged reputations is possible. If a breach irreversibly damages a state's reputation, the risk of exclusion by the investment community may deter states. However, this extreme form of punishment lacks credibility. Knowing that states' temptations can change, investors know that their beliefs may be based on outdated information. The possibility of change provides rational motivation for some profit-seeking investors to invest despite previous breaches and keeps the door open for investors to revise their beliefs. This creates the counterintuitive dynamic where states with better reputations face stronger incentives to breach, knowing they can subsequently repair their reputations.

The argument that better reputations cause contract breaches is challenging to test due to the information structure. States' temptations are private information. They are also changing and unobservable. Existing studies show that even states constrained by visible mechanisms like domestic institutions infringe on investors' rights (Esberg and Perlman 2023; Graham, Johnston, and Kingsley 2018). Notably, much like the investors in the model, researchers are also uncertain about whether a state at a given time is a commitment or an opportunistic type. If researchers could identify state types with certainty, so should the investors who face much higher stakes. If that were true, reputational concerns relying on such uncertainty would disappear. This contradicts casual observation, such as frequent references to reputation by defendant states in investor-state disputes (Kerner and Pelc 2021).

The uncertainty about states' types poses an empirical challenge because commitment types tend to have good reputations, as they do not breach, and cannot take advantage of their good reputations, as their hands are already tied. The overrepresentation of commitment types among states with better reputations means that naive comparisons of breach behavior across states with good and bad reputations cannot recover the postulated positive relationship. The model predicts that such a naive comparison should recover a *negative correlation* between better reputations and breach, even though the *causal relationship is positive*. In other words, the theory predicts that correlation and causation pull in opposite directions. Only if it was possible to identify opportunistic states with certainty and make the comparison within that subset could one find a positive relationship between better reputations and breach. The researcher's uncertainty about states' types precludes this possibility.

To address these challenges, I analyze the impact of exogenous adverse economic shocks, such as severe natural disasters, on reputation dynamics and derive testable implications. The model predicts that reputations moderate the effect of disasters: states with better reputations are more likely to breach due to disasters. This result stems from disasters having two countervailing effects. First, disasters make the economic or political rents from breach more valuable due to associated financial costs and the sensitive political climate. This channel increases states' breach temptations. Second, disasters render the state's economy less attractive, necessitating stronger reputations to reassure wary investors. This channel decreases states' breach temptations. States with better reputations, having more 'reputational credit' to expend, are more influenced by the first effect, whereas states with poorer reputations are more constrained by the second.

The contrasting responses of Sri Lanka and the Dominican Republic to severe disasters highlight these dynamics. Both disaster-prone island nations with comparable development levels faced significant disasters in 2003-2004. Before 2003, the Dominican Republic, having never faced an investor claim in international arbitration, was perceived as having a good reputation. Conversely, with a prior claim filed against it in 2000, Sri Lanka was seen as having a tarnished reputation. Following the disasters, the Dominican Republic breached its commitments by refusing to compensate TCW, a major electricity distributor, for negotiated tariffs and subsidies, leading TCW and its parent company, Société Générale, to seek half a billion dollars in restitution through arbitration. In contrast, Sri Lanka did not infringe upon investors' rights and prioritized enhancing its investment environment post-disaster, successfully boosting FDI inflows 24% by the following year.

I focus on states' breach behavior following severe natural disasters to test the model's empirical implications systematically. Since investors and governments may consider that some countries are more disaster-prone than others, I argue that once ex-ante disaster risk is accounted for, the timing of disasters is plausibly exogenous. I measure disaster risk using gradient boosting machines on historical disaster data and estimate heterogeneous treatment effects of disasters based on states' prior reputation levels. Empirical results provide strong support for my theoretical expectations. States with better reputations breach with substantively and significantly higher frequency due to facing a disaster. The results are robust regarding alternative ways of measuring reputations and contract breaches and considering different lengths of treatment periods following natural disasters.

To my knowledge, this research provides the first systematic evidence supporting the argument that a good reputation can increase a state's temptation to exploit the trust it engenders among foreign investors. These findings reveal that while reputations do constrain states from breaching, reputational enforcement is inherently inefficient. The constraining power of reputational concerns is stronger for states with poorer reputations and weaker for those with better ones. Reputational enforcement is critical not only for protecting foreign investors' property rights but for international cooperation and compliance more broadly (Crescenzi 2018; Mansfield and Pevehouse 2006; Simmons 2000; Tomz 2007). These results should be relevant to scholars of commitment problems in international relations.

Additionally, this work contributes to the literature on the determinants of contract breach (Biglaiser, Lee, and Staats 2016; Jensen and Johnston 2011; Wellhausen 2015, 2016). It demonstrates how past breaches——or their absence——can shape current actions through reputational effects, a previously unexplored mechanism. The finding that reputational concerns are less constraining for states with good reputations highlights the importance of exploring alternative channels through which to secure foreign investors' property rights to complement reputational enforcement, such as stronger domestic institutions (Biglaiser and Staats 2012; Jensen 2008), issue linkage (Biglaiser, Lee, and Staats 2016), or foreign firms' connections to the local economy (Johns and Wellhausen 2016, 2021)

Finally, this research contributes to breach behavior following crises. Jensen et al. (2019) argue that states are less likely to expropriate following economic crises due to heightened reputational concerns. In contrast, I show theoretically that the net effect of disasters on breach is ambiguous. Empirically, I find that while disasters significantly impact the probability of breach, this effect is highly conditional on current reputations. Disasters reduce the frequency of contract breaches among states with poorer reputations but not among states with better reputations.

2 Theoretical Model

I borrow Phelan (2006)'s government taxation model and adapt it to state-foreign investor relationships. I then extend the model to consider how disasters affect the reputation system. Importantly, I focus on the effect of a state's reputation on its behavior and on observable implications, which are absent in Phelan (2006). Nevertheless, I rely on Phelan (2006)'s equilibrium characterization and refer the interested reader to that paper for the uniqueness proof (Theorem 8).

2.1 Setup

A host-government G and a unit measure of identical potential foreign investors (or simply, firms) interact over infinitely many periods, indexed by t. In each period, firms decide whether to invest in G or not, after which G decides whether to breach. If a firm stays out, it receives its outside option $d > 0$. If a firm invests, this yields some surplus v in that period. I assume $v > d$; without breach risk, investing is profitable. Each firm is small and cannot affect the course of play individually; therefore, we focus on the fraction of firms that invest in a given period α_t.[1] G cares only about how its actions affect overall FDI flows, captured by α. In a period, $\alpha_t v$ is the total value of the surplus produced by all firms.

Firms are uncertain whether G faces breach temptation. I capture this uncertainty by allowing G to be either a *commitment* or an *opportunistic* type. A *commitment* G's temptation is already constrained by the various non-reputational mechanisms identified in the literature; hence, reputational concerns do not affect its strategy. A *commitment* G never breaches, always takes τ fraction of the surplus ($\tau\alpha_t v$) and leaves the rest to the firms. We can interpret τ as taxes or, more abstractly, as some agreed-upon division of surplus representing business as usual.[2]

If G is *opportunistic* and does not breach, it similarly takes τ fraction of the surplus. If it breaches, it seizes all $\alpha_t v$ of the surplus for itself.[3] One can interpret G's rents from breach to be either economic, via transfer of resources, or political, e.g., increasing support for the government, as long as the rents are proportional to the harm induced on the firm. Regardless of whether the rents are economic or political, the opportunistic G profits from breaching in the short run: no mechanism outside of reputations negates the opportunistic G's breach temptation. All investors observe whether a breach occurs in a period.

1. Index firms by $j \in [0, 1]$ and let $a_{jt} \in [0, 1]$ be a given firm's investing probability. The fraction of firms that invest at t is $\alpha_t = \int_0^1 a_{jt} d_j$.

2. Modeling *commitment* G as an action type which never breaches is standard in reputation models since Kreps and Wilson (1982), which greatly simplifies the analysis and presentation.

3. This is simply a normalization of the firms' breach payoff to zero. A positive breach payoff for firms would not change the results if it is less than their outside option, and G's breach payoff is greater than regular taxes. Therefore, the model covers both outright and "creeping" expropriations.

The effectiveness of non-reputational mechanisms that restrain G from breaching fluctuates over time. The relationships between foreign investors and the ruling elite may strengthen or weaken, domestic judicial institutions might become more robust or deteriorate, and changes in technology, the emergence of new sectors, or shifts in sectoral importance can alter how foreign firms are integrated with the local economy. I capture such changes in G's breach temptation by allowing G's type to follow a Markov chain, illustrated in figure 1. A commitment G in t remains that way in $t+1$ with λ probability and turns opportunistic with $1-\lambda$ probability. An opportunistic G remains opportunistic in the next period with $1-\epsilon$ probability and changes into a commitment type with ϵ probability. Firms do not directly observe type changes but have correct expectations about the process of change: ϵ and λ are common knowledge.

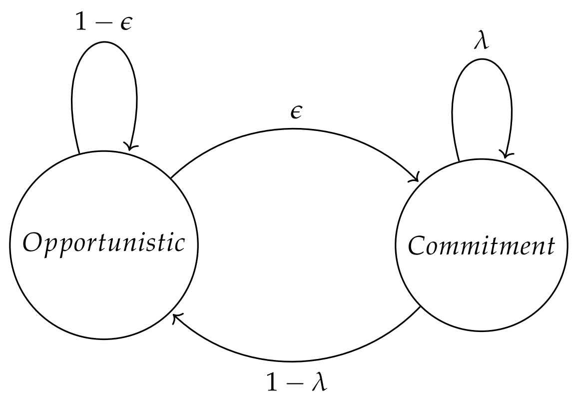


Figure 1: The Markov chain governing the changes in G's types between periods.

I assume the following about the transition probabilities:

$$\lambda > \frac{d}{(1-\tau)v} > \epsilon \tag{1}$$

Where $\frac{d}{(1-\tau)v}$ is the ratio of firms' outside option to their surplus share. This assumption ensures that change is sufficiently infrequent so that firms can make inferences about G's type from its past behavior, allowing reputational incentives. If the left inequality is violated, even if investors are certain that G is a commitment type today, they will be too suspicious of G tomorrow to make reputation-building worthwhile for G. If the right inequality is violated, even if the firms are certain today that G is opportunistic, they will be too confident tomorrow that G has turned into a commitment type to render reputation building irrelevant.

Let μ denote investors' belief that G is a commitment type at a given time: μ is G's *reputation*. I set G's prior reputation at the beginning of the game to $\mu_0 = \epsilon$. Given the possibility of cultivating a reputation for being a commitment type, the goal is to see how reputational concerns constrain opportunistic types from breaching depending on their current reputations. The solution concept is Markov Perfect Equilibrium (MPE), with G's reputation μ as the state variable. I denote with $\sigma(\mu)$ the probability that the opportunistic G breaches. An MPE is specified by $\sigma(\mu)$ and the fraction of firms that decide to invest $\alpha(\mu)$ as a function of G's reputation.[4]

2.2 Equilibrium

Each firm is small and cannot individually influence the continuation of the game; therefore, firms maximize their period payoffs. A firm invests if it expects higher returns than its outside option:

$$\underbrace{\mu(1-\tau)v}_{\substack{\text{G is a commitment type} \\ \text{and does not breach}}} + \underbrace{(1-\mu)(1-\sigma)(1-\tau)v}_{\substack{\text{G is an opportunistic type} \\ \text{and does not breach}}} > d$$

The first term on the left is the firm's return from its investment if G is a commitment type, in which case G would not breach. The second term is the firm's return if G is opportunistic, which would forgo breach with $1-\sigma$ probability. If G breaches, the firm's payoff is zero.

Even if the firm expects to face certain breach from the opportunistic G, the firm still wants to invest if G's reputation is high enough. To see that, set $\sigma = 1$. Since the firm loses its investments if G is opportunistic, its expected returns $\mu(1-\tau)v$ depend on G's reputation. If $\mu > \frac{d}{(1-\tau)v}$, the firm nevertheless finds investing worthwhile. Let $\mu^* = \frac{d}{(1-\tau)v}$ be the cutoff reputation level which makes firms indifferent about investing even when they expect the worst from the opportunistic G.

Note that $\frac{d}{(1-\tau)v}$ is the ratio of the firm's outside option to its surplus share when G respects its property rights: it is larger with better outside options and smaller with greater surplus share. Hence $\frac{d}{(1-\tau)v}$ captures the *leverage* firms have over G. The firms' leverage over G determines the reputation level μ^* that makes firms indifferent about investing even when they expect the worst from the opportunistic G.

4. Commitment G's strategy is trivial since it never breaches by assumption. To simplify the presentation, I define formal objects only for the opportunistic G.

Observing G's behavior at t, firms update G's reputation according to Bayes' rule, adjust it to account for the possibility of type changes, and arrive at G's reputation at the beginning of $t+1$. If firms observe a breach at t, they infer that G is opportunistic since the commitment G never breaches. Then, G's reputation at the beginning of $t+1$ equals ϵ, the probability that yesterday's opportunistic G becomes a commitment type today. This is the lowest possible reputation at the beginning of any period. Let $\mu'(\mu)$ denote G's reputation at the beginning of the next period when it does not breach this period, given a current reputation μ:

$$\mu'(\mu) = \underbrace{\lambda\left(\frac{\mu}{\mu + (1-\mu)(1-\sigma(\mu))}\right)}_{\substack{\text{G was a commitment type yesterday,} \\ \text{stays a commitment type today}}} + \underbrace{\epsilon\left(1 - \frac{\mu}{\mu + (1-\mu)(1-\sigma(\mu))}\right)}_{\substack{\text{G was an opportunistic type yesterday,} \\ \text{becomes a commitment type today}}} \tag{2}$$

Focus on the opportunistic G, and assume it discounts future payoffs by $\delta \in (0,1)$. The opportunistic G maximizes $V(\mu)$, the continuation value of the game given current reputation μ:[5]

$$V(\mu) = \underbrace{\sigma\Big(\alpha v + \delta V(\epsilon)\Big)}_{\substack{\text{Breach today,} \\ \text{start with } \epsilon \text{ reputation tomorrow}}} + \underbrace{(1-\sigma)\Big(\tau\alpha v + \delta V(\mu')\Big)}_{\substack{\text{Do not breach today,} \\ \text{start with } \mu' \text{ reputation tomorrow}}} \tag{3}$$

Consider a situation where G's reputation exceeds the reputation threshold $\mu > \mu^*$. Then, all firms invest regardless of μ. Suppose, in equilibrium, the opportunistic G strictly prefers to breach in this situation. This is indeed true in equilibrium, and I will discuss the intuition below after discussing players' strategies.[6] For now, maintain that the opportunistic G strictly prefers to breach contract when $\mu > \mu^*$.

Given the opportunistic G breaches when $\mu > \mu^*$, what happens when its reputation is below the threshold ($\mu^* \geq \mu$)? Recall that firms are indifferent about investing when G's reputation is at the cutoff ($\mu = \mu^*$) and when they expect the worst from the opportunistic G ($\sigma(\mu > \mu^*) = 1$). If G's reputation is lower than the cutoff ($\mu^* \geq \mu$) and firms still expect a breach from the opportunistic G, then the firms' breach risk is too great to invest at that reputation level. Knowing this, the opportunistic G can respect firms' rights sufficiently to compensate for its reputational

5. Whether the opportunistic G maximizes all future payoffs as in here, or payoffs until a type change—e.g., a leader turnover—do not change the results. This only affects G's discounting, immaterial for the equilibrium.

6. I provide the proof in the appendix.

gap, and firms would invest again. Indeed, for any reputation lower than μ^*, the opportunistic G can proportionally adjust its willingness to protect firms' property rights to make the firms indifferent about investing:

$$\mu(1-\tau)v + (1-\mu)(1-\sigma)(1-\tau)v = d$$

$$\sigma(\mu) = \frac{(1-\tau)v - d}{(1-\mu)(1-\tau)v} = \frac{1-\mu^*}{1-\mu}$$

In other words, if $\mu > \mu^*$, then $\sigma(\mu) = 1$ and if $\mu^* \geq \mu$, then $\sigma(\mu) = \frac{1-\mu^*}{1-\mu}$. This fully specifies the opportunistic G's equilibrium strategy, depicted in Figure 2. Opportunistic G's probability of breach is strictly increasing in its current reputation when $\mu^* \geq \mu$ because firms are willing to live with a greater breach risk from the opportunistic type the more confident they are that G is the commitment type, that is, the greater G's reputation. Further, when $\mu^* \geq \mu$, the opportunistic G's probability of breach, $\sigma(\mu)$, is strictly decreasing in μ^*—the greater the leverage firms have over G, the greater the reputation cutoff level and the lower G's probability of breach.

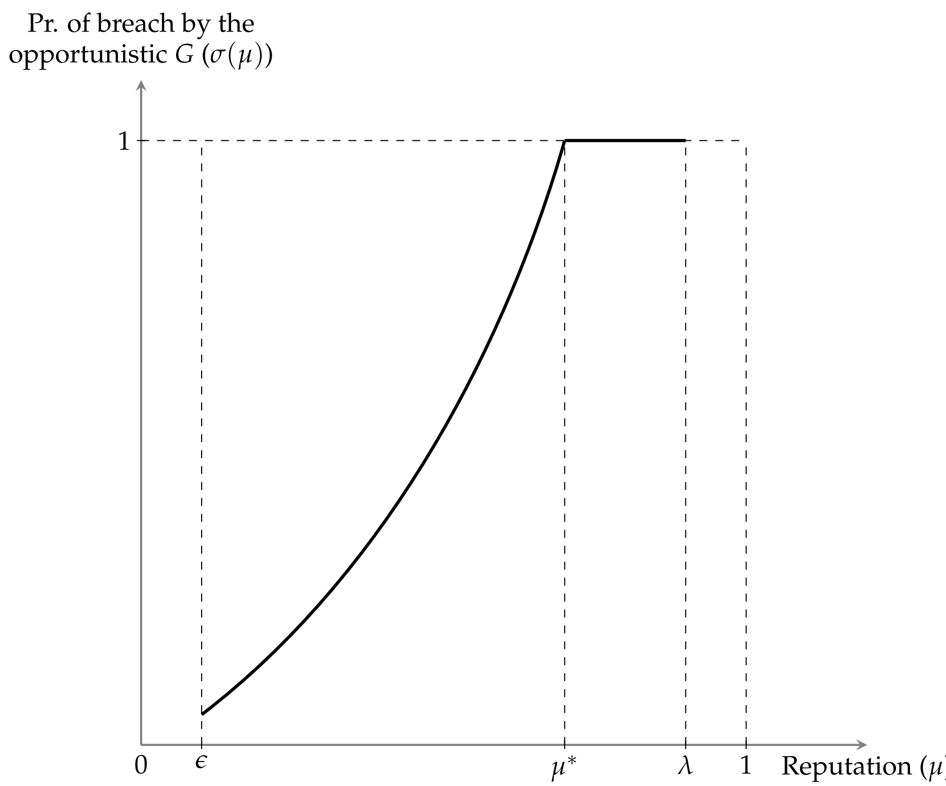


Figure 2: The probability that the opportunistic G breaches ($\sigma(\mu)$) in equilibrium as a function of its reputation (μ).

Given the opportunistic G's strategy, the equilibrium evolution of G's reputation μ' in equation 2 simplifies to:

$$\mu'(\mu) = \left(\frac{\lambda - \epsilon}{\mu^*}\right)\mu + \epsilon \tag{4}$$

Given no breach today, G's reputation tomorrow is increasing in ϵ (the probability that an opportunistic G turns commitment) and λ (the probability that a commitment G stays commitment). Further, the greater the firms' leverage (μ^*) over G, the less they are convinced that G is the commitment type upon observing good behavior. Then, it is more critical for the opportunistic G to build its reputation because firms need stronger assurances to invest.

Next is the firms' investment decisions. Firms strictly prefer investing if G's reputation is higher than the cutoff $\mu > \mu^*$. If G's reputation is lower than the cutoff, firms know that the opportunistic G forgoes breaching only if future rewards are worthwhile. I showed above that G is mixing when its reputation is $\mu^* \geq \mu$ to make firms indifferent about investing. Then, the fraction of firms expected to invest in G in the next period, $\alpha(\mu)$, should be high enough to make G indifferent about upholding firms' property rights in this period. Therefore, in equilibrium, a greater fraction of firms invest the better G's reputation. In other words, if $\mu > \mu^*$ then $\alpha(\mu) = 1$ and all firms invest, and if $\mu^* \geq \mu$, then more firms invest the greater G's reputation and thus $\alpha(\mu)$ is increasing in μ.[7]

Finally, why would the opportunistic G breach when its reputation is above the threshold? The opportunistic G requires sufficient rewards to forgo the breach temptation. However, there is an upper limit to these rewards. Investors have a level of risk regarding property rights protection that they are willing to accept to proceed with their investments. This risk level is determined by their outside options and the size of the surplus they expect from the venture (μ^*). Investors might enjoy a further reduction of their risk, but that does not impact their behavior; they are already willing to invest.

At the same time, the opportunistic G's breach temptation increases with the fraction of firms investing in its economy. The greater the opportunistic G's temptation, the greater the rewards necessary to keep it in check. However, because a larger fraction of firms invest when G's reputation is better, the fraction of firms who have yet to invest– the size of future rewards– diminishes.

7. See the appendix for the solution of and expressions for the equilibrium α levels.

Once $\mu > \mu^*$ and all potential investors invest, no further rewards exist. Therefore, each time the opportunistic G's reputation improves, future rewards are slightly insufficient to keep the same level of constraint on G's behavior. The opportunistic G compensates by increasing its probability of breach.

If the investors could credibly withhold investments to discipline the opportunistic G following a breach, this could keep G's temptation in check, notwithstanding the ever-diminishing rewards of reputation building. However, investors cannot credibly leverage this threat because they know that G's type is changing. Investors' interest in reaping the rewards of profitable investments makes at least some of them give investing G a chance, even after breaching. At least some investors find this risk palatable because the opportunistic G is most willing to uphold their property rights immediately after breaching to mitigate this risk. Since investors cannot threaten to shun G entirely, G knows it can rebuild its reputation. These are the reasons why (i) the opportunistic G's strategy of breaching with higher probability when its reputation is better is consistent with its optimization, and (ii) when the opportunistic G's reputation is beyond the threshold, it would rather breach contract knowing that it can start rebuilding its reputation tomorrow.[8]

To summarize, on the one hand, a better reputation induces a higher volume of FDI. On the other hand, the better an opportunistic G's reputation, the greater the probability that it will breach until its reputation hits the threshold μ^*, after which the opportunistic G breaches with certainty. Further, this is the unique MPE of the game (Phelan 2006, Theorem 8). Proposition 1 states the main result:

Proposition 1. *In equilibrium, the opportunistic G breaches contract with greater probability the better its reputation when $\mu^* \geq \mu$, and when $\mu > \mu^*$, it breaches contract with certainty. Commitment G never breaches contract.*

2.3 Why would foreign investors trust states with better reputations?

Proposition 1 implies that the causal effect of increasing a state's reputation is to increase its breach probability. If this is true, why would investors trust states with better reputations?

Investors can use reputations to proxy for lower breach risk because they inhabit a different

8. See the appendix for the proof.

information environment: they are uncertain about states' types. Remember that reputation is the probability that a state is a commitment type. Since commitment types do not breach, regardless of reputations, they tend to have good reputations. Opportunistic types breach with greater probability the better their reputations. This results in the investors' expectations being correct on average. Among states with better reputations, there are more commitment and fewer opportunistic types; hence, breach risk is lower. Among states with poorer reputations, the opposite is true; hence, breach risk is higher. In other words, while the *causal* effect of increasing a state's reputation is to *increase* its probability of breach, the *correlational* relationship perceived by investors is the opposite, that states with better reputations tend to breach less. The following proposition summarizes this conclusion. I provide the proof in the appendix.

Proposition 2. *From the investors' perspective, states with better reputations breach contract with lower probability.*

2.4 Empirical challenges due to uncertainty about types and a solution

The primary empirical challenge is that, like the investors, researchers are also uncertain whether a given state at a given time is an opportunistic or a commitment type. While many non-reputational mechanisms can keep states' hands from breaching, the temptation is an unobservable, latent variable that is also changing. No known factor correlated with being a commitment type, such as domestic institutions, provides certainty about state temptations. Research shows that even states that domestic institutions seemingly constrain can and do violate foreign firms' property rights (Esberg and Perlman 2023; Graham, Johnston, and Kingsley 2018). Indeed, if researchers could identify states' types with certainty, so should the investors who face much higher stakes. That would destroy the uncertainty and, with it, reputational incentives. Frequent references by states and investors to the importance of states' reputations contradicts that scenario (e.g., Kerner and Pelc 2021, 782).

The inability to identify states' types with certainty poses a challenge because direct evidence for the positive *causal* relationship between better reputations and breach in Proposition 1 can be obtained only if it was possible to identify opportunistic states and make the comparisons within that subset. Otherwise, by Proposition 2, naively comparing states with varying reputations should recover the negative *correlational* relationship perceived by investors: states with better reputations breach less. To address these challenges, I extend the model in the next section to consider how an exogenous shock, a severe natural disaster, affects reputation dynamics and formally derive further observable implications.

2.4.1 Solution: Severe Natural Disasters

Severe natural disasters are adverse shocks that pose significant human and financial burdens on states, potentially affecting up to 7% of GDP (Felbermayr and Gröschl 2014). I argue that the mechanisms through which disasters impact states' breach temptation can be summarized into two distinct effects. One, disasters make short-term economic or political gains from breaches more critical, increasing states' temptation. Second, disasters make states less attractive for investments, enhancing investors' leverage. Then, investors require stronger reassurances about breach risk, making reputation-building more important and decreasing state temptation. These opposing effects vary in strength based on existing reputations, offering a testable implication. I discuss each effect below. Figure 3 offers a summary.

The first effect of disasters, depicted in Figure 3a, is to increase the significance of rents from breaching.[9] These rents can be economic—–extracting valuable resources during times of crisis—– or political, such as avoiding unpopular commitments like toll increases on highways built by foreign firms or maintaining promised tariffs to foreign-owned energy companies. Disasters thus increase the economic urgency and the political sensitivity surrounding these decisions. For example, following Hurricane Jeanne in 2004, the Dominican Republic breached its contract with the TCW Group, a foreign electricity supplier, by refusing to honor contracted rates, thereby keeping energy prices low for the public. This decision, politically favorable during a disaster, reportedly cost TCW $500 million.[10] Additionally, TCW complained about the government's inadequate handling of 'energy theft,' a politically sensitive issue that became rampant after the disaster. Attempts by TCW to collect debts were extremely unpopular, leading to instances of public aggression like the stoning of company representatives and the burning of a collection office. Despite thousands of arrests for energy theft during this period, only a few led to convictions, with most

9. Aid flows following disasters are found to be less than 3% of estimated damages on average (Noy, Becerra, and Cavallo 2012), not nearly enough to compensate for the disaster-induced financial strain.

10. Notice of Arbitration and Statement Claim."*TCW v. The Dominican Republic*, p. 67.

individuals being released within hours.[11]

This effect increases states' temptation to breach. From the perspective of outside observers (investors and researchers), suppose disasters turn commitment types into opportunistic types with p probability, with opportunistic states remaining so. A state's reputation is the probability that it is a commitment type; therefore, disasters reduce the affected states' reputations from μ to $(1-p)\mu$. By Proposition 2, better reputations are negatively correlated with breach, hence decreasing reputations *increases* breach frequency. This is driven by commitment-turned-opportunistic states, which find themselves freer to breach.

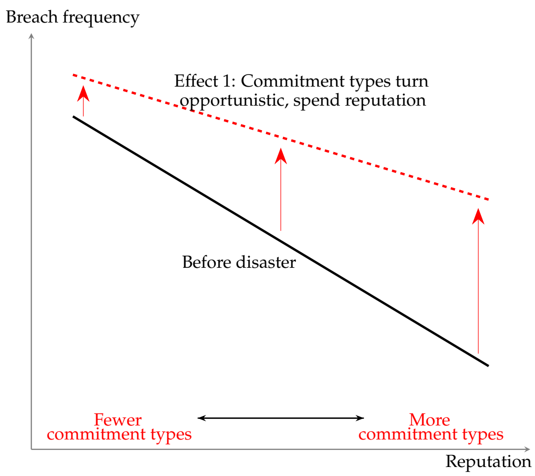
The first effect—–increasing the value of breach-related rents—–should be stronger among states with better reputations because it works through commitment types. Among states with better reputations, more commitment types can potentially turn opportunistic, and if they do, they are more likely to exploit their good reputations. Consistently, when the Dominican Republic breached its contract with TCW Group following Hurricane Jeanne, its previous violation was over a decade ago, and it had never faced investor complaints in international arbitration courts.

For the second effect, illustrated in Figure 3b, disasters decrease the attractiveness of a disaster-struck economy to investors relative to their outside options, enhancing investors' leverage. Investors' decisions become more sensitive to assurances against breach risk, thereby increasing the importance of reputation-building efforts. This does not affect commitment types, as they already honor their commitments. However, for opportunistic types, the increased investor leverage reduces their propensity to breach. Specifically, investor leverage increases the reputation cutoff μ^*, and by Proposition 1, the breach probability of an opportunistic state with a reputation below its cutoff. As a result, increasing investor leverage should *decrease* the breach frequency.

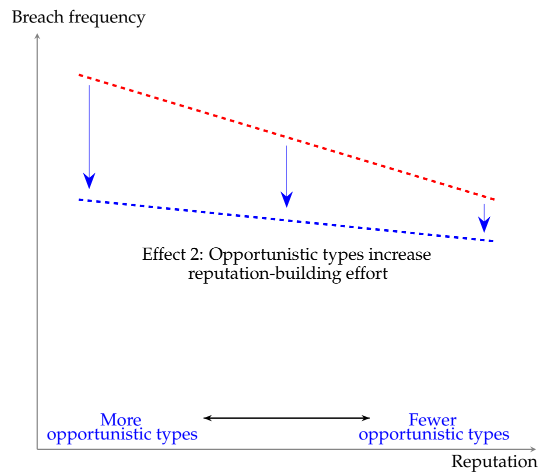
This second effect—–enhanced investor leverage—–should be stronger among states with poorer reputations because this effect works through opportunistic types, increasing their reputation-building effort. Among states with poorer reputations, there tend to be more opportunistic types.

The case of Sri Lanka provides a contrasting example to the Dominican Republic, illustrating this second effect. Both countries—disaster-prone island nations with similar economic development—faced severe disasters in 2004. Unlike the Dominican Republic, which had a strong reputation when disaster struck, Sri Lanka had a recently tarnished reputation; it was sued for breaching

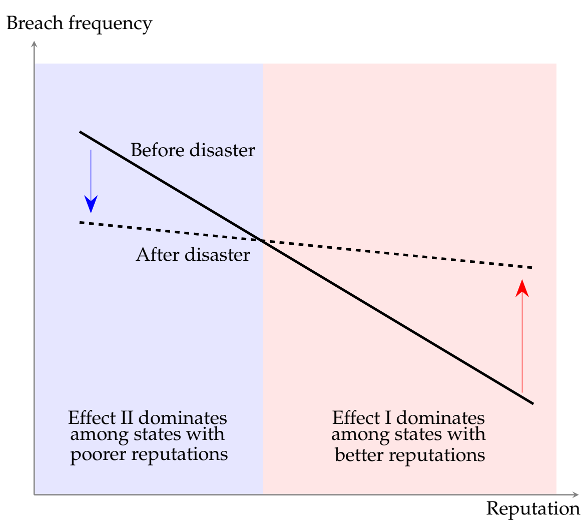
11. Notice of Arbitration and Statement Claim."*TCW v. The Dominican Republic*, pp. 50-51.



(a) Effect I: Increases the importance of rents from breach and turns some commitment types into opportunistic types. Increases breach. Works through commitment types. There are more commitment types among states with better reputations; hence, this effect is stronger.



(b) Effect II: Increases investors' leverage over states, hence the importance of reputations for attracting FDI. Reduces breach. Works through opportunistic types. There are more opportunistic types among states with poorer reputations; hence, this effect is stronger.



(c) Disasters *increase* the slope of the relationship between reputations and breach frequency. The net disaster effect is ambiguous; hence, the final slope may be positive or negative.

Figure 3: How disasters affect the relationship between reputations and breach frequency from the outside observer's (investors, researchers) perspective.

with Mihaly Corporation in 2000 in the International Centre for Settlement of Investment Disputes (ICSID).[12] Unlike the Dominican Republic, Sri Lanka did not breach but rather prioritized FDI in its post-disaster economic recovery strategy. The government bolstered the investment environment significantly, creating a sub-committee to fast-track investment proposals, reducing approval times from years to weeks, and saw a 24% increase in FDI inflows in 2005.[13]

Given these opposing effects, disasters' net impact on breach is ambiguous. However, the relative strength of these effects by states' reputations generates an observable implication. Among states with better reputations, the first effect—of increasing breach—is stronger, and the second effect—of decreasing breach—is weaker. Hence, the first effect is expected to dominate. The case of Dominican Republic, a state with a good reputation that breached following a disaster, illustrates this expectation. Accordingly, among states with poorer reputations, the second effect dominates the first. The case of Sri Lanka, a state with a poor reputation that did not breach but intensified efforts to attract FDI, illustrates this expectation.

Therefore, from an observer's (investor, researcher) perspective, the slope of the relationship between reputations and breach *increases* due to disasters. This does not imply that the post-disaster slope is necessarily positive. In other words, states with better (poorer) reputations are expected to be more (less) likely to breach *as a result of* disasters, not that they are overall more likely to breach after disasters. Proposition 3 below summarizes this result. I provide a formal discussion and the proof in the appendix.

Proposition 3. *States with better reputations are more likely to breach contract due to disasters.*

3 Research Design

To estimate the difference in the causal effects of disasters on states' propensity to breach by prior reputations, I rely on the exogenous timing of severe disasters. I argue that, once countries' ex-ante

12. *Mihaly International Corporation v. Democratic Socialist Republic of Sri Lanka* ICSID Case No. ARB/00/2. The case was dismissed in 2002 for jurisdiction issues, not on substantive grounds. See arbitrator Suratgar's concurring opinion acknowledging the claimant's losses from Sri Lanka's breach.

13. A billion reasons to invest in Sri Lanka." *Sunday Times*, 12 March 2006. BOI end 2005 with record $ 290 million FDI in 2005." *Daily Mirror*, 20 March 2006. Weerasekara, Poornima. Cabinet subcommittee fast tracks approval for $110m investments." *Daily Mirror*, 10 March 2006. Hewamanna, Damayanthi. ADB confident of private sector-led growth in Lanka." *Daily Mirror*, 7 April 2006. "Britain's corporate giants Marks and Spencer and Aviva Life International rated Sri Lanka as a top investment destination." *Daily Mirror*, 24 June 2006.

disaster risk is accounted for, the occurrence of disasters can be considered as-if random. Below, I discuss my data and measures, followed by the empirical strategy.

Contract breach, the outcome:

I utilize two distinct sources to capture breach behavior. The first is the investor-state dispute settlement (ISDS) dataset, which provides information on lawsuits filed by foreign firms against governments in international tribunals (Wellhausen 2016).[14] This dataset covers 773 cases between 1990-2015. Breach behavior in this dataset includes outright expropriations, such as Occidental Petroleum v. Ecuador 2006, where Occidental sued Ecuador for $1 billion for seizing their oil exploration and production assets in the Ecuadorian Amazon Block 15 region.[15] They also include "creeping expropriations," breaches shy of forceful asset transfers, such as Siemens v. Argentina 2002, where Siemens successfully sued Argentina for $400 million for suspending its contract for creating a system of migration control and personal identification.[16] Breaches by Sri Lanka and the Dominican Republic discussed above also fall under this category.

The second source is widely used expropriation data collected by Kobrin (1980), updated by Minor (1994), Hajzler (2012), Hajzler and Rosborough (2016), and finally, Esberg and Perlman (2023), which is the version I employ.[17] This dataset documents 726 direct expropriations by developing countries from 1960-2015, sourced from news reports, and excludes creeping expropriations.

An advantage of ISDS data is that it covers a broader range and, thus, a more complete picture of theoretically relevant breach acts. Further, information is based primarily on legal proceedings rather than news, avoiding the potential selection issues due to newsworthiness. However, the ISDS data has two drawbacks. First, scholars noted concerns regarding a recent proliferation of frivolous cases filed for strategic reasons rather than contract violations (Kerner and Pelc 2021; Pelc 2017). Therefore, I use ISDS data to capture breach acts in two ways. One uses all cases regardless of their outcome, and two uses the subset of cases ending with a settlement or firm victory. Of the 773 recorded cases, 303 are in this subset.

14. Venues include ICSID, International Chamber of Commerce (ICC), Stockholm Chamber of Commerce (SCC), Permanent Court of Arbitration (PCA), London Court of International Arbitration (LCIA), regional arbitration centers, and ad-hoc tribunals (Wellhausen 2016).

15. https://www.italaw.com/cases/767

16. https://www.italaw.com/cases/1026

17. Henceforth referred to as "expropriation data."

The second limitation of ISDS data is that it features a different potential selection issue: investors can sue governments only if investments are protected via an international legal framework—typically a bilateral investment treaty (BIT). I address this issue by controlling for the number of BITs in effect for a state, from Graham, Johnston, and Kingsley (2018). Additionally, I replicate the analyses with the expropriation data mentioned above, collected based on news. Since breaches in the expropriation data do not require a legal infrastructure to be observed, this demonstrates the robustness of my results to different ways of collecting breach information, if not directly addressing the potential selection issues.

The theory says that breach observations are valuable for investors because of their information content about states' types. Observing a breach in a period reveals that the state must have been an opportunistic type tempted to breach, for if it was a commitment type, it would not. In the empirical setting, the unit of analysis is state-year. Accordingly, the dependent variable $Breach_{it}$ is an indicator for whether a country i breached in year t.

Disasters, the treatment:

Data on disasters come from the Emergency Events Database (EM-DAT), which sources information from UN agencies, governments, insurance companies, research institutions, and NGOs like the Red Cross/Crescent (Caruso 2017). Records include the scale of each disaster, the number of fatalities, and the financial damage incurred. I exclude industrial disasters and those linked to short-run human activities like epidemics. Following existing research on disasters' impacts on political and economic outcomes, I focus on storms, floods, volcanic activities, earthquakes, and landslides (Cavallo et al. 2013; Escaleras and Register 2011; Ramsay 2011).

A disaster should be severe enough to have the theorized effects on state behavior. Following Cavallo et al. (2013), I classify a disaster as "severe" if the death toll relative to the local population exceeds the 90th percentile in the dataset.

Based on the theory that only severe disasters significantly affect state behaviors, I adopt the definition from Cavallo et al. (2013) and classify a disaster as 'severe' if the death toll relative to the population exceeds the 90th percentile in the dataset.[18] The 2004 tsunamis in Sri Lanka and Hurricane Jeanne in the Dominican Republic are examples of such severe disasters. Over 300

18. Casualties are used to assess severity for their broader coverage and reliability compared to financial estimates (Cavallo et al. 2013).

country-years in my dataset experienced disasters meeting this severity criterion, with a median casualty figure around 500.

The economic and political repercussions of these disasters are often long-lasting. Additionally, there is typically some delay between a breach and the subsequent lawsuit filing in the ISDS data. I show results with 2- and 3-year treatment periods, including the disaster year. Depending on the treatment period and time coverage, the total number of treated country-years ranges from 191 to 612."

Reputation, the moderator:

I have maintained that a state's reputation is closely linked to its past behavior because investors remain uncertain about a state's breach temptation even when considering observable indicators like regime type or the rule of law. This perspective aligns with findings that even states seemingly constrained by domestic institutions can breach contracts at levels similar to those where the rule of law is weaker (Esberg and Perlman 2023; Graham, Johnston, and Kingsley 2018). This is corroborated by interviews with senior company executives, who find past breach information genuinely informative when making investment decisions (Büthe and Milner 2009, 210).

I measure reputations by capturing the main features of investors' equilibrium updating. In the model, investors update a state's reputation based on its breach behavior. A state's reputation at the beginning of any period is bounded from both above (by λ) and below (by ϵ). Observing a breach, investors infer that the state is opportunistic, dropping its reputation to zero. Investors revise this reputation to ϵ by the next period—the probability that an opportunistic type turns into a commitment type,—which is the lower reputation bound. For each period without breach, the state's reputation increases following equation 2 until it reaches λ—the probability that a commitment type turns opportunistic,—which is the upper reputation bound.

Accordingly, the reputation measure sets state i's reputation to zero in year t if it breaches during that year. The reputation then increases by 0.1 each subsequent year without a breach until it fully recovers to one after ten years. Here, 1 and 0 are simply normalizations of the model's reputation bounds λ and ϵ. The theory offers no specific guidance on the time horizon to completely recover a damaged reputation. The results are also robust to 5- and 20-year horizons (in appendix). The analysis aims to determine if disasters affect states' breach propensity differently depending on their prior reputations by examining how $Reputation_{it-1}$—reputation before the events in t—impacts breach in year t. Consistency is maintained across analyses, using either ISDS or expropriation data to document both current and historical breaches for reputation measurement.

While qualitative evidence indicates that company executives utilize past breach information to assess risk when making investment decisions, they can also access information on state reputation through third-party political risk ratings and indexes. To demonstrate the robustness of my findings against these alternative reputation measures, I include in the appendix results using a reputation metric based on the Fraser Institute's Economic Freedom survey (Gwartney et al. 2016). Specifically, I employ the "legal system and property rights protection" index, aggregating data on the rule of law, property rights security, the independence and impartiality of the judiciary, and the effectiveness and impartiality of law enforcement. [19]

Empirical strategy:

The goal is to estimate how the effects of disasters on states' breach propensity are influenced by their prior reputations. The main challenge for the causal interpretation of results is that, while the exact timing of disasters is exogenous to reputation dynamics, disaster risk is not randomly distributed. Some countries are geographically more prone to disasters than others. Investment decisions might reflect disaster risk, and broadly, more or less disaster-prone countries may systematically differ in ways affecting their past reputations and current breach propensity.

I argue that, once disaster risk is accounted for, the occurrence of disasters can be regarded as-if random, satisfying the assumption of strongly ignorable treatment assignment (Rosenbaum and Rubin 1983). I measure disaster risk via a predictive model based on gradient boosting machines (GBM), a tree-boosting technique where—unlike tree-bagging techniques like random forests where trees are built independently—consecutive trees are built to improve on the residuals of previous trees (Montgomery and Olivella 2018).[20] I use inputs predictive of disasters and their severity: past disaster records since the beginning of the 20th century, land and total geographic area, population and population density, GDP, GDP per capita, and country and year

19. Fraser's index is one of the oldest of its kind, offering broader time and geographic coverage than the alternatives. It is still considerably sparser than measures based directly on past breaches.

20. I employed the caret package in R to implement GBMs. For further details on GBMs and the caret package, see Kuhn (2008).

indicators.[21]

Proposition 3 suggests that states with better reputations are more prone to breach due to disasters. To investigate this, I present two sets of results. The first set utilizes linear probability models based on the following equation:[22]

$$\begin{aligned} Breach_{i,t} = \pi_0 Disaster_{i,t} + \pi_1 Reputation_{i,t-1} + \pi_2 Disaster_{i,t} \times Reputation_{i,t-1} \\ + \pi_4 Risk_{i,t} + \pi_5 FDI_{i,t-1} + \pi_6 BITs_{i,t-1} + \mathbf{X}'_{i,t-1}\beta + \alpha_i + \eta_t + \epsilon_{i,t} \quad (5) \end{aligned}$$

$Breach_{i,t}$ is whether state i breached in year t; $Reputation_{i,t-1}$ is state i's reputation prior to t; and $Disaster_{i,t}$ is whether state i is in the treatment period following a disaster. Of primary interest is π_2, the marginal change in the treatment effect of disasters on breach by prior reputations. By Proposition 3, π_2 is expected to be positive.[23] I provide results with country-fixed effects (α_i) relying on variation within states over time, year-fixed effects (η_t) relying on variation across states, and two-way fixed effects.[24]

In all models, alongside disaster risk $Risk_{i,t}$, I control for $FDI_{i,t-1}$, the total FDI stock as a percentage of GDP in year $t-1$, and $BITs_{i,t-1}$, the number of BITs in effect for state i in the previous year. Taking into account disaster risk should render the treatment assignment independent of factors that do not determine disaster occurrence, like FDI stock and the BITs in effect. However, controlling for FDI stock allows for more balanced comparisons across states where FDI is similarly important. BITs may be important when breach is measured via ISDS data. Foreign investors can sue host-governments only if their investments are protected by a BIT. Taking BITs into account helps alleviate this potential selection issue.[25]

To demonstrate the robustness of my results, I also present estimates from models with addi-

21. Disaster data is from EM-DAT. The rest are from World Development Indicators (WDI) and Penn World Tables (Feenstra, Inklaar, and Timmer 2015).

22. I use linear probability models with heteroskedasticity-robust standard errors for clarity in interpreting interaction terms. Additionally, scholars find nonlinear models like logit and probit inappropriate for randomized experiments with binary outcomes, particularly when interaction terms are present, which is what our observational setting is designed to mimic (Freedman 2008; Gomila 2021).

23. In the formal treatment of Proposition 3 (appendix), π_2 corresponds to $\frac{\partial \Delta(\mu)}{\partial \mu}$.

24. Burgeoning literature highlights myriad issues in causally interpreting two-way fixed effects designs; see Chaisemartin and D'Haultfœuille (2023) for a survey. I provide these estimates for robustness purposes.

25. I use the natural log transformations. FDI data is from the UN Conference on Trade and Development, and BIT data is from (Graham, Johnston, and Kingsley 2018). I use the versions compiled in Graham and Tucker (2019).

tional controls (collectively $\mathbf{X}_{it}$ in equation 5). These include one-year lagged measures capturing whether the country experienced leader turnover, Polity scores, GDP, and GDP per capita levels. [26]

For the second set of results, I preprocess the data using matching techniques. As the treatment assignment ignorability hinges on disaster risk, the objective is to balance the treatment and control groups regarding disaster risk while minimizing reliance on parametric assumptions. Observations are first exactly matched by quintiles of disaster risk and, within each quintile, matched on risk based on the Mahalanobis distance with a 0.1 standard deviation caliper. I also ensure balance across other critical variables by matching on reputations, FDI stock, and BITs in effect.[27]

The matching procedure excludes within-unit matches to prevent matching the same state with itself in different time periods. I perform optimal full matching of the treatment and control groups using the optmatch package in R (Frederickson and Hansen 2023; Hansen and Klopfer 2006; Hansen 2007). This procedure treats matching as an optimization problem balancing the requirement for dispersion in the treatment variable and the need for uniformity in matched variables across treatment and control groups. This procedure optimally generates non-overlapping matched sets where a given treated unit can be matched with multiple control units.

After matching, I estimate the heterogeneous average treatment effect on the treated (ATT) for disasters by prior reputation levels using the following equation:

$$\begin{aligned} Breach_{i,t} = \pi_0 Disaster_{i,t} + \pi_1 Reputation_{i,t-1} + \pi_2 Disaster_{i,t} \times Reputation_{i,t-1} \\ + \pi_4 Risk_{i,t} + \pi_5 FDI_{i,t-1} + \pi_6 BITs_{i,t-1} + \epsilon_{i,t} \end{aligned} \quad (6)$$

Again, the focus is on π_2, the marginal change in the ATT of disasters across reputations, expected to be positive by Proposition 3. I estimate the model by including the covariates used in matching with heteroskedasticity-robust errors clustered at the matched set level.

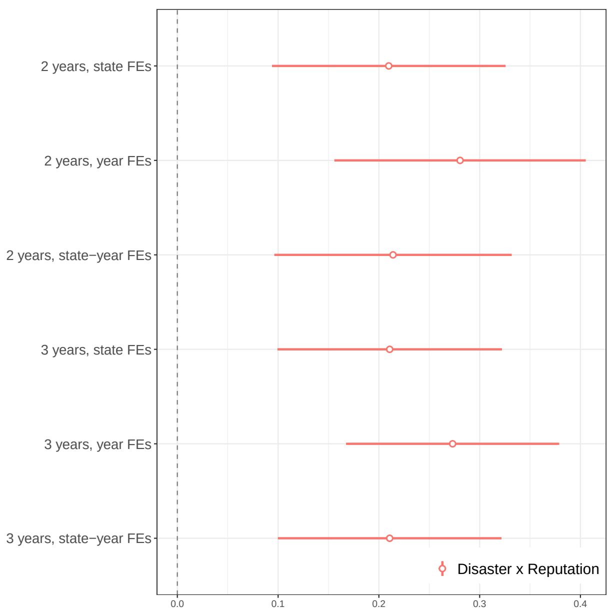
The appendix provides summary statistics for the variables used in the analyses (Table 1) and the balance statistics for each matched sample (Table 7).

26. Leader data is from Mattes, Leeds, and Matsumura (2016). The rest are from the International Political Economy Data Resource (Graham and Tucker 2019).

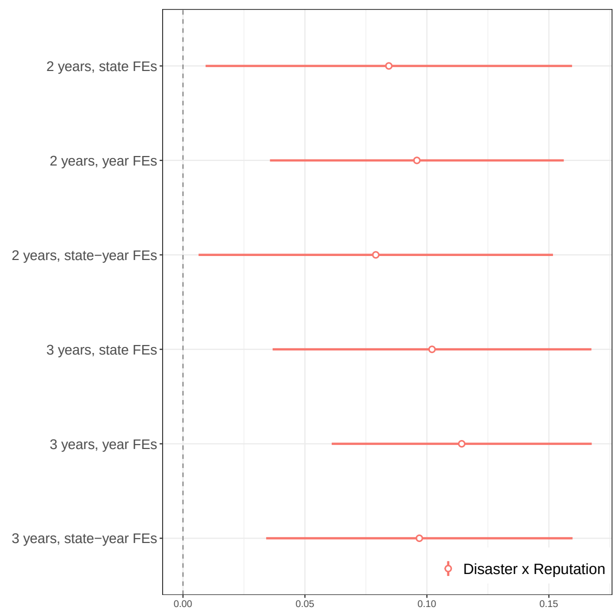
27. Using Mahalanobis distances, imposing a 0.5 standard-deviation caliper.

4 Results

Figure 4 presents the results from Equation 5. Each line shows the interaction term coefficient (π_2) between disasters and reputations, incorporating the full range of covariates but varying in treatment periods and fixed effects. This term captures the marginal change in the effect of disasters on breach propensity as reputations improve. By Proposition 3, states with better reputations are more likely to breach due to disasters. The findings, depicted in Figure 4a using ISDS data (all cases) and Figure 4b using expropriation data, strongly support this proposition.[28]



(a) ISDS Data (all cases)



(b) Expropriation Data

Figure 4: The coefficient of the interaction term between disasters and reputations (π_2 in Equation 5) captures the marginal change in the ATE of disasters when increasing reputations. The bands represent 95% confidence intervals. Panel (a) and (b) are based on models 4-6 and 10-12 reported in, respectively, Table s2 and 3 (Appendix).

The interaction term is consistently positive, statistically, and substantively significant across all specifications. Results using ISDS data in Figure 4a suggest that a state with no breaches in the decade before a disaster is about 25% more likely to breach due to the disaster than a state that breached in the preceding year. Similarly, using expropriation data, the difference in treatment effects based on prior reputation levels is about 10%, which, while lower, is still substantial. Results are consistent across different treatment durations and whether comparisons are made between

28. Appendix, Tables 2 and 3 display these and other specifications with consistent results.

states in a given year (year-fixed effects) or within states over time (state-fixed effects).

Results relying on matched samples in Figure 5 display similar patterns. Again, each line is the coefficient of the interaction term (π_2) in equation 6, from matched samples created using different treatment periods and different ways of capturing breach.[29] Coefficient of the interaction term is much larger when estimated on matched samples where control and treatment groups are similar regarding disaster risk, reputations, FDI stock, and BITs in effect. In models using all ISDS cases to capture breach, the estimated moderating effect of reputations over the ATT of disasters on contract breach propensity is approximately 60%, and in models using expropriation data, approximately 50%.

Figure 5 also presents results from matched samples where breach acts are captured via the subset of ISDS cases that ended in settlement or firm victory, addressing concerns about the recent proliferation of frivolous ISDS cases (Kerner and Pelc 2021; Pelc 2017). The estimates from these models are smaller but remain significant, at 27% for the 2-year treatment period and 43% for the 3-year treatment.[30] The consistent findings across various ISDS case types support the argument by Allee and Peinhardt (2011) that facing a lawsuit, regardless of the outcome, can detrimentally affect a country's reputation.

29. See appendix, Table 8.

30. See appendix Table 4 for similar estimates on non-matched samples with consistent results.

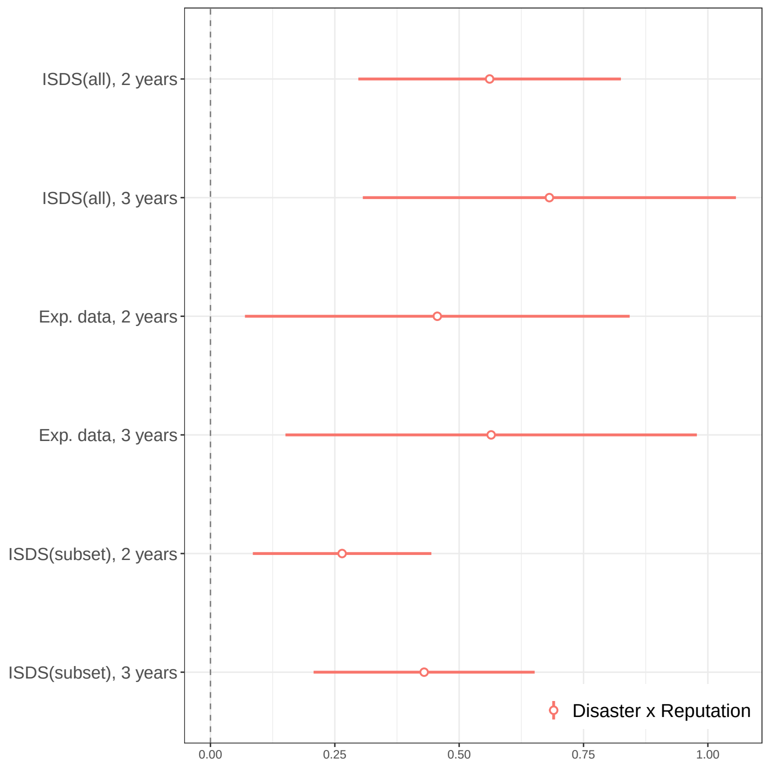


Figure 5: The coefficient of the interaction term between disasters and reputations (π_2 in Equation 6) captures the marginal change in the ATT of disasters when increasing reputations. The bands represent 95% confidence intervals. Based on the models reported in Table 8, balance statistics are in Table 7 (Appendix).

These effects appear primarily driven by states with poorer reputations breaching with much lower frequency during disasters. This suggests that the second effect of disasters—–increasing investor leverage, exemplified by the case of Sri Lanka—–may be the more influential mechanism. Depending on the model, coefficients for $Disaster_t$ suggest that a disaster decreases breach propensity among states with the worst reputations by approximately $10 - 20\%$, with this effect increasing to $30 - 60\%$ in matched samples; all substantively large effects.[31] This relationship is statistically significant in almost all models. Conversely, the results indicate that states with better reputations are slightly more likely to breach under disaster conditions. However, these effects are smaller, in the range of a few percentage points, and not statistically significant.

Additionally, the relationship between reputations and breach propensity in non-disaster periods reveals that, while better reputations incentivize breach, from an investor's perspective, states with better reputations are less likely to breach contracts (Proposition 2). Results consistently

31. See appendix, Tables 2, 3, and 8.

show a negative correlation between better reputations and breach in non-disaster times, given by the coefficient of $Reputation_{t-1}$, as anticipated. In non-disaster times, improving a state's reputation from worst to best is associated with a $10-15\%$ reduction in breach, with this correlation strengthening to $15-45\%$ within matched samples.[32]

These findings remain robust across different reputation horizons (5- and 20-year horizons),[33] different reputation measures (via breach history, and via Fraser Institute's property rights protection index),[34] and capturing breach acts via different sources of information—whether ISDS lawsuits (all cases or the relevant subset) or newsworthy expropriation events.[35] The models featuring the Fraser Institute's property rights index as the reputation measure show consistent results when a breach is captured via the subset of ISDS cases with comparable effect sizes. When a breach is captured via all ISDS cases or via expropriation data, the models with year-fixed effects yield consistent results. Those with state-fixed effects show null results, perhaps due to low within-state variation of the index.

5 Discussion and Conclusion

What is the relationship between a state's reputation and its propensity to breach contract with foreign investors? Via a formal model, I argue that among states whose behavior is constrained by reputational concerns (the opportunistic types), better reputations encourage breach. Better reputations lead to more trust and FDI, increasing the temptation to breach. More trust means less room for improvement, reducing the future returns from good behavior. Additionally, potential unobserved changes in states' breach temptations enable reputation rebuilding by making investors consider that their unfavorable beliefs may be due to outdated circumstances. When rebuilding is possible, the better an opportunistic state's reputation, the less likely it is to uphold investors' rights. Commitment types, constrained via non-reputational mechanisms, do not breach, and their behavior does not change with reputations.

Direct empirical validation of this theory is challenging due to the inherent uncertainty about a state's breach temptation——whether it is a commitment or opportunistic type. Since commitment

32. Based on Tables 2, 3, and 8.
33. Table 6
34. Table 5
35. Tables 4, 8, and 6.

types are restrained by other mechanisms but tend to have good reputations, naive comparisons find better reputations associated with less breach, although the causal relationship is the opposite.

To address these challenges, I formally analyze the impact of disasters on state behavior under reputational pressures. I argue that states with better reputations are more likely to breach due to such shocks. I test this implication, relying on the as-if random occurrence of disasters conditional on disaster risk. The results offer strong evidence for the argument that better reputations incentivize breach, showing that states with better reputations breach with significantly higher frequency due to disasters.

This paper contributes to understanding how states' reputations impact the protection of foreign investors' property rights in a world where non-reputational mechanisms can also constrain. Extensive literature exists on the role of reputational concerns in protecting investors and the conditions affecting their salience (Allee and Peinhardt 2011; Büthe and Milner 2008; Garriga 2016; Jensen and Johnston 2011; Wellhausen 2015), as well as on alternative mechanisms that restrict government actions (Arias, Hollyer, and Rosendorff 2018; Henisz 2000; Johns and Wellhausen 2016, 2021; Pyle 2011). This paper bridges these areas by proposing a novel theory where reputations develop from the uncertainty among investors about whether non-reputational mechanisms curtail a state's behavior or if it must be managed through reputational concerns. Thus, the significance of reputational concerns is intrinsically linked to the effectiveness of non-reputational constraints.

Another innovative aspect of this theory is its consideration of how changes in states' temptations to breach influence reputation dynamics. Prior research indicates that a state's past breach behavior may not reliably predict its current actions due to changing circumstances, rendering past behaviors only noisy indicators of present intentions (Johns and Wellhausen 2016). My model accounts for this by allowing the types of states—–indicative of their breach temptations—–to evolve. Although reputational enforcement mechanisms still protect investors' property rights, they do so inefficiently. The model illustrates that when past behavior is an imperfect guide of current behavior, profit-driven firms have incentives to give states with previously tarnished reputations the benefit of the doubt, facilitating reputation rebuilding. Paradoxically, this capacity for reputation recovery creates a stronger incentive for states with good reputations to breach.

To my knowledge, this paper provides the first systematic evidence that better reputations incentivize contrary behavior. This contributes most directly to the literature on the determinants of breach (e.g., Biglaiser, Lee, and Staats 2016; Jensen and Johnston 2011; Jensen et al. 2019; Wellhausen 2015, 2016). It introduces a new mechanism not previously considered: past breaches, or lack thereof, directly affect current behavior via reputations. Crucially, it is the *possibility* of change in states' breach temptation—–not actual change—–that activates this mechanism. This means reputations can impact breach decisions today, even if the underlying economic conditions or the effectiveness of non-reputational constraints do not change. Moreover, by illustrating the inefficiencies of reputational enforcement, this research reaffirms the requirement for additional mechanisms to safeguard foreign investors' rights alongside reputational concerns (Arias, Hollyer, and Rosendorff 2018; Henisz 2000; Johns and Wellhausen 2016, 2021; Pyle 2011).

These results are relevant for all research leveraging reputational concerns to explain cooperative outcomes in international relations. Scholars have often highlighted the role of international institutions in enhancing the effectiveness of reputational mechanisms (Greif, Milgrom, and Weingast 1994; Guzman 1997; Johns 2012; Koremenos, Lipson, and Snidal 2001). However, this study suggests that reputational concerns may not effectively constrain those with already good reputations. A promising area for future research can be exploring how institutions can be designed to mitigate reputational inefficiencies discussed here. More broadly, given that reputations play a significant role in scenarios where commitment problems intersect with long-term relationships, these insights are relevant to specialists in international cooperation and political scientists in general.

This research also contributes to breach behavior following crises. While Jensen et al. (2019) suggest that states are less likely to expropriate following economic crises due to increased reputational concerns, I argue that the impact of natural disasters on breach is theoretically ambiguous, influenced by competing effects—–greater investor leverage and elevated importance of breach rents. Empirically, I find that the breach-reducing effect of disasters depends on current reputations, and states with poorer reputations are significantly less likely to breach due to disasters, but not states with better reputations. Theoretically and empirically, I identify substantial heterogeneity in disaster effects by reputation, underlining the need to consider strategic actor responses to exogenous shocks.

Finally, this research complements findings in other areas where actors known for desirable behaviors may paradoxically engage more freely in undesirable actions, a type of moral hazard. For example, Kono (2006) shows that democracies, typically advocates of liberal trade policies, may implement non-tariff trade barriers because they are harder to detect. Cooley (2020) observes that states with low tariff rates often have significant non-tariff barriers, and Bazillier, Hatte, and Vauday (2017) find that multinationals known for environmental responsibility are more likely to operate in countries with lax environmental standards. More directly relevant, Esberg and Perlman (2023) and Graham, Johnston, and Kingsley (2018) find that democracies with strong rule of law can still breach contracts at rates comparable to non-democracies. Given these findings, and my results that better reputations may incentivize breaches, future research could fruitfully explore whether strong reputations increase or decrease the likelihood of engaging in undesirable behaviors in areas where monitoring is challenging.

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Reputations, Foreign Direct Investment, and Contract Breach

Supplemental Information

A Theoretical appendix

A.1 Proof of Proposition 1

Proposition 1. *In equilibrium, the opportunistic G breaches contract with greater probability the better its reputation when $\mu^* \geq \mu$, and when $\mu > \mu^*$, it breaches contract with certainty. Commitment G never breaches contract.*

Proof. The proof follows Phelan (2006). The threshold μ^*, as well as the opportunistic G's equilibrium strategy $\sigma(\mu)$ are described above. There are three things I need to show to complete the proof of the MPE and thus Proposition 1: (i) in equilibrium G's reputation can exceed μ^* in finite steps, (ii) the equilibrium fraction of foreign firms which invest in G, $\alpha(\mu)$, and (iii) it is optimal for G to breach contract with certainty when its reputation is $\mu > \mu^*$.

A.1.1 G's reputation can exceed μ^* in N steps

Given a reputation $\mu < \mu^*$ and the opportunistic G's equilibrium strategy $\sigma(\mu) = \frac{1-\mu^*}{1-\mu}$, if G does not breach contract in a given period, G's reputation in the beginning of the next period is:

$$\mu'(\mu) = \left(\frac{\lambda - \epsilon}{\mu^*}\right)\mu + \epsilon$$

I will show that, starting from $\mu = \epsilon$, we can exceed μ^* by applying the function $\mu'(\mu)$ consecutively and in finite steps. First suppose $\left(\frac{\lambda-\epsilon}{\mu^*}\right) \geq 1$. Then $\mu'(\mu)$ is linear with a slope greater than or equal to one, as such, G's reputation can exceed μ^* in finite steps. Next suppose $\left(\frac{\lambda-\epsilon}{\mu^*}\right) < 1$. Note that the fixed point $\mu'(\mu)$ is $\frac{\epsilon\mu^*}{\mu^*-\lambda+\epsilon}$. Since $\lambda > \mu^*$ by assumption, we have $\frac{\epsilon\mu^*}{\mu^*-\lambda+\epsilon} > \mu^*$, and thus the fixed point of the updating process is greater than μ^*. This means, again, that G's reputation can surpass μ^* in finite steps.

A.1.2 The equilibrium fraction of foreign firms investing in G

Given that G's reputation can exceed μ^* in finite steps, let N be the minimum number of consecutive instances where G does not breach contract required to push G's reputation above μ^*, starting from a prior belief $\mu = \epsilon$. Let μ^k, $k \in \{0, 1, ..., N, ...\}$ represent these consecutive reputation steps where we apply the function $\mu'(\mu)$ k times: i.e. $\mu^0 = \epsilon$, $\mu^1 = \mu'(\epsilon)$, $\mu^2 = \mu'(\mu'(\epsilon))$ and so on, such that $\mu^{N-1} < \mu^*$ and $\mu^N > \mu^*$. The case where $\mu^N = \mu^*$ will generically not occur, and I will ignore that knife-edge scenario. I will specify foreign firms' strategies on this μ^k grid of beliefs.

In the text, we showed that the opportunistic G mixes between breaching and not when $\mu \leq \mu^*$ to induce indifference on foreign firms. In equilibrium, when $\mu \leq \mu^*$, the fraction of foreign firms G expects will invest in the next period should also make the opportunistic G indifferent about breaching contract this period. Let $\alpha^k = \alpha(\mu^k)$ and $V^k = V(\mu^k)$. Then for $k < N$, that is when $\mu < \mu^*$, we have:

$$V^k = \alpha^k v + \delta V^0 \tag{7}$$

$$V^k = \alpha^k \tau v + \delta V^{k+1} \tag{8}$$

The first equation is the continuation value of the game for the opportunistic G when its reputation is μ^k and it breaches contract. The second equation is the continuation value if the opportunistic G does not breach contract.

When $\mu \geq \mu^*$ we said that all firms invest, $\alpha(\mu) = 1$ and the opportunistic G breaches contract with certainty; $\sigma(\mu) = 1$. Then for $k \geq N$ this implies:

$$V^k = v + \delta V^0 \tag{9}$$

The above set of Bellman equations have the same number of equations and unknowns, and thus has a unique solution. Set $k = 0$ in equation 7:

$$V^0 = \frac{\alpha^0 v}{1 - \delta}$$

Solve equation 7 with 8:

$$V^{k+1} = \frac{\alpha^k v(1-\tau)}{\delta} + \frac{\alpha^0 v}{1-\delta}$$

Set $k = k+1$ in equation 7 and solve with above:

$$\alpha^{k+1} = \frac{1-\tau}{\delta}\alpha^k + \alpha^0$$

Set $k = 0$ above and iterate over k to simplify:

$$\alpha^k = \alpha^0 \sum_{i=0}^{k} \left(\frac{1-\tau}{\delta}\right)^i$$

Set $k = N-1$ in equation 8 and solve for α^{N-1} with equations 7 and 9:

$$\alpha^{N-1} = \frac{\delta(1-\alpha^0)}{1-\tau}$$

We can now find out α^0 using the above expressions:

$$\alpha^0 = \frac{1}{\sum_{i=0}^{N}(\frac{1-\tau}{\delta})^i}$$

Finally, we can use α^0 to solve for α^k where $k \leq N-1$:

$$\alpha^k = \frac{\sum_{i=0}^{k}\left(\frac{1-\tau}{\delta}\right)^i}{\sum_{i=0}^{N}(\frac{1-\tau}{\delta})^i}$$

And for $k \geq N$ we have $\alpha^k = 1$. This completes the specification of the equilibrium fraction of foreign firms investing in G as a function of G's reputation. Note that the expression for α^k for $k < N$ is between zero and one, regardless of δ, and it is strictly increasing in k, and thus G's reputation.

A.1.3 It is optimal for G to breach contract with certainty when its reputation is $\mu > \mu^*$

The proof is by contradiction. Suppose $k \geq N$ yet G weakly prefers fulfilling its commitments to breaching contract. In particular, let $k = N$:

$$\tau v + \delta V^N \geq v + \delta V^0$$

$$V^N \geq \frac{v(1-\tau)}{\delta} + V^0$$

Now set $k = N - 1$ in equation 8 and solve for V^N using equation 7:

$$V^N = \alpha^{N-1} \frac{v(1-\tau)}{\delta} + V^0$$

Since we have $0 < \alpha^{N-1} < 1$ the above expression implies that $V^N > V^N$ a contradiction. Therefore it is optimal for G to breach contract with certainty for $\mu \geq \mu^*$. This concludes the specification of the equilibrium.

□

A.2 Proof of Proposition 2

Proposition 2. *From the investors' perspective, states with better reputations breach contract with lower probability.*

Proof. Recall that, in equilibrium, if a state's reputation is lower than the cutoff, $\mu \leq \mu^*$, an investor faces $1 - \mu^*$ probability of contract breach, and if the state's reputation is higher than the cutoff, $\mu > \mu^*$, an investor faces $1 - \mu$ probability of contract breach.

To see how this implies a *negative* overall relationship between reputations and contract breach, suppose we have a unit measure of states, all with reputations μ, and reputations μ^* distributed according to an increasing and continuous cumulative distribution function F with support (ϵ, λ). Let the states be indexed by $i \in [0,1]$, ordered according to their reputation cutoffs μ_i^* from high to low (that is, if $i > i'$ then $\mu_{i'}^* \geq \mu_i^*$). Let $\gamma = 1 - F(\mu)$ be the fraction of all states with reputations at or below their reputation cutoffs. This means γ is decreasing in μ and if F' first order stochastically dominates F, then $\gamma' = 1 - F'(\mu) > \gamma$. Note that, by the ordering of μ_i^* from high to low according to the index i, $i = \gamma$ is also the state that has the highest index with its reputation cutoff exactly equal to μ, $\mu^*_\gamma = \mu$.[36] Finally, let y be the fraction of states which breach contract. Then the expected fraction of all states that would breach contract, $E[y]$, is given by:

$$E[y] = \int_0^\gamma (1 - \mu^*_i) di + \int_\gamma^1 (1 - \mu) di \tag{10}$$

The first term is the expected fraction of states that would breach contract with reputations below their cutoffs $\mu \leq \mu^*_i$ and the second term is the same for states with reputations above their cutoffs $\mu > \mu^*_i$.

To see how this expectation changes with μ, take the derivative of $E[y]$ with respect to μ. Applying the Leibniz' integral rule:

$$\begin{aligned} \frac{\partial E[y]}{\partial \mu} &= \frac{\partial \gamma}{\partial \mu}(1 - \mu^*_\gamma) - \frac{\partial \gamma}{\partial \mu}(1 - \mu) - (1 - \gamma) \\ &= \frac{\partial \gamma}{\partial \mu}(\mu - \mu^*_\gamma) - (1 - \gamma) \\ &= -(1 - \gamma) < 0 \end{aligned}$$

The last step is because we have $\mu^*_\gamma = \mu$. Therefore, ceteris paribus, the expected fraction of states which breach contract is lower among states with better reputations compared to states with worse reputations, as required.

□

A.3 Proposition 3

Proposition 3. States with better reputations are more likely to breach contract due to disasters.

Proof. Assume the same setup as in Proposition 2. As in equation 10, the expected frequency of contract breach is:

$$E[y] = \left(\int_0^\gamma (1 - \mu^*_i) di \right) + \left(\int_\gamma^1 (1 - \mu) di \right) \tag{11}$$

36. Suppose $i = \gamma$ is the state that has the highest index with its reputation cutoff exactly equal to μ yet $1 - F(\mu)$ is equal to some $\beta \neq \gamma$. The ordering of μ^*_i in $i \in [0, 1]$ from high to low implies that γ fraction of states have $\mu^*_i \geq \mu$. This means $1 - F(\mu) = \gamma$, a contradiction. The reverse direction would similarly produce a contradiction.

Now suppose that the states face a disaster shock prior to deciding on whether to breach contract. The shock turns commitment types into opportunistic types with p probability: therefore, the effect of the disaster is to reduce the reputation levels among the treatment group by a factor of $p\mu$ to $(1-p)\mu$. The disaster also increases the reputation cutoffs such that each state now has the reputation cutoff $\mu_i^{*\prime} \geq \mu_i^*$. More specifically suppose the cumulative distribution F' of the new cutoffs has the same support as before but first order stochastically dominates F. Here the fraction of states with reputations below their reputation cutoffs is $\gamma' = 1 - F'((1-p)\mu)$ and thus $\gamma' > \gamma$. The expected frequency of contract breach with the disaster shock is:

$$E[y'] = \left(\int_0^{\gamma'} (1-\mu_i^{*\prime})di\right) + \left(\int_{\gamma'}^1 (1-(1-p)\mu)di\right) \tag{12}$$

The effect of the disaster on the expected frequency of contract breach is $\Delta(\mu) = E[y'] - E[y]$ which equals:

$$\begin{aligned}
\Delta(\mu) &= \left(\int_0^{\gamma'} (1-\mu_i^{*\prime})di\right) + \left(\int_{\gamma'}^1 (1-(1-p)\mu)di\right) - \left(\int_0^{\gamma} (1-\mu_i^{*})di\right) - \left(\int_{\gamma}^1 (1-\mu)di\right) \\
&= -\left(\int_0^{\gamma} (\mu_i^{*\prime}-\mu_i^{*})di\right) + \left(\int_{\gamma}^{\gamma'} (1-\mu_i^{*\prime})di\right) - \left(\int_{\gamma}^{\gamma'} (1-\mu)di\right) + \left(\int_{\gamma'}^1 (p\mu)di\right) \\
&= \left(\int_0^{\gamma} (\mu_i^{*}-\mu_i^{*\prime})di\right) + \left(\int_{\gamma}^{\gamma'} (\mu-\mu_i^{*\prime})di\right) + \left(\int_{\gamma'}^1 (p\mu)di\right)
\end{aligned}$$

The first term is weakly negative, since $\mu_i^{*\prime} \geq \mu_i^*$. The second term is ambiguous. These are states whose reputations μ were above their cutoffs μ_i^* but when their reputations drop to $(1-p)\mu$, their new reputations are below their new cutoffs $\mu_i^{*\prime}$. We do not know for a given state here whether $\mu > \mu_i^{*\prime}$ or not. The final term is strictly positive. Therefore, the effect of the disaster on the frequency of contract breach is ambiguous.

To see the effect of greater current reputations μ on the effect of the disasters, consider the derivative of $\Delta(\mu)$ with respect to μ. Applying Leibniz' integral rule:

$$\begin{aligned}
\frac{\partial\Delta(\mu)}{\partial\mu} &= \frac{\partial\gamma}{\partial\mu}(\mu_\gamma^* - \mu_\gamma^{*\prime}) + \frac{\partial\gamma'}{\partial\mu}(\mu - \mu_{\gamma'}^{*\prime}) - \frac{\partial\gamma}{\partial\mu}(\mu - \mu_\gamma^{*\prime}) + \gamma' - \gamma + p\left(1 - \gamma' - \frac{\partial\gamma'}{\partial\mu}\mu\right) \\
&= \frac{\partial\gamma}{\partial\mu}(\mu_\gamma^* - \mu) + \frac{\partial\gamma'}{\partial\mu}(\mu - \mu_{\gamma'}^{*\prime}) + (\gamma' - \gamma) + p\left(1 - \gamma' - \frac{\partial\gamma'}{\partial\mu}\mu\right)
\end{aligned}$$

Note that we have $\mu^*_\gamma = \mu$ as mentioned above. Similarly, we have $\mu^{*\prime}_{\gamma'} = (1-p)\mu$. Then the above expression can be further simplified:

$$\begin{aligned}\frac{\partial \Delta(\mu)}{\partial \mu} &= \frac{\partial \gamma'}{\partial \mu}(\mu - (1-p)\mu) + (\gamma' - \gamma) + p\left(1 - \gamma' - \frac{\partial \gamma'}{\partial \mu}\mu\right) \\ &= (\gamma' - \gamma) + p\left(1 - \gamma'\right) > 0\end{aligned}$$

This means a greater fraction of states with better reputations breach contract as a result of disasters compared to states with worse reputations, as required.

□

B Empirical appendix

B.1 Summary Statistics

Table 1: Summary Statistics

Statistic	N	Mean	St. Dev.	Min	Max
Breach (ISDS, all cases)	5,595	0.087	0.282	0	1
Breach (Exp. data)	7,900	0.048	0.214	0	1
Breach (ISDS, settlement or firm victory)	5,595	0.040	0.196	0	1
Reputation (ISDS, all, 5y horizon)	5,595	0.842	0.330	0	1
Reputation (ISDS, all, 10y horizon)	5,595	0.797	0.363	0	1
Reputation (ISDS, all, 20y horizon)	5,595	0.757	0.395	0	1
Reputation (Exp data, 5y horizon)	7,900	0.897	0.269	0	1
Reputation (Exp data, 10y horizon)	7,900	0.853	0.310	0	1
Reputation (Exp data, 20y horizon)	7,900	0.789	0.351	0	1
Reputation (ISDS, settlement/firm vic., 5y horizon)	5,595	0.906	0.255	0	1
Reputation (ISDS, settlement/firm vic., 10y horizon)	5,595	0.866	0.298	0	1
Reputation (ISDS, settlement/firm vic., 20y horizon)	5,595	0.825	0.341	0	1
Property rights index (Fraser)	2,262	0.522	0.213	0	1
Severe Disasters	10,806	0.020	0.141	0	1
Disaster Risk	10,806	0.009	0.022	0.00002	0.244
FDI Stock (% GDP)	6,018	1.081	3.345	0.00001	35.596
# Bilateral Investment Treaties	10,240	5.973	13.121	0	117
GDP per capita	9,076	9,881	16,661	115	199,672
GDP (million USD)	9,076	224,799	933,808	21.442	16,597,446
Leader Turnover	8,065	0.169	0.374	0	1
Polity Score	8,166	0.809	7.439	−10	10

B.2 Results

Table 2: Results using all ISDS cases to capture breach (10-year reputation horizons)

	2-year treatment period						3-year treatment period					
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Reputation_{t-1} $\times$Disaster	0.171**	0.250**	0.177**	0.210**	0.281**	0.214**	0.192**	0.256**	0.191**	0.211**	0.273**	0.211**
	(0.050)	(0.053)	(0.051)	(0.059)	(0.064)	(0.060)	(0.049)	(0.046)	(0.048)	(0.057)	(0.054)	(0.057)
Reputation_{t-1}	−0.089**	−0.226**	−0.070**	−0.087**	−0.228**	−0.060**	−0.094**	−0.230**	−0.074**	−0.090**	−0.232**	−0.063**
	(0.020)	(0.018)	(0.020)	(0.021)	(0.020)	(0.022)	(0.020)	(0.019)	(0.021)	(0.021)	(0.020)	(0.022)
Disaster	−0.162**	−0.230**	−0.167**	−0.197**	−0.260**	−0.201**	−0.185**	−0.237**	−0.184**	−0.210**	−0.260**	−0.209**
	(0.050)	(0.053)	(0.050)	(0.057)	(0.061)	(0.057)	(0.046)	(0.044)	(0.046)	(0.054)	(0.051)	(0.054)
Risk	0.008	0.003	0.007	0.005	0.002	0.015	0.011	0.003	0.009	0.009	0.002	0.018
	(0.013)	(0.002)	(0.013)	(0.016)	(0.002)	(0.016)	(0.013)	(0.002)	(0.013)	(0.016)	(0.002)	(0.016)
$\ln(\text{FDI, \%GDP})_{t-1}$	−0.015†	−0.011**	−0.035**	0.043	−0.013	−0.082*	−0.016†	−0.011**	−0.035**	0.041	−0.013	−0.083**
	(0.009)	(0.004)	(0.010)	(0.028)	(0.013)	(0.032)	(0.009)	(0.004)	(0.010)	(0.028)	(0.013)	(0.032)
$\ln(\text{BITs})_{t-1}$	0.076**	0.027**	0.055**	0.076**	0.023**	0.050**	0.076**	0.027**	0.055**	0.076**	0.023**	0.050**
	(0.006)	(0.004)	(0.008)	(0.008)	(0.005)	(0.009)	(0.006)	(0.004)	(0.008)	(0.008)	(0.005)	(0.009)
$\ln(\text{GDPpc})_{t-1}$				0.119**	−0.009*	0.185**				0.119**	−0.009*	0.185**
				(0.039)	(0.004)	(0.041)				(0.039)	(0.004)	(0.041)
$\ln(\text{GDP})_{t-1}$				−0.056†	0.008†	−0.217**				−0.057†	0.008†	−0.217**
				(0.030)	(0.004)	(0.040)				(0.030)	(0.004)	(0.040)
$\text{Leader Turnover}_{t-1}$				0.010	0.013	0.012				0.009	0.013	0.011
				(0.013)	(0.013)	(0.013)				(0.013)	(0.013)	(0.013)
Polity_{t-1}				−0.001	0.001	−0.001				−0.001	0.001	−0.001
				(0.001)	(0.001)	(0.001)				(0.001)	(0.001)	(0.001)
Country FEs	✓	✗	✓	✓	✗	✓	✓	✗	✓	✓	✗	✓
Year FEs	✗	✓	✓	✗	✓	✓	✗	✓	✓	✗	✓	✓
Observations	4,511	4,511	4,511	3,846	3,846	3,846	4,511	4,511	4,511	3,846	3,846	3,846
R^2	0.070	0.104	0.018	0.071	0.096	0.020	0.072	0.106	0.019	0.072	0.098	0.022

†p<0.1; *p<0.05; **p<0.01. Reported are OLS coefficients and heteroskedasticity-robust standard errors in parentheses.

Table 3: Results using expropriation data to capture breach (10-year reputation horizons)

	2-year treatment period						3-year treatment period					
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Reputation_{t-1} ×Disaster	0.085^{*}	0.099^{**}	0.085^{*}	0.084^{*}	0.096^{**}	0.079^{*}	0.101^{**}	0.115^{**}	0.101^{**}	0.102^{**}	0.114^{**}	0.097^{**}
	(0.038)	(0.031)	(0.037)	(0.038)	(0.031)	(0.037)	(0.033)	(0.026)	(0.032)	(0.033)	(0.027)	(0.032)
Reputation_{t-1}	-0.082^{**}	-0.150^{**}	-0.079^{**}	-0.082^{**}	-0.153^{**}	-0.077^{**}	-0.084^{**}	-0.152^{**}	-0.081^{**}	-0.085^{**}	-0.156^{**}	-0.079^{**}
	(0.021)	(0.021)	(0.023)	(0.022)	(0.022)	(0.024)	(0.021)	(0.022)	(0.023)	(0.023)	(0.023)	(0.024)
Disaster	-0.105^{**}	-0.106^{**}	-0.106^{**}	-0.104^{**}	-0.104^{**}	-0.101^{**}	-0.115^{**}	-0.115^{**}	-0.116^{**}	-0.115^{**}	-0.113^{**}	-0.112^{**}
	(0.040)	(0.032)	(0.039)	(0.040)	(0.032)	(0.039)	(0.034)	(0.026)	(0.033)	(0.034)	(0.027)	(0.033)
Risk	0.023^{**}	0.00005	0.023^{**}	0.022^{**}	−0.0002	0.026^{**}	0.023^{**}	0.0002	0.024^{**}	0.022^{**}	−0.0001	0.026^{**}
	(0.007)	(0.001)	(0.007)	(0.007)	(0.001)	(0.007)	(0.007)	(0.001)	(0.007)	(0.007)	(0.001)	(0.007)
$\ln(\text{FDI, \%GDP})_{t-1}$	−0.001	$-0.005^{\dagger}$	-0.012^{*}	−0.002	−0.007	-0.037^{**}	−0.001	$-0.005^{\dagger}$	-0.012^{*}	−0.001	−0.007	-0.036^{**}
	(0.004)	(0.003)	(0.005)	(0.008)	(0.007)	(0.011)	(0.004)	(0.003)	(0.005)	(0.008)	(0.007)	(0.011)
$\ln(\text{BITs})_{t-1}$	0.016^{**}	$0.004^{\dagger}$	0.005	0.012^{*}	0.004	0.002	0.016^{**}	$0.004^{\dagger}$	0.005	0.012^{*}	0.004	0.001
	(0.003)	(0.002)	(0.005)	(0.005)	(0.003)	(0.005)	(0.003)	(0.002)	(0.005)	(0.005)	(0.003)	(0.005)
$\ln(\text{GDPpc})_{t-1}$				-0.039^{*}	−0.001	0.013				-0.037^{*}	−0.001	0.013
				(0.018)	(0.002)	(0.020)				(0.017)	(0.002)	(0.020)
$\ln(\text{GDP})_{t-1}$				0.039^{**}	0.001	-0.045^{*}				0.038^{**}	0.001	-0.044^{*}
				(0.013)	(0.002)	(0.021)				(0.013)	(0.002)	(0.021)
$\text{Leader Turnover}_{t-1}$				0.003	0.004	0.003				0.002	0.003	0.003
				(0.007)	(0.007)	(0.007)				(0.007)	(0.007)	(0.007)
Polity_{t-1}				-0.002^{**}	−0.0002	-0.003^{**}				-0.002^{**}	−0.0002	-0.003^{**}
				(0.001)	(0.0004)	(0.001)				(0.001)	(0.0004)	(0.001)
Country FEs	✓	✗	✓	✓	✗	✓	✓	✗	✓	✓	✗	✓
Year FEs	✗	✓	✓	✗	✓	✓	✗	✓	✓	✗	✓	✓
Observations	4,532	4,532	4,532	3,908	3,908	3,908	4,532	4,532	4,532	3,908	3,908	3,908
R^2	0.025	0.059	0.016	0.025	0.060	0.019	0.025	0.059	0.016	0.025	0.060	0.020

$^{\dagger}p<0.1$; $^{*}p<0.05$; $^{**}p<0.01$. Reported are OLS coefficients and heteroskedasticity-robust standard errors in parentheses.

Table 4: Results capturing breach via ISDS cases which ended in settlement or firm victory (10-year reputation horizons)

	2-year treatment period						3-year treatment period					
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Reputation_{t-1} ×Disaster	0.042	$0.126^{\dagger}$	0.061	0.049	$0.129^{\dagger}$	0.065	0.087^{*}	0.155^{**}	0.103^{*}	0.093^{*}	0.160^{**}	0.107^{*}
	(0.056)	(0.066)	(0.058)	(0.063)	(0.076)	(0.066)	(0.043)	(0.045)	(0.044)	(0.047)	(0.050)	(0.049)
Reputation_{t-1}	−0.014	-0.144^{**}	−0.009	−0.011	-0.143^{**}	−0.0005	−0.017	-0.147^{**}	−0.012	−0.014	-0.145^{**}	−0.003
	(0.020)	(0.018)	(0.020)	(0.020)	(0.019)	(0.020)	(0.020)	(0.018)	(0.020)	(0.021)	(0.019)	(0.021)
Disaster	−0.045	$-0.124^{\dagger}$	−0.064	−0.047	$-0.128^{\dagger}$	−0.064	-0.095^{*}	-0.156^{**}	-0.111^{*}	-0.100^{*}	-0.163^{**}	-0.114^{*}
	(0.057)	(0.066)	(0.058)	(0.064)	(0.076)	(0.066)	(0.043)	(0.045)	(0.044)	(0.046)	(0.049)	(0.048)
Risk	−0.003	0.002	−0.004	−0.005	0.002	−0.003	−0.0002	0.002	−0.001	−0.002	0.002	−0.00002
	(0.010)	(0.002)	(0.010)	(0.012)	(0.002)	(0.012)	(0.010)	(0.002)	(0.010)	(0.012)	(0.002)	(0.012)
$\ln(\text{FDI, \%GDP})_{t-1}$	−0.007	-0.007^{*}	-0.012^{*}	0.008	−0.015	−0.029	−0.007	-0.007^{*}	-0.013^{*}	0.006	−0.015	−0.030
	(0.005)	(0.003)	(0.006)	(0.021)	(0.009)	(0.022)	(0.005)	(0.003)	(0.006)	(0.021)	(0.009)	(0.022)
$\ln(\text{BITs})_{t-1}$	0.044^{**}	0.013^{**}	0.041^{**}	0.054^{**}	0.012^{**}	0.041^{**}	0.044^{**}	0.013^{**}	0.040^{**}	0.054^{**}	0.012^{**}	0.041^{**}
	(0.004)	(0.003)	(0.006)	(0.006)	(0.004)	(0.007)	(0.004)	(0.003)	(0.006)	(0.006)	(0.004)	(0.007)
$\ln(\text{GDPpc})_{t-1}$				0.073^{*}	-0.007^{*}	0.080^{*}				0.072^{*}	-0.007^{*}	0.079^{*}
				(0.031)	(0.003)	(0.032)				(0.031)	(0.003)	(0.032)
$\ln(\text{GDP})_{t-1}$				-0.067^{**}	0.003	-0.092^{**}				-0.067^{**}	0.003	-0.091^{**}
				(0.022)	(0.003)	(0.027)				(0.022)	(0.003)	(0.027)
$\text{Leader Turnover}_{t-1}$				$0.019^{\dagger}$	$0.018^{\dagger}$	$0.021^{\dagger}$				$0.019^{\dagger}$	$0.018^{\dagger}$	$0.021^{\dagger}$
				(0.011)	(0.011)	(0.011)				(0.011)	(0.011)	(0.011)
Polity_{t-1}				−0.0003	0.0003	−0.001				−0.0003	0.0003	−0.001
				(0.001)	(0.001)	(0.001)				(0.001)	(0.001)	(0.001)
Country FEs	✓	✗	✓	✓	✗	✓	✓	✗	✓	✓	✗	✓
Year FEs	✗	✓	✓	✗	✓	✓	✗	✓	✓	✗	✓	✓
Observations	4,511	4,511	4,511	3,846	3,846	3,846	4,511	4,511	4,511	3,846	3,846	3,846
R^2	0.026	0.055	0.008	0.026	0.051	0.009	0.027	0.056	0.009	0.027	0.052	0.010

$^{\dagger}p<0.1$; $^{*}p<0.05$; $^{**}p<0.01$. Reported are OLS coefficients and heteroskedasticity-robust standard errors in parentheses.

Table 5: Results using Fraser Institute's Property Rights Index to capture reputations (3-year treatments).

	ISDS: settled & firm-victory			Expropriation data			ISDS: all cases		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Prop. Rights$_{t-1}$ ×Disaster	0.158†	0.351**	0.232*	−0.012	0.187**	−0.001	0.019	0.213†	0.031
	(0.088)	(0.065)	(0.094)	(0.079)	(0.068)	(0.077)	(0.127)	(0.112)	(0.133)
Prop. Rights$_{t-1}$	−0.103	−0.473**	−0.201†	−0.017	−0.384**	−0.090	−0.136	−0.630**	−0.121
	(0.086)	(0.062)	(0.108)	(0.053)	(0.064)	(0.086)	(0.103)	(0.070)	(0.128)
Disaster	−0.092	−0.215**	−0.132*	−0.065	−0.118**	−0.075	−0.078	−0.192**	−0.086
	(0.061)	(0.043)	(0.063)	(0.048)	(0.041)	(0.046)	(0.087)	(0.071)	(0.090)
Risk	0.020	0.004	0.024	0.067	−0.001	0.065†	0.078	0.004	0.071
	(0.047)	(0.004)	(0.046)	(0.042)	(0.003)	(0.039)	(0.058)	(0.005)	(0.058)
ln(FDI, %GDP)$_{t-1}$	−0.109	−0.020	0.047	0.580**	−0.007	0.355*	0.778**	−0.064	0.690*
	(0.139)	(0.030)	(0.148)	(0.189)	(0.025)	(0.140)	(0.287)	(0.054)	(0.285)
ln(BITs)$_{t-1}$	0.073†	0.030**	0.084†	−0.108**	0.005	−0.141**	0.085†	0.071**	0.055
	(0.040)	(0.008)	(0.044)	(0.036)	(0.007)	(0.037)	(0.049)	(0.010)	(0.055)
ln(GDPpc)$_{t-1}$	0.122	0.026**	0.026	−0.113	0.029**	−0.034	0.077	0.024*	0.106
	(0.121)	(0.008)	(0.127)	(0.084)	(0.007)	(0.071)	(0.147)	(0.010)	(0.156)
ln(GDP)$_{t-1}$	−0.152	0.006	0.066	0.274**	0.003	0.039	0.105	0.015†	−0.010
	(0.100)	(0.006)	(0.117)	(0.075)	(0.005)	(0.091)	(0.123)	(0.009)	(0.157)
Leader Turnover$_{t-1}$	0.034†	0.024	0.033†	−0.011	−0.009	−0.012	0.028	0.009	0.028
	(0.019)	(0.019)	(0.019)	(0.014)	(0.015)	(0.014)	(0.022)	(0.024)	(0.022)
Polity$_{t-1}$	−0.005	0.001	−0.006	−0.006	−0.001	−0.008†	0.003	0.004*	0.003
	(0.006)	(0.001)	(0.006)	(0.005)	(0.001)	(0.005)	(0.007)	(0.002)	(0.006)
Country FEs	✓	✗	✓	✓	✗	✓	✓	✗	✓
Year FEs	✗	✓	✓	✗	✓	✓	✗	✓	✓
Observations	1,688	1,688	1,688	1,280	1,280	1,280	1,688	1,688	1,688
R^2	0.008	0.071	0.010	0.032	0.073	0.035	0.025	0.101	0.009

$^{\dagger}p<0.1$; $^{*}p<0.05$; $^{**}p<0.01$. Reported are OLS coefficients and heteroskedasticity-robust standard errors in parentheses.

Table 6: Results with 5- and 20-year reputation horizons (3-year treatments)

	5-year reputation horizon			20-year reputation horizon		
	(ISDS: all)	(ISDS: subset)	(Expropriation)	(ISDS: all)	(ISDS: subset)	(Expropriation)
Reputation_{t-1} $\times$Disaster	0.286^{**}	0.176^{**}	0.156^{**}	0.169^{**}	$0.081^{\dagger}$	0.042
	(0.062)	(0.051)	(0.038)	(0.054)	(0.048)	(0.028)
Reputation_{t-1}	-0.091^{**}	-0.014	-0.106^{**}	-0.044^{*}	0.008	-0.053^{*}
	(0.023)	(0.023)	(0.029)	(0.021)	(0.020)	(0.022)
Disaster	-0.285^{**}	-0.180^{**}	-0.173^{**}	-0.170^{**}	$-0.089^{\dagger}$	-0.059^{*}
	(0.058)	(0.048)	(0.037)	(0.050)	(0.046)	(0.027)
Risk	0.018	-0.0002	0.025^{**}	0.017	-0.0004	0.026^{**}
	(0.016)	(0.012)	(0.007)	(0.016)	(0.012)	(0.007)
$\ln(\text{FDI, \%GDP})_{t-1}$	-0.082^{**}	-0.030	-0.032^{**}	-0.084^{**}	-0.031	-0.037^{**}
	(0.032)	(0.022)	(0.011)	(0.032)	(0.022)	(0.011)
$\ln(\text{BITs})_{t-1}$	0.048^{**}	0.040^{**}	0.001	0.052^{**}	0.041^{**}	0.002
	(0.009)	(0.007)	(0.005)	(0.009)	(0.007)	(0.005)
$\ln(\text{GDPpc})_{t-1}$	0.176^{**}	0.077^{*}	0.015	0.194^{**}	0.081^{*}	0.008
	(0.041)	(0.032)	(0.020)	(0.041)	(0.032)	(0.021)
$\ln(\text{GDP})_{t-1}$	-0.208^{**}	-0.089^{**}	-0.043^{*}	-0.225^{**}	-0.094^{**}	-0.040^{*}
	(0.039)	(0.027)	(0.021)	(0.040)	(0.027)	(0.020)
Leader Turnover_{t-1}	0.012	$0.021^{\dagger}$	0.003	0.011	$0.021^{\dagger}$	0.004
	(0.013)	(0.011)	(0.007)	(0.013)	(0.011)	(0.007)
Polity_{t-1}	-0.001	-0.001	-0.002^{**}	-0.001	-0.001	-0.003^{**}
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Country FEs	✓	✓	✓	✓	✓	✓
Year FEs	✓	✓	✓	✓	✓	✓
Observations	3,846	3,846	3,908	3,846	3,846	3,908
R^2	0.026	0.011	0.025	0.019	0.010	0.014

$^{\dagger}p<0.1$; $^{*}p<0.05$; $^{**}p<0.01$. Reported are OLS coefficients and heteroskedasticity-robust standard errors in parentheses.

B.3 Matched Designs

B.3.1 Balance Statistics

Table 7: Balance Statistics

	ISDS data			
	2-year treatment		3-year treatment	
	Before	After	Before	After
Disaster Risk	0.71**	0.00	0.74**	0.00
Reputation_{t-1}	0.15	0.00	0.16	0.00
$\ln(\text{FDI, \%GDP})_{t-1}$	0.43**	0.00	0.45**	−0.01
$\ln(\text{BITs})_{t-1}$	−0.41**	0.02	−0.43**	0.01
Year	−0.03	0.07	−0.03	0.03
	Expropriation data			
	2-year treatment		3-year treatment	
	Before	After	Before	After
Disaster Risk	0.84**	0.00	0.89**	0.00
Reputation_{t-1}	−0.07	−0.01	−0.09	−0.01
$\ln(\text{FDI, \%GDP})_{t-1}$	0.20*	−0.01	0.20*	0.00
$\ln(\text{BITs})_{t-1}$	−0.32**	0.00	−0.32**	−0.01
Year	−0.11†	−0.05	−0.10	−0.05

$^{\dagger}p < 0.1$; $^{*}p < 0.05$; $^{**}p < 0.01$. Reported are standardized mean differences between treatment and control groups. All matched samples are obtained by (i) exactly matching on quintiles of Disaster Risk, and Mahalanobis distance matching on the natural log of Disaster Risk within those quintiles using 0.1 sd calipers (ii) Mahalanobis distance matching on lagged reputation, FDI stock (% GDP), and # BITs, using 0.5 sd calipers.

B.3.2 Results based on matched samples

Table 8: Results with matched samples (10-year reputation horizons)

	ISDS, all		Expropriation data		ISDS, subset	
	(2 years)	(3 years)	(2 years)	(3 years)	(2 years)	(3 years)
$Reputation_{t-1} \times Disaster$	0.561^{**}	0.681^{**}	0.456^{*}	0.564^{**}	0.265^{**}	0.430^{**}
	(0.135)	(0.191)	(0.197)	(0.211)	(0.092)	(0.113)
$Reputation_{t-1}$	-0.346^{**}	-0.387^{**}	-0.469^{*}	-0.571^{**}	$-0.145^{\dagger}$	-0.265^{*}
	(0.123)	(0.182)	(0.185)	(0.196)	(0.084)	(0.107)
Disaster	-0.545^{**}	-0.667^{**}	-0.482^{*}	-0.590^{**}	-0.275^{**}	-0.449^{**}
	(0.127)	(0.183)	(0.196)	(0.208)	(0.086)	(0.105)
Risk	−0.001	0.000	0.002	−0.001	0.005	0.006
	(0.008)	(0.008)	(0.004)	(0.006)	(0.007)	(0.011)
$\ln(FDI, \%GDP)_{t-1}$	0.007	0.019	0.020	0.036	0.011	0.020
	(0.014)	(0.023)	(0.018)	(0.030)	(0.013)	(0.022)
$\ln(BITs)_{t-1}$	0.072^{**}	0.103^{**}	0.016^{*}	0.031^{**}	0.050^{**}	0.071^{**}
	(0.015)	(0.022)	(0.007)	(0.011)	(0.015)	(0.022)
Observations	848	790	986	881	848	790
R^2	0.108	0.136	0.099	0.113	0.056	0.092

$^{\dagger}p<0.1$; $^{*}p<0.05$; $^{**}p<0.01$. Reported are OLS coefficients and CR1 standard errors clustered by matched pairs.