Online Appendix for "Crisis and Contract Breach: The Domestic and International Determinants of Expropriation"

In this online appendix, we include (1) a formal model based on which we derive our two hypotheses, (2) a survival analysis of the OPIC data, (3) additional robustness checks for our main empirical analysis, and (4) supplementary information for the instrumental variable analysis, lists of countries, summary statistics, and correlation tables for our sample.

1 A Model of Political Risk and Economic Crisis

In this section, we provide a decision-theoretic model that examines host government behavior towards FDI. We are specifically interested in finding the conditions under which it is optimal for a host government to expropriate assets from their foreign investors.

Economic Crisis and Foreign Investment

Economic crisis affects a country in a variety of ways, depending on the type of crisis (e.g. banking, currency, or debt). Often, credit markets get tighter, unemployment rises, the capital-to-labor ratio and total factor productivity decrease, there is inflation, domestic foreclosures increase, and growth slows. Each can interfere with domestic generation of revenue.

As noted previously, these consequences can impact the government-investor relationship in a variety of ways. In this paper, we begin by assuming that every unit of revenue is more valuable to the government during a crisis.[1] We also assume that expropriation entails more uncertainty than continuing to facilitate the investment (governments have more information about existing FDI revenue, compared to the value of the assets upon expropriation, particularly after paying the transaction costs to seize them).

Finally, we account for the real possibility that a government's reputation has broader financial consequences than simply affecting FDI. A government expropriation has the ability to signal a government's unwillingness to uphold contracts and thus has a negative effect on a government's reputation in currency and bond markets. Specifically, a government expropriation of investments during a financial crisis can lead to a decreased demand for the local currency (leading to a run on reserves or a depreciation of the currency in a floating exchange rate system) and higher borrowing cost for the government via increased interest rates in sovereign bond markets. de Paoli, Hoggarth and Saporta (2006) suggest that there are similar losses in a crisis, following sovereign default.[2] In the model, we parameterize these costs, which we call *financial market costs* for convenience.

Why are these costs more extreme during a crisis? These additional financial mar-

[1] Insufficient access to revenue is one of the hallmarks of crisis. Kindleberger (1996, 15) describes the point in a crisis where a government is faced with the possibility that it will not be able to meet its liabilities: bankruptcies increase, liquidation occurs, and "the realization spreads that there is only so much money." He lists this concern as the key argument for a lender of last resort, which may convince "the market that money will be made available in sufficient volume to meet the demand for cash." Reinhart and Rogoff (2009) also describe the key role of public debt during economic crisis: "government debt is...often the unifying problem across the wide range of financial crises we examine" (from their preface). In their conception of economic crises (Table 1.2), the problem of insufficient access to revenue (whether to provide public credit or avoid default) is persistent across crises.

[2] According to de Paoli, Hoggarth and Saporta (2006), there are two costs of default: reduced access to future finance and output loss (because domestic firms are also unable to borrow). They argue that banking crises and currency crises exacerbate the output loss during default because domestic banks cannot function as intermediaries and provide credit as before and currency crises increase governments' fixed debt. They call this output loss broader financial costs.

ket costs can come from two sources. Governments which choose to not pay creditors or expropriate investors during a crisis may be signaling government type, or signaling government's expectations of future economic performance based on private information. For example, in a classic study, Sandleris (2008) argues that government repayment decisions during an economic crisis reveal the government's private information about the state of the economy. For Cole, Dow and English (1995) government decisions during a crisis reveal a government's propensity to uphold contracts in the future. One excellent empirical example from sovereign debt payments is Kaminsky and Schmukler (2002). They find that sovereign debt defaults have spillover effects on other financial markets, and that these effects are even more pronounced during an economic crisis. Note that we simply assume that there is some positive probability that these costs are realized, which we believe is a realistic assumption.

To summarize, in a crisis, revenue is scarcer than in normal times, so the average unit of currency is worth relatively more to the government. For foreign investments, which simultaneously offer sustainable revenues to the government as well as assets that can be seized for gain (amid higher uncertainty), the increased demand for revenue creates new incentives for expropriation but also for good behavior. In addition to increased transaction costs of seizure, during a crisis the government also faces financial market costs.

The Model

In this single-period model we assume that foreign investors enter prior to the unfolding of an economic crisis. Rather than model the full process of choosing an investment location, we simplify our model by examining how an economic crisis affects the treatment of existing investors in a single round of play. This behavior towards existing investors then has effects on future FDI flows.

Our model starts where nature (N) determines whether or not an economic crisis occurs in the host country. This assumption of exogenous crisis may seem strong, but existing work on economic crisis supports the view that while many speculative bubbles emerge through a combination of private decisions and government policies, the timing of when these bubbles burst is difficult to predict (Kerner 2009). This assumption of exogeneity actually biases our empirical analysis against our main hypothesis. Thus, we make the conservative assumption that the economic crisis is exogenous and focus on leader decisions in the wake of a crisis.

In response to a crisis, a leader in the host government (L) decides whether or not to expropriate foreign investment.[3] To capture the rich variance in potential government involvement in the investment, denote G ($G \geq 0$) as the amount L contributes to the average foreign investment project and α ($\alpha \geq 0$) as the return on that contribution.

Let ω, where $\omega \geq 0$, be the value of the investment upon expropriation, net of the transaction costs of realizing that benefit. However, a host government may be exposed to other costs. One of the most direct costs is retaliation from foreign actors. Denote R (where $R \geq 0$) as the expected cost of retaliation.[4] This may be direct sanctions from the home government of the investor, forcing the host government to pay compensation through investment arbitrations, withholding foreign aid, IMF intervention, or the application of diplomatic pressure.[5] A less direct cost is that expropriation can disrupt post-crisis revenue streams from FDI. If the host government can avoid expropriation (by playing $\neg E$), they can receive the benefit of continued

[3]We focus on the decision of the individual leader. In a survey of investors, MIGA (2012) finds that vast majority of investors believe that expropriations originate from the executive branch. Here, expropriation stands for an intentional rent seizure, by the government, from foreign investors. While future work can analytically distinguish between types of contract breach, for this paper, we simply model a general contract breach.

[4]Recall, in the main text, that countries have enacted legislation to trigger retaliation from bodies like the World Bank and the International Monetary Fund if expropriation is not followed by compensation within six months of the taking (e.g. the González (1971) and Helms (1994) Amendments to previous versions of the U.S. Foreign Assistance Act).

[5]We assume each parameter is measured in the same unit (whether in dollars or otherwise).

investment during the recovery phase, albeit at a rate discounted by their regard for post-crisis investment. Denote $\delta \in (0,1)$ as the degree to which L discounts this future investment. Thus, in a non-crisis state, governments that do not expropriate receive a payoff of: $G\alpha + \delta G\alpha = G\alpha(1+\delta)$. Governments that expropriate receive a payoff of: $\omega - R$.

In a crisis, governments face the same decision to expropriate, but often with significantly less revenue coming from domestic sources. Relative to this revenue, FDI may represent an even more valuable revenue stream, particularly when they deliver a stable flow of revenue or provide a social function, such as employment (generating tax revenue from domestic citizens). For this reason, we assume that during a crisis, a unit of revenue is worth relatively more to the government by a factor of π, where $\pi > 1$: $G\alpha \rightarrow \pi G\alpha$ and $(\omega - R) \rightarrow \pi(\omega - R)$. We believe that this is not a controversial assumption, but one that relates to existing scholarship on the role of crisis in triggering expropriations. Secondly, as discussed above, FDI can provide a steady stream of revenue for the government but expropriation often entails more uncertainty. During a crisis, this wider variability may be key. Likewise, following a crisis, which may have damaged domestic projects, foreign investment may be even more valuable to help the economy rebuild. Denote r as this 'rebuilding premium,' such that $r \geq 1$, and $\delta \rightarrow r\delta$ following a crisis.

Denote X as the leader's payoff when exposed to financial market costs. This may be substantially less than their payoff for expropriation, without these costs. Here though, we merely assume that $X \leq \omega - R$. More formally, we assume that with probability $1 - q$, an expropriation will trigger additional financial market costs. Thus, while in normal times L chooses between $G\alpha(1+\delta)$ (for playing $\neg E$) and $\omega - R$ (for playing E), in a crisis, the leader chooses between $G\alpha(\pi + r\delta)$ and $q\pi(\omega - R) + (1-q)X$. Figure A1 illustrates the decision-theoretic logic.

Figure A2 graphically displays our assumptions. In the left panel, the dashed 45°

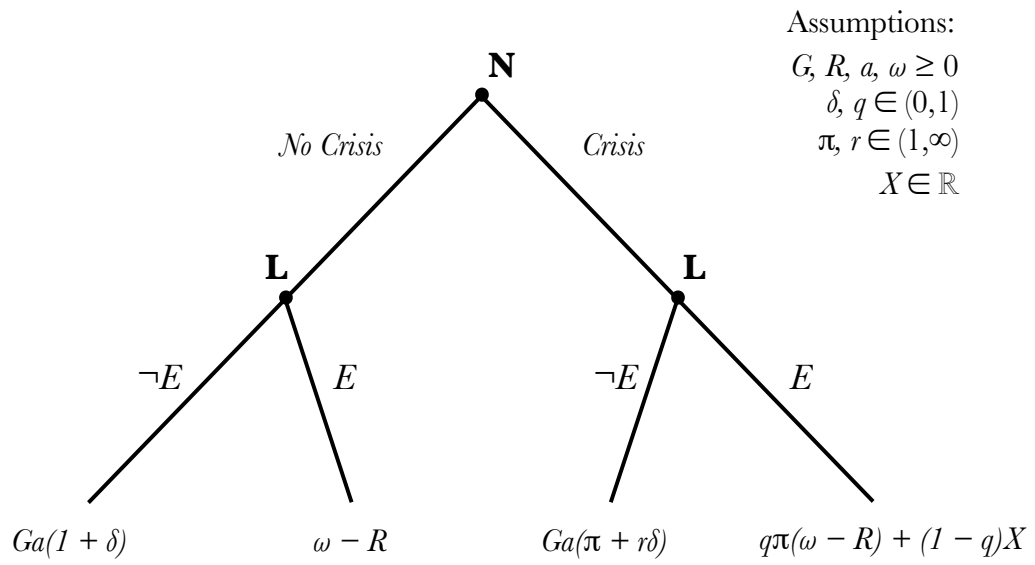


Figure A1: An illustration of the logic. Following the determination of the economic climate by nature (N), a host government (L) chooses whether or not to expropriate that investment.

line graphs the payoffs if no difference exists between crisis and non-crisis times. The more vertical this line, the more a government values a unit of revenue during a crisis (by a factor of π). We can also see the payoff discontinuity during a crisis: what may simply be big losses in normal times, may also entail additional financial market costs during a crisis.

Finally, we assume that the range of payoffs is larger with expropriation (with the parameter ω). Specifically, we assume that the mean expected value of ω may be the same in crisis and non-crisis time (not considering π), but that the variance around that value is wider in crisis (the benefits may be critical (e.g. if the government gets control of a bank or energy supplier) or may be especially low (e.g. if there are no managers that can be spared during crisis time)). Put differently, governments may be able to capture a larger percentage of the revenue, but they also may face greater challenges to realizing that higher percentage. While in normal times, this wider variation just means a more extreme minimum and maximum payoff, in crisis, an expropriation may precipitate a dramatic drop. The right panel of Figure A2 displays

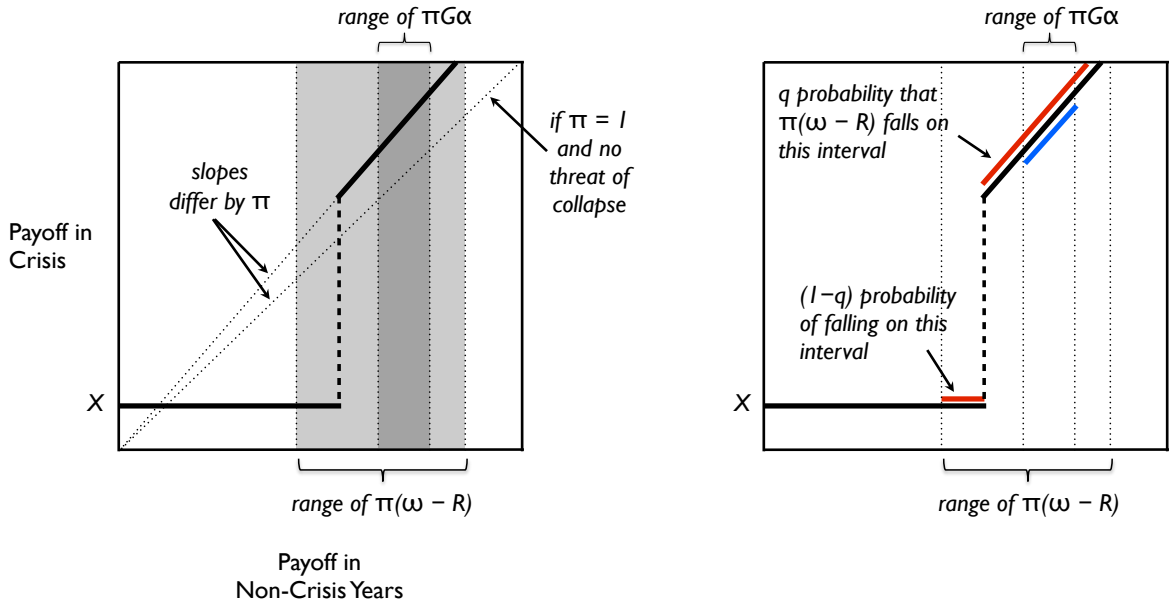


Figure A2: An illustration of the assumptions, comparing L's payoff in crisis (y-axis) to their payoff in non-crisis times (x-axis). First, revenue is more valuable in a crisis than in normal times (by a factor of π). Second, there is wider variation around the expected expropriation payoff (after all transaction costs have been assessed), $\pi(\omega - R)$, than around the expected payoff for simply keeping the investment as is, $\pi G\alpha$. Finally, a government may face a drop in payoff (to X) if additional financial market costs accompany a crisis-time expropriation.

this variation.

With this logic, we determine the conditions under which a government will be incentivized to expropriate. Suppose N selects a non-crisis state of the world. Looking at Figure A1, L will choose E when $\omega - R \geq G\alpha(1+\delta)$. Solving for α, this reduces to:

$$\alpha \leq \frac{w - R}{G(1+\delta)}. \tag{1}$$

Thus, L will only expropriate in non-crisis time when the value of FDI revenue is sufficiently low to satisfy Equation (1). Flipping the inequality provides the condition for which this rate of return will be sufficiently high to prevent expropriation.

Now suppose that N selects crisis. Following the same process, L will choose E when $q\pi(\omega - R) + (1-q)X \geq G\alpha(\pi + r\delta)$. Solving for α, this reduces to:

$$\alpha \leq \frac{q\pi(w-R)+(1-q)X}{G(\pi+r\delta)}. \tag{2}$$

Like condition (1), condition (2) shows that L will only expropriate during a crisis when the value of FDI revenue is sufficiently low. Here again, the rate of return can be critical to preventing (or incentivizing) expropriation. Looking more closely, we see that, in both crisis and non-crisis times, the more L cares about future investment (the greater δ is), the less they will want to expropriate.[6] In this simple sense, reputation with investors can further constrain a government from breaching contracts.

Next, we examine how economic crisis affects the expropriation response from the host government. We then briefly discuss how foreign pressure and intervention can affect expropriation behavior.

The Effect of Crisis and Foreign Dependence on Expropriation

In the previous subsection we focused on a leader's decision to expropriate from investors using a relatively straightforward cost-benefit calculation. During an economic crisis, do the benefits of expropriating outweigh the costs, or does the future loss of investment weigh even more heavily on a government's decisions to expropriate during a crisis? Our model provides a prediction on this question. Comparing Equations (1) and (2), we see that crisis will make expropriation less likely when:

$$\frac{w-R}{G(1+\delta)} > \frac{q\pi(w-R)+(1-q)X}{G(\pi+r\delta)}$$

$$\Rightarrow X < (\omega-R)\left[\frac{r\delta+\pi(1-q-q\delta)}{(1+\delta)(1-q)}\right]. \tag{3}$$

Recall the previous assumption that $X \leq (\omega - R)$. Thus, condition (3) will be satisfied

[6]Notice that joint ownership with the host government can also provide a risk shield for investors: as $G\alpha$ increases, conditions (1) and (2) become more difficult to satisfy, suggesting that L will have even less incentive to expropriate.

by assumption when $\left[\frac{r\delta+\pi(1-q-q\delta)}{(1+\delta)(1-q)}\right] > 1$. Let us first inspect the condition for extreme values of q. Suppose that $q \to 1$ (i.e. that expropriation in a crisis will *not* trigger additional financial market costs). Notice that, as $q \to 1$, the inequality goes to $\frac{\delta(r-\pi)}{0}$: when $(r > \pi)$, crisis will reduce expropriation risk. Now suppose that $q \to 0$ (i.e. that expropriation in a crisis will trigger additional financial market costs). As $q \to 0$, equation (3) becomes $X < (\omega - R)\left[\frac{r\delta+\pi}{1+\delta}\right]$. This equation will always be satisfied: $X \leq (\omega - R)$ and $r, \pi > 1$ by assumption. Thus, when there is a high likelihood of spillover costs ($q \approx 0$), crisis-time expropriations are less likely for any values of $\pi \geq 1$ and $r \geq 1$. But as this spillover risk becomes small ($q \to 1$), crisis-time expropriations become less likely only when the value of attracting new foreign capital following a crisis dominates the urgency of higher revenues today (i.e., $r > \pi$).

Thus, we see that, for intermediate levels of financial spillover risk q, a crisis reduces the risk of expropriation whenever (i) new foreign capital is sufficiently important for post-crisis recovery (high r), (ii) spillover to bond markets is likely (low q), or (iii) the financial costs associated with these spillovers is sufficiently large (low X; notice that Equation (3) will be easier to satisfy as X decreases). Notice the parallels with the theory in the main text, which argued that expropriation would be less likely during a crisis due to short- and long-term costs, including the response from currency and bond markets (X), the chance of spillover effects to other financial markets (q), the costs of a larger downturn (low X), and the prospect of investment loss ($r\delta$). As explained in the main theory section, scholars argue that many of these, if not all, will occur during a crisis. Put together, conditions (3) and (4) suggest that, due to financial market repercussions and possible loss of valuable future investment, we should expect a lower incidence of expropriations during a crisis. Our first empirically testable hypothesis is the following:

Hypothesis 1: *During an economic crisis, host governments will be less likely to*

expropriate from foreign investors.

Our first hypothesis focuses on the relationship between crisis and expropriation. Equally important is the role of retaliatory pressure on countries that expropriate. In the derivation of Equation (1), $\alpha \leq \frac{w-R}{G(1+\delta)}$, and Equation (2), $\alpha \leq \frac{q\pi(w-R)+(1-q)X}{G(\pi+r\delta)}$, we see that increasing R (the retaliatory potential) makes it more difficult for the α-criteria to be satisfied. Thus, the more consequences from foreign political actors, the less incentive to expropriate.

While we do not formally model the choice of foreign actors to intervene, our focus on policy decisions during crisis leads us to explore how involvement with the IMF shapes expropriation decisions. The obvious implication from our model is that support from the IMF has a major impact on a country's propensity to expropriate. This leads to our second empirically testable hypothesis:

> ***Hypothesis 2:*** *The more dependent the host government is on assets provided by foreign political actors, the less likely they will be to jeopardize those assets by expropriating.*

2 Survival Analysis of U.S. Investments

In the article, our statistical analysis examines the likelihood of expropriation events in a given country-year. We find support for our prediction that governments are less likely to observe expropriations during periods of financial crisis and strong results linking countries dependent on multilateral support as less likely to expropriate in a given year. Unfortunately, this research design is not without flaws. Specifically, we do not know which investors were not expropriated, and thus our statistical models only tell half of the story. Some countries, such as Argentina, have attracted a large number of investors. During periods of crisis, some of these investments have been

expropriated. But for a given investor, do periods of economic crisis lead to a higher probability of expropriation?

Existing scholarship has counted the number of expropriations in a country, and our analysis in Table 2 follows this literature. In this appendix, we replicate the analysis with a new dataset and an alternative statistical estimator. We examine individual investment projects in high risk emerging markets. The data on these investments are from the OPIC, the U.S. political risk insurance agency, and contain information on every investment insured through the agency from 1973 to 2000. During this period, out of the total 2,602 investments, there were 23 expropriation acts. Thus, even in these high risk countries expropriations are rare events.[7]

There are two points to consider in analyzing expropriation events. First, previous studies show that over time host countries increase their negotiation power against foreign investors and the likelihood of expropriation increases.[8] Thus, including duration of investments could improve our analysis considerably. Second, we do not observe some possible expropriations even though the most recent foreign investments continue to face the risk. Our data are generally censored. We can choose to ignore the censored information, but this may cause bias and loss of information in parameter estimates (Allison 2010; **?**). Survival models can address both of these issues. With contract level information, the OPIC data allows us to address these concerns using survival models.

We organize the data as time-series cross-sectional, and the unit of analysis is investment-year. To model expropriation risk, we define both the outcome and duration of investments. The dependent variable is the investment status, equal to 1

[7]We note that this limited numbers of expropriations is not an indicator that expropriation is not an important risk for firms. As we argued in the paper, expropriations are major concerns to investors that shape firm decisions. In our final section of the paper, we address the large number of investment disputes that fall short of an expropriation, largely because of threats to a country's reputation or potential retaliation by international organizations.

[8]See Grieco 1982 for an overview of obsolescing bargaining.

if the investment was expropriated by the host country, equal to 2 if the investment period ended without expropriation, and 0 if the data are censored. While we do not have information about the exact ending time of the investment period, we know the starting year and that most investment insurance contracts are for no more than 15 years in duration. Thus we assume that investments are not expropriated (survived) if there is no expropriation event within 15 years.[9] Our measure of duration is the number of years the investment survives before exiting from the host country with either expropriation or termination of the investment period.

As discussed, in our data investments have two modes of termination: they can end with expropriations or by the termination of the investment period. And the occurrence of one of these events prevents the occurrence of the other. We therefore employ a competing risk model as proposed by Fine and Gray (1999). The cumulative incidence estimate of the model is a function of the hazard of both failures, and thus it estimates the probability of expropriation when competing risks are present (Gooley et al. 1999). Moreover, as in the Cox model, this method does not require to specify or parameterize time-dependency. Therefore, we do not have to make assumptions about the nature and shape of the baseline model.

The analysis in this section differs from those of Table 2 in three respects; we don't include country fixed effects as the models do not converge, to control for country level heterogeneity we use robust standard errors clustered around country. We also do not include the lagged dependent variable as the OPIC data are investment-level data. Lastly, we lose some data on expropriations when listwise deletion is employed to handle missing values. Since expropriations are rather rare events in our data, we use multiple imputation to fill in the missing values.[10]

[9] In our data, 23 investments are expropriated, 2174 investments survived the investment period, and 335 are censored. We couldn't identify the host country for 8 investments.

[10] We imputed ten datasets and run the analyses for each data. The estimates and standard errors were then calculated using the method suggested by Little and Rubin (2014).

Table A1: Determinants of expropriations, competing risk survival model 1973-2007

	Model 1	**Model 2**	**Model 3**	**Model 4**	**Model 5**
Financial crisis		−0.336	−0.221	−0.334	−0.220
		(0.286)	(0.328)	(0.290)	(0.330)
IMF agreement			−1.339		−1.341
			(0.670)**		(0.672)**
World Bank Lending				0.022	0.050
				(0.222)	(0.226)
log(GDP)	0.036	0.040	0.027	0.021	−0.001
	(0.265)	(0.257)	(0.238)	(0.304)	(0.300)
FDI (% GDP)	−0.014	−0.012	−0.012	−0.012	−0.012
	(0.041)	(0.042)	(0.041)	(0.042)	(0.040)
log(GDP per capita)	6.916	7.219	7.492	7.241	7.470
	(5.867)	(5.890)	(5.983)	(5.809)	(5.948)
log(GDP per capita)	−0.496	−0.519	−0.542	−0.519	−0.538
squared	(0.413)	(0.416)	(0.421)	(0.410)	(0.419)
Economic growth	−0.117	−0.118	−0.119	−0.118	−0.118
	(0.029)***	(0.029)***	(0.028)***	(0.029)***	(0.029)***
Trade openness	−0.001	−0.001	0.000	−0.001	0.000
	(0.012)	(0.012)	(0.000)	(0.013)	(0.011)
Resource rent (% GDP)	0.020	0.017	0.006	0.017	0.006
	(0.039)	(0.040)	(0.039)	(0.039)	(0.039)
Democracy	−0.050	−0.047	−0.050	−0.047	−0.050
	(0.052)	(0.052)	(0.052)	(0.052)	(0.051)
Oil prices	0.021	0.020	0.018	0.020	0.018
	(0.008)***	(0.007)***	(0.007)**	(0.008)***	(0.008)**
Time trend	−0.058	−0.055	−0.044	−0.056	−0.046
	(0.064)	(0.062)	(0.057)	(0.065)	(0.061)
Number of observations	36,273	36,273	36,273	36,273	37,306
Number of countries	115	115	115	115	119
Log likelihood	−148.742	−148.298	−145.627	−148.075	−145.401

Notes. Standard errors are in parentheses. * p< .1; ** p< .05; *** p< .01.

Table A1 reports the results from the competing risk survival analysis. First, *IMF agreement* is negatively and statistically significantly associated with expropriation events as expected. All other variables kept constant, signing an IMF agreement reduces expropriation risk by half.[11] However, both financial crisis and World Bank lending do not provide support to our hypotheses. Regarding control variables, increase in *oil prices* increases expropriation acts as in Table 2. And *Economic growth* has negative effects on expropriations in all models, suggesting that governments do not pursue "opportunistic" expropriations.

Overall, our investment level analyses do not lend direct support for the first hypothesis that economic crises have a negative effect on expropriations, but provides support for the deterrent effect of multilateral financial institutions.[12] It should also be noted that during economic crisis countries often seek help from multilateral institutions. In our data, approximately in 45% of the crisis-years, countries are under an IMF program and in 65% of the crisis-years, they receive above average World Bank lending.

3 Robustness Analysis

In addition to the survival analysis, we conduct a number of robustness checks for our main statistical analysis by using other codings and measures for our main dependent and independent variables. First, we use the Reinhart-Rogoff (R-R) financial crises data. The data include six types of crises for 70 countries (many of which are OECD countries). We use the number of financial crises as our independent variable. Because the R-R data do not cover all developing countries, only 33 countries are included in

[11] Please note that expropriations are rather rare events.

[12] We test the effect of economic crisis on expropriations with alternative measurements, dichotomous and two-year lagged economic crisis variable, and negative economic growth. The results remain similar.

this analysis. Second, we use a commonly used measure for economic crisis—negative economic growth rate. This variable is 1 if the economic growth rate in a country-year is lower than zero and 0 otherwise. Third, we dichotomize our dependent variable, which is 1 if a country expropriated FDI at least once in a given year and 0 otherwise. We use a logit model with country fixed-effects. Lastly, we include year fixed-effects in the model.

The results are presented in Table A2. Models 1 and 2 include the R-R financial crises and negative economic growth as the independent variable, respectively. As can be seen in both models, financial or economic crisis has a negative and statistically significant effect on expropriations. This offers support to our first hypothesis that governments are less likely to expropriate FDI during economic downturns.[13] Models 3-4 report the results of the logit model, which remain largely unchanged from the main results, except that the coefficient for *World Banking lending* loses statistical significance in the full model.

Model 5 includes year fixed-effects. As can be seen, the coefficients for our three independent variables remain negative, although none of them achieves statistical significance. While this result is not fully supportive of our hypotheses, we suspect that this is because both our dependent and independent variables show some temporal patterns. Many expropriation acts occurred in the same years/time periods, which is shown in Table 1 in the main text. Economic crises are also often cross-border and clustered in the same years. In other words, year dummies are highly correlated with both our dependent and independent variables. The inclusion of year fixed-effects in our model, as a result, may absorb the explanatory power of our independent variables.

In sum, the robustness analyses show that our main findings are robust to alter-

[13]Note that for these two alternative operationalizations of economic crises, we use the original measures instead of creating the moving average. Thus, we may not capture the effect of the recovery period and the coefficients may be underestimated.

Table A2: Determinants of investment expropriations: Robustness analyses

	Model 1 (R-R data)	**Model 2** (growth)	**Model 3** (Dichotomous DV)	**Model 4**	**Model 5** (Year FE)
Financial crisis	−0.221	−0.647	−0.835	−0.775	−0.256
	(0.126)*	(0.303)**	(0.250)***	(0.259)***	(0.248)
IMF agreement				−0.605	−0.337
				(0.269)**	(0.248)
World Bank lending				−0.142	−0.066
				(0.133)	(0.116)
log (GDP)	−4.158	−5.326	−4.150	−5.547	−2.652
	(2.581)	(1.662)***	(1.800)**	(2.215)**	(1.858)
FDI (% GDP)	−0.019	0.002	−0.018	−0.027	−0.017
	(0.091)	(0.026)	(0.028)	(0.026)	(0.028)
log(GDP per capita)	−3.608	7.059	5.630	8.304	7.535
	(7.835)	(3.950)*	(4.290)	(4.929)*	(4.140)*
log(GDP per capita)	0.310	−0.221	−0.232	−0.329	−0.441
squared	(0.516)	(0.245)	(0.266)	(0.316)	(0.262)*
Economic growth	−0.009	−0.033	−0.024	−0.031	−0.042
	(0.024)	(0.024)	(0.019)	(0.020)	(0.017)**
Trade openness	0.025	0.016	0.024	0.023	0.013
	(0.012)**	(0.009)*	(0.009)***	(0.010)**	(0.009)
Resource rent (% GDP)	0.033	0.021	0.028	0.045	0.028
	(0.023)	(0.015)	(0.018)	(0.022)**	(0.018)
Democracy	−0.089	−0.051	−0.043	−0.054	−0.072
	(0.034)***	(0.027)*	(0.029)	(0.029)*	(0.026)***
Oil prices	0.029	0.028	0.026	0.027	0.126
	(0.007)***	(0.005)***	(0.006)***	(0.006)***	(0.207)
Time trend	0.054	0.036	0.019	0.077	
	(0.063)	(0.040)	(0.044)	(0.054)	
$\text{Expropriations}_{t-1}$	0.204	0.211	0.555	0.463	−0.001
	(0.084)**	(0.070)***	(0.263)**	(0.276)*	(0.065)
Number of observations	1,045	2,192	2,186	1,976	1,976
Number of countries	33	79	79	71	71
Log likelihood	−291.8	−477.2	−341.6	−316.9	−405.9
AIC	673.6	1136.4	865.2	803.9	1047.8
BIC	901.4	1660.1	1382.9	1278.9	1712.9

Notes. Standard errors are in parentheses. * p< .1; ** p< .05; *** p< .01.

native model specifications, alternative measures of economic crises, and alternative codings of expropriations. Governments are less likely to expropriate foreign assets during economic crises, and when they are under IMF agreements or borrowing from the World Bank.

4 Supplementary tables and figures

Table A3: Variables for the instruments

Variable	Mean	Std. Dev.	Min	Max	Description and Source
Financial crisis likelihood	0.091	0.072	0	0.375	The proportion of years a country has experienced financial crisis over the past years.
3-month US Treasury bill rate	−0.067	1.552	−3.420	2.960	3-Month US Treasury bill secondary market rate (average) (Federal Reserve Bank of St. Louis)
IMF agreement likelihood	0.252	0.260	0.000	1.000	Number of years a country has been under an IMF program divided by total years elapsed. IMF pogram data are from Dreher (2006)
WB lending likelihood	0.0	0.1756	0.312	2.029	Total number of WB adjustment projects divided by total years elapsed. WB program data are from Boockmann and Dreher (2003).
log(IMF liquidity ratio)	4.800	0.672	3.540	7.083	IMF liquidity ratio: Usable currencies and SDR holdings divided by reserve tranche positions and outstanding IMF borrowing. Source: IMF annual reports from 1973 to 2007.
log(WB liquidity ratio)	2.423	3.077	0.370	3.824	WB liquidity ratio: Unrestricted currencies, investments and total loans divided by any payables, borrowings, and undistributed loans. Source: World Bank annual reports from 1970 to 2007.

Table A4: Control Function Approach: First-stage regressions

	Financial crisis	**IMF agreement**	**WB lending**
Financial crisis likelihood ×	1.695	0.578	0.003
3-month US T-bill rate	(0.091)**	(0.108)***	(0.043)
IMF agreement likelihood ×	0.103	0.900	0.335
log(IMF liquidity ratio)	(0.057)*	(0.064)***	(0.037)***
WB program likelihood ×	0.153	0.044	0.330
log(WB liquidity ratio)	(0.151)	(0.040)	(0.067)***
log(GDP)	−1.029	−0.159	0.152
	(0.489)**	(0.055)***	(0.306)
FDI (% GDP)	−0.037	0.003	0.002
	(0.007)***	(0.013)	(0.003)
log(GDP per capita)	−0.233	−0.328	3.619
	(0.917)	(0.673)	(0.659)***
log(GDP per capita)	0.038	0.012	−0.321
squared	(0.063)	(0.048)	(0.048)***
Economic growth	−0.006	−0.007	0.006
	(0.004)	(0.010)	(0.004)
Trade openness	0.005	−0.002	−0.001
	(0.001)***	(0.002)	(0.001)
Resource rent (% GDP)	−0.008	−0.014	0.016
	(0.004)**	(0.007)**	(0.005)***
Democracy	−0.001	−0.012	−0.006
	(0.007)	(0.010)	(0.004)
Oil prices	−0.001	0.003	−0.002
	(0.002)	(0.005)	(0.001)**
Time trend	−0.005	0.027	0.099
	(0.012)	(0.010)***	(0.008)***
Expropriations$_{t-1}$	0.083	−0.261	−0.086
	(0.077)	(0.174)	(0.054)
3-month US T-bill rate	−0.228	0.063	0.019
	(0.017)***	(0.036)*	(0.010)*
log(IMF liquidity ratio)	−0.031	−0.272	−0.015
	(0.071)	(0.155)*	(0.044)
log(WB liquidity ratio)	−0.736	0.547	−1.414
	(0.291)**	(0.859)	(0.227)***
Number of observations	1,620	1,831	1,741
Number of countries	72	73	67
Pseudo R^2	0.568	0.213	0.870
Weak identification test			
F-statistic	432.1	198.8	21.4
P-value	0.000	0.000	0.000

Notes. Standard errors are in parentheses. * p< .1; ** p< .05; *** p< .01.

Table A5: List of countries that are included in the analysis in Table 2

Algeria	Angola	Argentina	Azerbaijan
Bahrain	Bangladesh	Benin	Bolivia
Brazil	Cambodia	Cameroon	Central African Rep.
Chad	Chile	Colombia	Congo Brazzaville
Congo Kinshasa	Costa Rica	Dominican Rep.	Ecuador
Egypt	El Salvador	Ethiopia	Gabon
Gambia	Georgia	Ghana	Guatemala
Guinea	Guyana	Haiti	Honduras
India	Indonesia	Iran	Ivory Coast
Jamaica	Kazakhstan	Kenya	Kuwait
Laos	Lebanon	Lesotho	Liberia
Libya	Madagascar	Malawi	Malaysia
Mauritania	Mexico	Morocco	Mozambique
Nepal	Nicaragua	Niger	Oman
Pakistan	Panama	Peru	Philippines
Russia	Saudi Arabia	Senegal	Sierra Leone
Sri Lanka	Sudan	Swaziland	Tanzania
Thailand	Togo	Trinidad	Turkmenistan
UAE	Uganda	Uzbekistan	Venezuela
Yemen	Zambia	Zimbabwe	

Table A6: List of countries that are included in the analysis in Table A1

Afghanistan	Algeria	Angola	Argentina
Armenia	Bahamas	Bangladesh	Barbados
Belarus	Belize	Benin	Bolivia
Botswana	Brazil	Bulgaria	Cameroon
Central African Rep.	Chad	Chile	China
Colombia	Congo Kinshasa	Congo Brazzaville	Costa Rica
Croatia	Cyprus	Czech Rep.	Dominica
Dominican Rep.	Ecuador	Egypt	El Salvador
Equatorial Guinea	Eritrea	Estonia	Ethiopia
Gabon	Georgia	Ghana	Greece
Grenada	Guatemala	Guinea	Guyana
Haiti	Honduras	Hungary	India
Indonesia	Iran	Israel	Ivory Coast
Jamaica	Jordan	Kazakhstan	Kenya
Korea	Kuwait	Kyrgyz Rep.	Latvia
Lebanon	Lesotho	Liberia	Lithuania
Madagascar	Malawi	Malaysia	Mauritius
Moldova	Mongolia	Morocco	Mozambique
Nepal	Nicaragua	Niger	Nigeria
Pakistan	Panama	Papua New Guinea	Paraguay
Peru	Philippines	Poland	Portugal
Romania	Russia	Rwanda	Saudi Arabia
Senegal	Serbia	Sierra Leone	Singapore
Slovakia	Somalia	South Africa	Sri Lanka
St. Lucia	St. Vincent	Sudan	Swaziland
Syria	Tanzania	Thailand	Trinidad & Tobago
Tunisia	Turkey	Uganda	Ukraine
Uruguay	Uzbekistan	Venezuela	Vietnam
Yemen	Zambia	Zimbabwe	

Table A7: Descriptive statistics for the sample in Table 2

Variables	Mean	Std. Dev.	Min	Max
Expropriations	0.100	0.525	0	11
Financial crises	0.095	0.322	0	3
IMF agreement	0.412	0.492	0	1
World Bank lending (logged)	5.959	1.797	0	10.268
FDI (% GDP)	2.166	5.173	−28.624	90.741
GDP (logged)	9.152	1.744	5.303	13.514
GDP per capita (logged)	6.827	1.229	4.390	10.749
GDP per capita (logged) squared	48.113	17.682	19.270	115.551
Economic growth	1.145	5.827	−33.073	90.140
Trade openness	68.064	39.567	6.320	280.361
Democracy	−1.074	6.817	−10	10
Resource rent	10.011	11.203	0	80.921
Oil prices	42.995	22.236	10.640	102.620

Table A8: Descriptive statistics for the sample in Table A1

Variables	Mean	Std. Dev.	Min	Max
Financial crises	0.527	0.662	0	3
IMF agreement	0.379	0.485	0	1
World Bank lending (logged)	18.134	1.955	0	21.366
FDI (% GDP)	0.380	3.979	−202.824	167.329
GDP (logged)	21.691	1.710	15.236	25.244
GDP per capita (logged)	7.251	1.099	4.175	10.662
GDP per capita (logged) squared	53.780	16.063	17.427	113.686
Economic growth	4.444	5.417	−51.031	149.973
Trade openness	59.806	38.831	5.755	531.737
Democracy	1.502	7.137	−10	10
Resource rent	6.298	9.168	0	89.166
Oil prices	−0.245	11.633	−28.580	50.600

Table A9: Correlation matrix of variables for the sample in Table 2

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Expropriations	1												
2. Financial crises	−0.041	1											
3. IMF agreement	−0.103	0.064	1										
4. World Bank lending (logged)	−0.076	0.032	0.175	1									
5. FDI (%GDP)	−0.027	−0.059	0.033	−0.071	1								
6. GDP (logged)	0.041	0.047	−0.131	0.570	−0.125	1							
7. log(GDP per capita)	0.062	0.046	−0.161	0.039	−0.005	0.605	1						
8. [log(GDP per capita)]^2	0.061	0.049	−0.161	0.037	−0.007	0.612	0.997	1					
9. Economic growth	−0.015	−0.165	−0.034	0.107	0.191	0.100	0.045	0.043	1				
10. Trade openness	−0.062	−0.064	0.002	−0.345	0.320	−0.351	0.168	0.150	0.083	1			
11. Democracy	−0.088	0.005	0.080	0.339	0.053	0.287	0.233	0.242	0.067	−0.017	1		
12. Resource rent	−0.025	0.002	−0.073	−0.271	0.244	−0.139	0.062	0.070	0.034	0.341	−0.231	1	
13. Oil prices	−0.073	0.041	−0.033	−0.093	−0.085	−0.041	0.030	0.028	−0.073	0.005	−0.140	0.049	1

Table A10: Correlation matrix of variables for the sample in Table A1

Variables	1	2	3	4	5	6	7	8	9	10	11	12
1. Financial crises	1											
2. IMF agreement	0.166	1										
3. World Bank lending (logged)	0.091	0.048	1									
4. FDI (%GDP)	−0.008	−0.023	−0.003	1								
5. GDP (logged)	0.031	−0.144	0.701	0.004	1							
6. log(GDP per capita)	0.212	−0.008	−0.052	−0.022	0.243	1						
7. [log(GDP per capita)]^2	0.208	−0.008	−0.041	0.026	0.263	0.998	1					
9. Economic growth	−0.263	−0.261	0.054	0.172	0.101	−0.157	−0.151	1				
9. Trade openness	−0.019	−0.003	−0.453	0.037	−0.544	0.118	0.095	0.018	1			
10. Democracy	0.107	0.061	0.128	0.001	0.120	0.410	0.413	−0.110	0.014	1		
11. Resource rent	0.055	−0.142	−0.157	0.075	−0.099	−0.127	−0.117	0.089	0.221	−0.277	1	
12. Oil prices	−0.029	0.025	0.096	0.000	0.115	0.166	0.169	0.005	0.029	0.128	−0.037	1

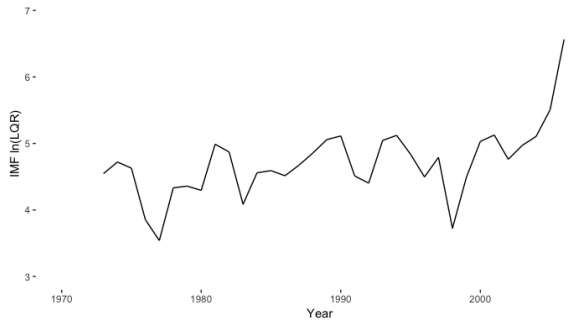


Figure A3: IMF liquidity ratio

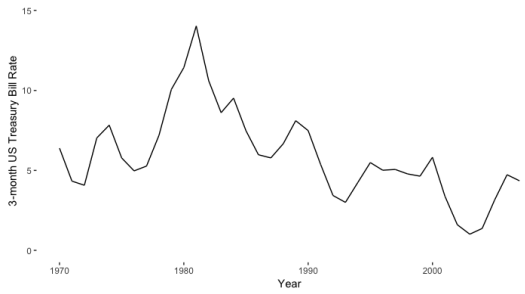


Figure A4: 3-month US Treasury bill rate

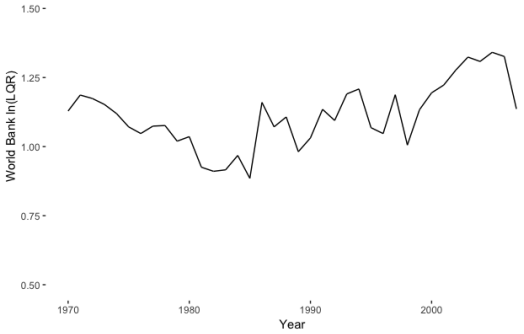
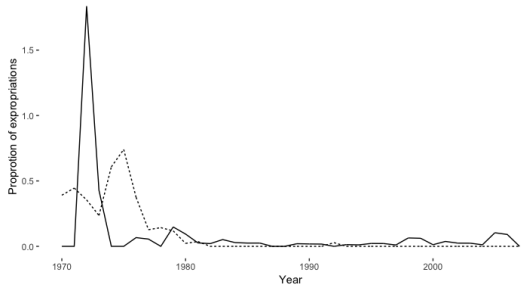


Figure A5: World Bank liquidity ratio



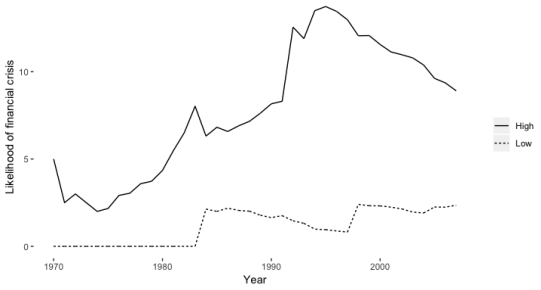


Figure A6: Parallel trends in financial crisis instrument

References

Allison, P.D. 2010. *Survival analysis using SAS: A practical guide*. SAS publishing.

Board of Governors of the Federal Reserve System (US), 3-Month Treasury Bill: Secondary Market Rate [TB3MS]. March 7, 2018. retrieved from FRED, Federal Reserve Bank of St. Louis; https://fred.stlouisfed.org/series/TB3MS.

Boockmann, Bernhard and Axel Dreher. 2003. "The contribution of the IMF and the World Bank to economic freedom." *European Journal of Political Economy* 19(3):633–649.

Cole, Harold L, James Dow and William B English. 1995. "Default, settlement, and signalling: lending resumption in a reputational model of sovereign debt." *International Economic Review* 36(2):365–385.

de Paoli, Bianca, Glenn Hoggarth and Victoria Saporta. 2006. "Costs of sovereign default." *Bank of England Quarterly Bulletin* 46(3):297–307.

Dreher, A. 2006. "IMF and economic growth: The effects of programs, loans, and compliance with conditionality." *World Development* 34(5):769–788.

Fine, J.P. and R.J. Gray. 1999. "A proportional hazards model for the subdistribution of a competing risk." *Journal of the American Statistical Association* 94(446):496–509.

Gooley, T.A., W. Leisenring, J. Crowley, B.E. Storer et al. 1999. "Estimation of failure probabilities in the presence of competing risks: new representations of old estimators." *Statistics in Medicine* 18(6):695–706.

Grieco, J.M. 1982. "Between dependency and autonomy: India's experience with the international computer industry." *International Organization* 36(3):609–632.

Kaminsky, Graciela and Sergio L Schmukler. 2002. "Emerging market instability: do sovereign ratings affect country risk and stock returns?" *The World Bank Economic Review* 16(2):171–195.

Kerner, A. 2009. "Why should I believe you? The costs and consequences of bilateral investment treaties." *International Studies Quarterly* 53(1):73–102.

Kindleberger, Charles P. 1996. *Manias, Panics and Crashes: A History of Financial Crises*. 3rd ed. John Wiley & Sons.

Little, Roderick JA and Donald B Rubin. 2014. *Statistical Analysis with Missing Data*. John Wiley & Sons.

MIGA. 2012. *2012 Annual Report*. Multilateral Investment Guarantee Agency.

Reinhart, Carmen M and Kenneth Rogoff. 2009. *This Time Is Different: Eight Centuries of Financial Folly*. Princeton University Press.

Sandleris, Guido. 2008. "Sovereign defaults: Information, investment and credit." *Journal of International Economics* 76(2):267–275.