

Inequality, Institutions, and the Risks to Foreign Investment¹

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Income inequality is frequently given a central role in explaining diverse political outcomes, but the specifics of how, when, and under what circumstances inequality really matters are far from clear. This paper addresses these questions by examining whether greater levels of inequality raise the risk of expropriation associated with foreign investment. The results demonstrate that inequality matters in two distinct ways. First, inequality elevates risk, although consistent with the argument developed herein, the effect is strongest when chief executives face high constraints on their decision making. Second, inequality mitigates the otherwise protective influence of political institutions on the risk of expropriation. The findings are robust across a variety of estimation strategies, including instrumental variable procedures that correct for error in the measurement of inequality. The findings provide new insights regarding the determinants of foreign investment while simultaneously resolving one part of the contested literature describing inequality's role in the political economy of development.

Though always present, inequality has recently returned as a core explanation of a variety of political outcomes. Concurrent with the observation that between- and within-country income inequality has risen (APSA Task Force 2008; Echeverri-Gent 2009), a variety of bold political economy arguments place inequality at the core of powerful political dynamics. To take just one prominent research agenda, Acemoglu and Robinson's (2000, 2006) and Boix's (2003) models of regime transition both draw on Meltzer and Richard's (1981) seminal model of the median voter—and how inequality affects their preferences regarding the size of government—to demonstrate that the degree of inequality shapes ruling elites' decision to either democratize or use repression to maintain the authoritarian status quo.

Compared to the elegance of these theories, however, the empirical findings regarding inequality's impact on political outcomes are quite messy. Bermeo (2009), for instance, argues that the spread of electoral democracy around the globe has not significantly reduced economic inequality.² Relatedly, Ansell and Samuels (2010) demonstrate that such median voter-based arguments fundamentally mischaracterize the dynamics of political competition between social groups. Inequality fares no better in

alternative research agendas; van de Walle (2009) argues there is no evidence for a causal relationship between income inequality and political violence, while the literature linking inequality to economic growth finds both positive and negative effects (Persson and Tabellini 1994; Deininger and Squire 1998; Li and Zou 1998).³

Clearly there remains much work to be done uncovering the specifics of why, how, and under what circumstances income inequality plays a role in political phenomena. This paper provides one answer to these questions by evaluating whether greater levels of income inequality raise the risk of expropriation associated with foreign direct investment. The empirical findings demonstrate a compelling but conditional effect. When executives face high constraints on their decision making, inequality raises the risk of expropriation. More generally, inequality also mitigates the otherwise risk-reducing role of political institutions. Both main findings are robust to a variety of estimation techniques. Considered in total, these findings resolve some of the ambiguity surrounding the concrete effects of inequality while also contributing to the political economy of development more generally.

This paper proceeds as follows. I begin by justifying the focus on the risk of expropriation for foreign investments. Next I develop a theoretical

¹ The author would like to thank Edmund Malesky, Roger Larocca, David Roodman, Jonathan Kriekhaus, William Thompson, and the anonymous reviewers for helpful comments and suggestions. This paper was previously presented at the 2010 Annual Meeting of the Midwest Political Science Association. Replication materials, including data and a STATA do file, are available at <https://sites.google.com/a/oakland.edu/mfails/>.

² More generally, Timmons (2010) finds no evidence of a general relationship between democracy and lower levels of inequality.

³ Treating inequality as a dependent variable also yields less than compelling results. Scheve and Stasavage (2009), for instance, demonstrate that partisanship and centralized wage bargaining have little effect on the degree of inequality, despite the emphasis the literature places on these factors.

argument linking the degree of income inequality to this risk by invoking the role of credibility. I also consider the measurement error issues associated with aggregate estimates of income inequality and describe an instrumental variable approach to this limitation before moving on to the empirical analysis and discussion of the results. Finally, I offer some concluding thoughts on the political consequences of income inequality.

Why Expropriation Risk?

Inequality is widely assumed to affect a plethora of political outcomes, so why focus on the risk of expropriation facing overseas investors? Two reasons stand out. First, focusing on the risk of expropriation allows this paper to draw on the rich literature highlighting the overwhelming influence of political factors—as opposed to strict considerations of fiscal incentives—when it comes to the ability of governments to attract foreign investment. For instance, regime type (Jensen 2003, 2008; Li and Resnick 2003) and government partisanship (Weymouth and Broz 2007) can lower the risk of expropriation, nationalization, or other unfavorable government action toward multinationals' investments. Such political factors signal “credible commitments to sets of economic policies” attractive to foreign investors and therefore increase the flow of FDI (Jensen 2006:2).

This presents a promising opportunity to begin untangling the effects of income inequality. Like regime type and partisanship, income inequality is not a hidden attribute of host countries. In fact, the degree of inequality is likely the most stable factor characterizing the political context of a host country; inequality shifts slowly within a country compared to the frequent alteration in government partisanship and the ever-present potential for regime change. Importantly for this paper, overseas investors know *ex ante* whether their potential host country is characterized by high or low inequality. If inequality does reduce the credibility of host governments' policies toward foreign investment—as argued below—it should be a strong predictor of investors' perceived risk.

Second, the focus on expropriation risk allows this paper to begin filling the considerable gap in the new institutional economics literature that builds on the seminal work of North (1981, 1990; see also North and Weingast 1989). Most current studies of FDI anchor their theories on some variety of North's thesis that institutions protecting rights to private property minimize transaction costs, reduce the uncertainty associated with economic exchange, create incentives for investment and innovation, and thus account for development outcomes around the globe (for example, Jensen 2003, 2006; Li and Resnick 2003; Li 2006, 2009). Biglaiser and Staats (2010), for instance, show that investors' perceptions regarding the strength of property rights in Latin American economies have

a much larger impact than regime type in determining US firms' investment decisions.⁴ More generally, strong property rights have emerged as a key factor in determining a host of development outcomes, including trade, investment, and economic growth.⁵

A concerted effort to understand the determinants of these institutions, however, lags behind considerably. As Dellepiane-Avellaneda (2010:223) writes in his recent review of this literature, “demonstrating that growth is a function of good institutions is of little help if this is not followed by analysis of how such institutions emerge and become self-enforcing.” This takes on added importance when we consider that our proxy measures of property rights are typically subjective evaluations, not tangible institutions subject to direct change or manipulation, and therefore may reflect instead some set of underlying political institutions or interests (Haggard, MacIntyre, and Tiede 2008).⁶ While creating objective measures of institutional quality is beyond the scope of this paper, this paper nonetheless advances this literature by focusing on the actual political factors that affect the perceived strength of property rights cross-nationally.

Inequality and Credibility

The political effect of inequality is often described by invoking the logic of the median voter, where a more unequal income distribution creates redistributive preferences in the electorate. Such a theory fits well with high profile (yet relatively rare) populist-driven nationalizations and expropriations.⁷ This argument is most clearly captured in the literature by Przeworski, Alvarez, Cheibub, and Limongi's (2000:209) evocative statement that given the ability to influence political outcomes, “those who suffer as a consequence of private property will attempt to use that power to expropriate the riches.” While this relatively simple “poor demand expropriation” argument is a useful starting point for understanding how inequality shapes foreign investment risk, it falls short in several important ways.

For starters, micro-level evidence is inconsistent with key implications of this argument. Kaufman (2009), for instance, highlights the experience from Latin America, where poor voters are neither more likely to vote for higher taxes on the wealthy nor

⁴ In such studies, including this one, property rights are measured using subjective assessments by experts, including investors and insurance agencies. For more details, see the data and results section below.

⁵ For notable examples, see Knack and Keefer (1995), Bleaney and Nishiyama (2002), Easterly and Levine (2003), Rodrik, Subramanian, and Trebbi (2004), and Souva, Smith, and Rowan (2008). For an important exception, however, see Glaeser, La Porta, Lopez-De-Silanes, and Shleifer (2004).

⁶ On this point, see Weymouth (2011). However, overseas investors are typically concerned with *future* deviations in policy that could adversely impact their financial investment, so even objective indicators would have to account for the security of such a policy over a relative long time-horizon—an attribute made difficult without considering subjective evaluations.

⁷ Li (2009) provides a few recent examples.

more likely to systematically vote for leftist candidates.⁸ Relatedly, market reforms including liberalizing foreign investment are often extremely popular in host countries, since they improve the variety, quality, and prices of consumer goods (Baker 2003) and can be channeled into sectors that raise wages (Pinto and Pinto 2008). Given that the poor majority benefit from both lower prices and increased wages, it is unlikely that they would use their political power to demand expropriation of the assets of foreign-owned companies.⁹

Nevertheless, from the perspective of foreign investors, inequality does signal something important about the policies of a particular host country and hence is an important influence on their overall risk assessment. I argue that potential investors view inequality not as a sign of impending populist expropriation specifically but as a strong signal that host government's policies toward foreign investment lack credibility generally. Credibility—or time consistency—implies that rules announced today will be followed tomorrow (Keefer and Stasavage 2003; Frye 2004). Such issues are paramount for foreign investment decisions, since as Jensen (2003, 2006) notes, FDI typically adopts a long time horizon and becomes relatively illiquid after the initial investment. Given this, it is no surprise that most existing research on FDI focuses on political institutions that render policies more credible. Jensen (2003), Henisz (2002, 2004), and Li (2009), for instance, all draw on some variety of Tsebelis (1995) veto point argument to demonstrate that an increased number of decision makers and political constraints provide a more credible policy environment.

High levels of income inequality reduce credibility by creating a more polarized society, raising the volatility of the policy environment in general and increasing the likelihood of extreme deviations from previously announced policies in particular. That inequality is a central (though not the only) indicator of social polarization is uncontroversial (Keefer and Knack 2002). More relevant to the theoretical argument here, this polarization creates greater volatility in the policy environment and, by extension, foreign investors are less confident that existing policies toward FDI will be enforced in the future. Alesina and Perotti (1996:1214), for instance, note that inequality can cause the poor majority “to become dissatisfied with the existing socio-economic status quo and demand radical changes.” Persson and Tabellini (1994) explicitly argue that inequality makes distributional conflict more important, while Reenock, Bernhard, and Sobek (2007) demonstrate that greater inequality can facilitate a breakdown of political regimes. All of these arguments suggest the inequality may lead to an extremely volatile political environment and create uncertainty regarding future

government composition, decisions, or even regime type.

Birdsall, Ross, and Sabot (1995) highlight the link between polarization and credibility in even greater detail by focusing on the consequences of low inequality. In their argument, greater equality facilitates macroeconomic stability, faster response time to unanticipated economic shocks, and increased private investment, all through the creation of a more stable policy environment. Though not couching their argument in the language of credibility, the emphasis is clear when the authors note that:

the likelihood that fiscal, monetary, and other economic policies will swing between the extreme of serving the narrowly defined and myopic interests of the elite and an equally myopic populist extreme is lower where lower levels of income inequality narrow the distance between the interests of the elite and the poor. (Birdsall et al. 1995:498–499)

Easterly, Ritzen, and Woolcock (2006) make a similar argument by highlighting how inequality can prevent the emergence of policy consensus and stability. In their model, high inequality is a sign of low levels of social cohesion, which makes it increasingly difficult for political leaders to generate enough public support for controversial policies. Even though such arguments are principally concerned with the likelihood of adopting reform, they demonstrate that policies emerging from polarized societies are more likely to be short-lived, suggesting to foreign investors that whatever the position toward FDI is now, societal pressures are likely to render future policies quite different.

The clearest link between polarization and credibility has been articulated by Keefer and Knack (2002). Here the authors draw on the social choice literature to show that, given decision makers with conflicting preferences and multiple policy dimensions, polarization raises the probability that existing policies will experience fundamental change in the future, and that these changes will be larger in magnitude than would have occurred in more equal societies. As they clearly note, inequality “increases the possibility of future extreme deviations from current government policies” (Keefer and Knack 2002:128). Compounding this outcome, greater polarization also creates stronger incentives to bypass or overturn the institutional solutions to policy instability—such as rules requiring unanimity or restrictions on who can participate in the decision-making process. Both elements of this argument suggest that polarized societies are less able to credibly commit to announced policies.

Nevertheless, careful examination of these arguments demonstrates an important conditional effect; inequality only reduces credibility when a set of complementary political institutions exists in the host country. Chief executives in host countries play an influential part in shaping the risks faced by foreign investors (Jensen 2008; Li 2009), yet the degree to

⁸ Kenworthy and McCall (2008) also find little evidence that within-country changes in inequality create more redistributive public attitudes.

⁹ I thank an anonymous reviewer for raising this point.

which such executives are susceptible to mass dissatisfaction, protest, or radical demands differs tremendously. In certain situations, decision makers may be able to comfortably wave off popular discontent and protest and reassure investors, whereas in others they may find that acquiescing is the only viable course of action. Executives that are insulated from these pressures or who do not otherwise rely on citizens' support for their continued tenure can temper any volatility in the policy environment brought about by high inequality. Such executives can treat domestic inequality as a nuisance that plays an inconsequential role in their day-to-day policymaking and dealings with foreign investors.

Conversely, executives who share power with other branches of government and have less autonomy in the decision-making process are more likely to alter policies as a response to inequality. If they do not, they may find themselves threatened by rival branches of government (that is, legislatures) that more actively address the grievances of the poor majority. Executives that face high constraints on their decision making may find it more politically expedient to renege on previous commitments to overseas investors, thus reducing credibility.

The argument linking high polarization with the short-lived nature of policy consensus also suggests a conditional effect. Easterly et al.'s (2006) argument, for instance, hinges on executives requiring some levels of societal support to create policy consensus. There is little reason to believe, however, that unconstrained executives require the same degree of social cohesion to generate a stable set of policies toward FDI, reform, or any other domain in the political arena as do their highly constrained counterparts in other countries. While this does not imply that the policy environments of autonomous executives will always be stable, there is little reason to expect it to be exacerbated by greater inequality.

The conditional nature of this relationship is most clear in Keefer and Knack's (2002) argument that polarization raises the likelihood of extreme policy deviations. Their argument, rooted in the social choice literature, critically assumes that political parties with varying preferences have the potential to assume office and become the central decision makers. At a minimum, these varying preferences must be part of the decision-making process for polarization to reduce credibility. Yet polities vary considerably in the degree to which executive turnover is likely or even possible, and autonomous executives may find it possible to simply eliminate from the deliberative process altogether parties with different preferences. In such instances, there is little reason to expect greater inequality to make the policy environment less credible.

In short, income inequality directly affects expropriation risk by reducing the credibility of policies in host countries where chief executives face greater constraints. Note that, somewhat ironically, this argument seems to contradict much of the conventional wisdom in the literature on the determinants of for-

eign investment risk since it implies that inequality only *reduces* credibility in the institutional circumstances designed to *enhance* credibility. Nevertheless, there are several theoretical arguments that support this expectation.

First, most of the relevant studies invoking Tsebelis' veto point concept pay insufficient attention to the difference between policy stability and policy credibility. For instance, despite regularly pronouncing that more veto points make "commitments to private property credible" (Li 2009:1101), these constraints only reduce the set of policies that decision makers prefer to the existing status quo. Policies in this instance are stable but may still lack credibility. Credibility requires overcoming what Frye (2004:455) succinctly describes as the dilemma of time-inconsistent exchanges, where "laws and policies often promise benefits in the future for changes in behavior today." Multiple veto points can render today's policy stable—it cannot be defeated by another option—but severe inequality may lead those decision makers to reevaluate their position and renege tomorrow. The credibility of policies depends on more than just the number of veto players involved in the decision-making process (Stasavage 2002).

Relatedly, there is an emerging consensus that a greater number of veto players are less effective in generating credibility when there is greater uncertainty regarding the future status quo—exactly the situation that occurs in polarized societies. In Keefer and Stasavage's (2003) formal model of veto points and monetary policy commitments, for instance, adding additional veto points to an already volatile environment is less likely to generate credibility. This same argument applies to the domain of foreign investment policies, though note that it differs slightly in terms of conceptualizing the way inequality shapes investment risk. Following this logic, inequality has a powerful indirect influence by rendering veto points in the decision-making process less effective at minimizing expropriation risk. This complimentary hypothesis is also evaluated empirically in the sections that follow.¹⁰

This proposed linkage between inequality, political institutions, and the risks to foreign investments has not been empirically tested in the literature. Keefer and Knack (2002) and Easterly et al. (2006) are two partial exceptions, although both studies are principally focused on whether inequality or other social divisions affect economic development through a property rights channel. Boix (2003:215) also demonstrates that risk decreases when inequality is lower, although his analysis is bivariate in nature. Before subjecting these hypotheses to empirical evaluation,

¹⁰ This seemingly contradictory logic can also be resolved by highlighting what this theory does *not* imply. The argument does not suggest that foreign investors prefer host countries with unconstrained executives and few veto points. Instead, the theory developed here suggests that foreign investors are likely to judge the impact of inequality on their risk differently depending on the degree to which executives are constrained in their decision making.

though, the next section describes the measurement challenges inherent in the study of income inequality.

Inequality Estimates and Measurement Error

Most cross-national research on the causes and consequences of income inequality relies on some version of aggregate estimates first described in Deininger and Squire (1996) and later expanded as the UN's World Income Inequality Database (WIID).¹¹ These authors provide the first large-scale data set providing estimates of income inequality in a wide sample of developed and developing countries. Nevertheless, the authors are careful to document the limitations of their data, namely that the underlying sources often used differing reference units and definitions of inequality and that the quality of some data was questionable. Thus, comparability between countries was often far more limited than researchers realized.

Together, these limitations constitute the authors' recognition of (sometimes considerable) measurement error in the aggregate estimates of inequality (Atkinson and Brandolini 2001). Limiting the sample to only those countries with sufficiently comparable and high-quality data mitigates most of these concerns but tends to drastically limit the sample size. Solt (2009) characterizes this as a fundamental trade-off between maximizing coverage or comparability. His recent contribution, namely using a custom missing-data algorithm to maximize both comparability and country coverage using the WIID, provides tremendous advantages for prior applied work on inequality, since it uses underlying correlations between various measures of inequality in multiple sources and multilevel modeling to create a complete (that is, free of missing values) database of gross and net income inequality for a truly global sample.¹² Nevertheless, this procedure is only as good as the underlying data on income inequality, and it is not at all clear that these data have improved since Deininger and Squire's (1996) original warnings on their indiscriminate use.

This paper uses an additional technique to mitigate measurement error problems. Specifically, I adopt a two-stage estimation procedure that uses an instrument to create predicted values of income inequality which are then used as a predictor of expropriation risk for overseas investments. So long as the errors produced in the first-stage regression of inequality on the instrument are uncorrelated with expropriation risk, this technique can overcome the

inference problems induced by poorly measured regressors (Wooldridge 2006; Kennedy 2008).¹³

For this analysis, I follow Easterly's (2007) work and use a measure of country factor endowments as the instrument to predict levels of inequality. Specifically, I measure the ratio of the quantity of land suitable for growing wheat to the quantity of land suitable for growing sugarcane (*wheat-sugar ratio*).¹⁴ These different crops require drastically different types of labor and resources and consequently lead to the development of very different types of economies and institutions. Sokoloff and Engerman (2000) and Engerman and Sokoloff (2002) argue that the production of commodities like sugarcane was very labor intensive and required the development of economies of scale. Consequently, sugarcane was produced on large plantation-style farms relying on slaves as a source of cheap labor. Conversely, wheat production required far less labor and economies of scale and is associated with family farms and the growth of a large middle class.

Since institutions are costly and difficult to change, the ratio of land suitable to each type of crop captures the relevant factor endowments and is theoretically linked to the level of inequality that would emerge and persist through the centuries. Higher levels of this wheat-sugar ratio indicate that more land was suitable for small-scale farming and should be associated with lower levels of inequality. Conversely, smaller ratios imply that more land was suitable for commodity production like sugarcane and thus the emergence of greater inequality. Equally important, there should be no relationship between this measure of factor endowments and expropriation risk except through the former's impact on inequality. The direction of causality is also clear; contemporary risk for overseas investments could not have caused geographical features such as land endowments.¹⁵

This usefulness of this *Wheat-Sugar ratio* as an instrument can be seen in Figure 1, which is a simple scatterplot relating the variable to the level of income inequality as measured by the Gini coefficient.¹⁶ The figure shows that there is indeed a strong association between the variables in the expected direction. Countries with a higher *Wheat-sugar ratio* are more amenable to the production of small-farm crops and consequently experience less inequality.

¹¹ Solt (2009) provides an informative discussion of the history of these databases.

¹² Previous efforts to maximize coverage and comparability involve crude adjustments based on averaging multiple measures or comparing indicators with predicted values of inequality based on lagged dependent variables and country dummies. For an example of the latter, see Dollar and Kraay (2003).

¹³ Chong and Gradstein (2007) have documented double causality between income inequality and a measure of institutional quality somewhat akin to the measure of expropriation risk employed here. Their identification of this process provides additional justification for the 2SLS approach, since it can remove this simultaneity and highlight the unique contribution of income inequality to the dependent variable.

¹⁴ This variable is constructed using estimates of national arable land suitable to the production of these crops. See Easterly (2007:761–762) for more detail.

¹⁵ Two-stage least squares approaches have their own set of assumptions, described recently in Sovey and Green (2011). I discuss the specific diagnostic measures of the 2SLS models in the results section below.

¹⁶ Specific variables and data sources are described more fully in the following section.

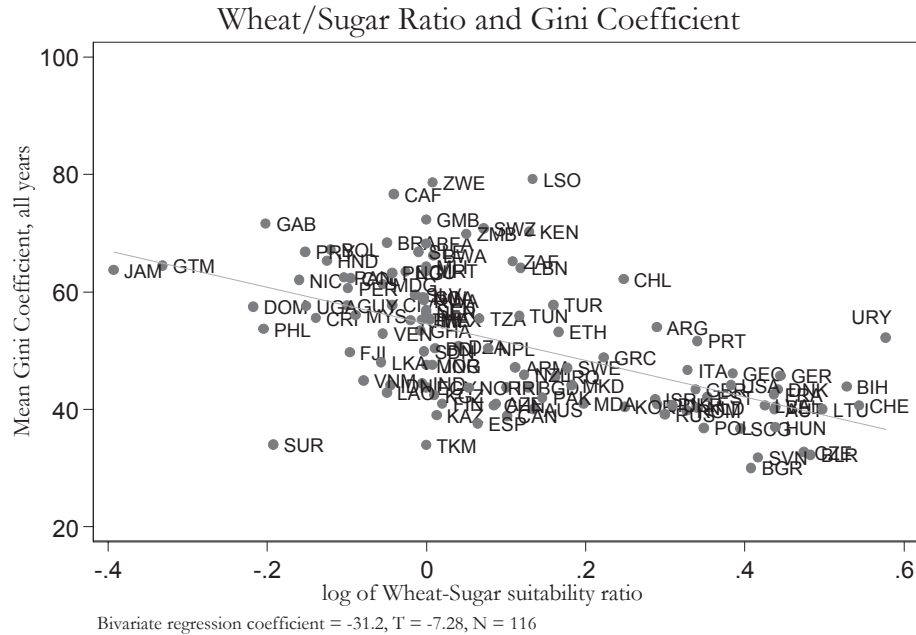


FIG 1. Assessing the Instrument for Inequality

Conversely, countries with land endowments encouraging the cultivation of commodities like sugar are associated with higher degrees of income inequality. The relationship is highly significant; the absolute value of the t -statistic is over 7. Moreover, the R^2 value for this bivariate regression indicates that the endowment variable captures almost one-third of the observed variation in income inequality. R^2 values are important in this sort of analysis, since they provide an intuitive measure of how well a particular instrument explains an endogenous regressor (Gujarati 1988). With the suitability of the instrument established, this paper now turns to an empirical analysis of inequality's effect on the risk faced by foreign investors.

Empirical Analysis

I test this argument by employing a quantitative analysis of a global sample, including developed and developing countries. As described below, the dependent variable is not available in a time-series and both the instrument and main independent variable—inequality—vary principally across countries. Therefore, the analysis is strictly cross-sectional. I describe specific variables below.

Starting with the dependent variable, I measure the risks to foreign investment using political risk insurance data first described by Jensen (2008). Multinational investors face a host of risks with their overseas investments, and a large insurance industry has developed to offer some protection against the most detrimental event, namely direct expropriation in the form of nationalizations and indirect expropriation through contract disputes or other government action influencing multinational firms' assets and ownership rights, including changes in host

country attitudes toward foreign investors (Jensen 2008:1044). Although the exact prices of insurance premiums for multinational investors are considered confidential, agencies do provide quantitative assessments of countries' risk on a variety of indicators. These risk assessments are used to price insurance policies for investors but their public availability means that they are also used to guide overseas investment decisions even when an insurance policy is not purchased.

I follow Jensen's (2008) analysis and use the "risk of expropriation and government action" (hereafter *expropriation risk*) published by the Belgian Export Credit Agency, ONDD.¹⁷ This specific variable ranges from 1 to 7, with higher numbers indicating greater risk associated with investments in a particular host country. Though we cannot directly observe credibility as a concept, these risk ratings serve as useful proxy measures since they capture the perceived risk associated with multinational investment in a host country over a relatively long time horizon.¹⁸ These particular ratings are revised at least once annually. The specific data I employ in this project were revised and published in early 2010 and use assessments from recent years to estimate the risk associated with investment projects in a country over the next 15 years.

Income inequality, the principle independent variable, is measured with Solt's (2009) calculations of country-specific gross Gini coefficients. As described above, Solt's work currently provides Gini coefficient

¹⁷ See Jensen (2008) for a more detailed discussion of this rating agency.

¹⁸ Keefer's (2007) important paper makes a similar argument where variations in credibility, though not directly observed, manifest themselves through patterns of public and private goods spending in democratic regimes.

measures of income inequality for the largest sample of countries and minimizes the trade-off between comparability and scope when using aggregate estimates of inequality. For this analysis, I average Gini coefficients for all yearly estimates from 1960 onwards to increase the number of countries included in the empirical analysis.

The selection of control variables follows the convention in the study of expropriation risk.¹⁹ First and foremost, I include a measure of chief executive autonomy from the *Polity* database. The specific measure is *executive constraints*, which ranges from 1 to 7 with higher scores indicating greater limitations on unilateral executive decisions. Prior studies suggest that this variable correlates negatively with the measure of *expropriation risk*—more constrained executives should lead to lower levels of risk (Jensen 2008).²⁰ Including this variable is also necessary to test whether the effect of inequality on risk varies according to the degree of executive autonomy, and relatedly, whether the impact of such political institutions on risk is weaker in host countries with high inequality. To test these conditional effects, I include a multiplicative interaction term *inequality* ($\times$) *executive constraints*.

Additional control variables capture important economic conditions. Higher levels of development are likely to reduce the risk associated with overseas investment, although expropriation may be more likely when the rate of economic growth is slower (Jensen 2008:1046). To control for these effects, I include a measure of the log of income per capita (*GDP pc*) and the rate of growth in income per capita (*economic growth*) from 2000 until 2005. Both variables are measured using data from the Penn World Tables version 6.3 (Heston, Summers, and Aten 2009).

Two additional control variables account for other proposed correlates of expropriation risk. I include a dummy variable measuring whether a country is a primary commodity exporter, since the “resource curse” literature suggests that such countries may rely more heavily on the distribution of rents for political purposes (Karl 1997; Ross 1999). If resource abundant states are unable to extract crucial revenue through the normal channels, they may turn to expropriation to fill this void. The particular variable used here, *commodity exporter*, comes from Easterly (2007).

Finally, Weymouth and Broz (2007) have argued that investors consider the partisanship of governments when making allocation decisions, suggesting an important role for political ideology. Leftist parties in power—given the widespread assumption that such parties are more likely to engage in radical redistribution to the poor majority—may lead to

higher risk ratings. I control for this influence with a dummy variable measuring the presence of a *leftist executive*. The variable is constructed using measures of ideology originally outlined in the Database of Political Institutions (Beck, Clarke, Groff, Keefer, and Walsh 2001) and subsequently updated.

Estimating these models involves two principle issues, namely the ordinal nature of the dependent variable and the inclusion of a two-step instrumental variable process. Each of these issues, but particularly in combination, presents complications to the estimation and interpretation of results. To ensure that these methodological issues alone are not driving the substantive findings, the empirical analysis below estimates four different models spanning all possible combinations of these two issues. That is, I estimate OLS and ordered probit models using both the standard measure of *inequality* and models instrumenting for *inequality* (and the interaction term *inequality* ($\times$) *executive constraints*) with the variable *log wheat-sugar ratio*. Following the methodology described in Easterly, Levine, and Roodman (2004), the interaction term is instrumented using another multiplicative term, *log wheat-sugar ratio* ($\times$) *executive constraints*.

I begin with the OLS regressions, both with and without the instrumental variable procedure. Although OLS is problematic when using ordered dependent variables, the usual reservations are not particularly important in this application. For starters, *expropriation risk* has seven categories and though a relatively small number of countries occupy the highest risk category, cases are much more evenly distributed throughout the lower (that is, less risky) ratings. Additionally, I am not interested in making point predictions from the regression of *expropriation risk* on the independent variables, a particularly egregious shortcoming of OLS with ordered dependent variables. OLS does offer some noteworthy advantages, namely easily interpretable coefficients. This is particularly important for interpreting the conditional effects captured by the interaction term.

These two models are reported in Table 1, Models 1 and 2. Focusing first on Model 1, without the instrumental variable process, the results immediately confirm that the effect of inequality on expropriation risk is dependent on the autonomy of chief executives. The coefficient for the interactive term is positive and highly significant. Because the model contains this interactive term, interpretation of the reported coefficients is complicated (Braumoeller 2004; Kam and Franzese 2007). The reported coefficients for *inequality* and *executive constraints* only reflect the impact of each variable when the other constituent term is zero, which is not a possible value in the measurement scale of the later and impossible in practice for the former. Among the control variables, there is strong evidence that more developed countries have significantly lower levels of risk. Economic growth is also negative and significant at the 10% level, suggesting that growing economies tend to reduce risk. On the contrary, there is

¹⁹ Except where noted, control variables are measured in the year 2005.

²⁰ Leblang (1996) and Li and Resnick (2003) argue that regime type affects expropriation risk. Since Jensen (2008) shows that this regime effect is driven by the constraints facing the executive, I focus on models using this variable.

TABLE 1. Inequality, Executive Constraints, and Expropriation Risk

	OLS (1)	GLM (instruments) (2)	Ordered probit (3)	Ordered probit (instruments) (4)
Inequality	-0.087 (0.029)**	-0.236 (0.105)*	-0.093 (0.028)**	-0.065 (0.034) [†]
Exec. constraints	-1.263 (0.256)***	-2.424 (0.707)**	-1.430 (0.276)***	-1.029 (0.402)**
Inequality × exec. constraints	0.019 (0.005)***	0.041 (0.014)**	0.022 (0.005)***	0.023 (0.005)***
GDP pc (ln)	-0.747 (0.135)***	-0.814 (0.239)**	-0.823 (0.152)***	-0.581 (0.226)*
GDP growth	-0.065 (0.038) [†]	-0.165 (0.088) [†]	-0.042 (0.038)	-0.036 (0.030)
Commodity exporter	-0.029 (0.298)	0.102 (0.363)	-0.170 (0.289)	-0.113 (0.213)
Left executive	-0.293 (0.242)	-0.408 (0.297)	-0.302 (0.255)	-0.208 (0.201)
Constant	16.034 (2.038)	24.805 (7.148)	—	—
Cut-1	—	—	-14.924 (2.289)	-8.753 (4.530)
Cut-2	—	—	-14.214 (2.246)	-8.203 (4.372)
Cut-3	—	—	-13.225 (2.201)	-7.487 (4.149)
Cut-4	—	—	-12.362 (2.170)	-6.865 (3.955)
Cut-5	—	—	-11.480 (2.155)	-6.225 (3.764)
Cut-6	—	—	-11.245 (2.162)	-6.055 (3.718)
N	114	109	114	114
Adj. R ²	0.60	—	—	—
LR (χ^2)	—	—	117.25	122.04
Prob > χ^2	—	—	0.000	0.000

(Notes. Dependent variable is ONDD political risk rating for expropriation risk; unstandardized coefficients, standard errors in parentheses; Murphy–Topel standard errors reported in Model 2; Models 2 and 4 instrument for Inequality and the interactive term; [†] $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$.)

no evidence that commodity exporting countries or those with executives from the left have any impact on the risk associated with overseas investments.

To untangle the effects of inequality, I follow Brambor, Clark, and Golder (2006) and calculate the marginal effect of *inequality* on *expropriation risk* at varying levels of *executive constraints*. Panel A in Figure 2 plots this effect graphically.

The solid line extending diagonally is the marginal effect while the vertical axis represents the magnitude. Because these marginal effects are estimates, they have a confidence interval, plotted on the graph as dashed lines. On the far left side, Panel A graphically portrays the information gleaned from the table of estimated coefficients; when chief executives face no limitations on their authority, income inequality has a negative and significant influence on the risk faced by FDI. Investors appear unfazed by inequality when it occurs in a regime characterized by a chief executive without significant checks on their power, even assigning lower levels of risk as inequality increases. As executives become more constrained, however, the influence of inequality changes. At the highest level of *executive constraints* (Uruguay, for instance), income inequality has a positive and significant effect. In other words, investors are considerably more fearful of high inequality when it occurs in the context of political institutions that provide more competition between executives and other branches of government. In these cases, increases in inequality raise the risk of expropriation, consistent with direct effect hypothesis.

Evaluating the indirect effect of inequality is straightforward. All that is required is interpreting the conditional hypothesis symmetrically, where the conditioning variable (*executive constraints*) and the main independent variable (*inequality*) switch posi-

tions and thus analytic interpretation.²¹ The graph in Panel B of Figure 2 plots this effect, interpreted as the marginal effect of *executive constraints* on *expropriation risk* at varying levels of *inequality*. Inequality ranges from the observed sample minimum of 26.3 to the observed maximum of 88.7. At the far left side of the graph, the marginal effect is negative and statistically significant. This indicates that under conditions of low inequality, an increase in the constraints on chief executives reduces the risk of expropriation for foreign investment. However, as inequality increases this effect becomes smaller, until it is statistically not distinguishable from zero at a Gini coefficient of around 58.²²

This is an extremely important finding. A host of prior studies argue that increasing executive constraints reduces the risk of expropriation. Here I demonstrate the limits to this effect. As inequality increases, the risk-reducing impact of executive constraints weakens, until it becomes insignificant around the middle of the scale. At the highest levels of inequality, increases in executive constraints actually significantly increase the risk of expropriation, suggesting that investors are particularly skeptical of policy credibility in host countries where multiple sources of decision making in government coincide with greater social polarization in the form of inequality. This is strong evidence that income inequality has an important influence on the risk of expropriation faced by multinational investors by directly influencing risk ratings and by critically

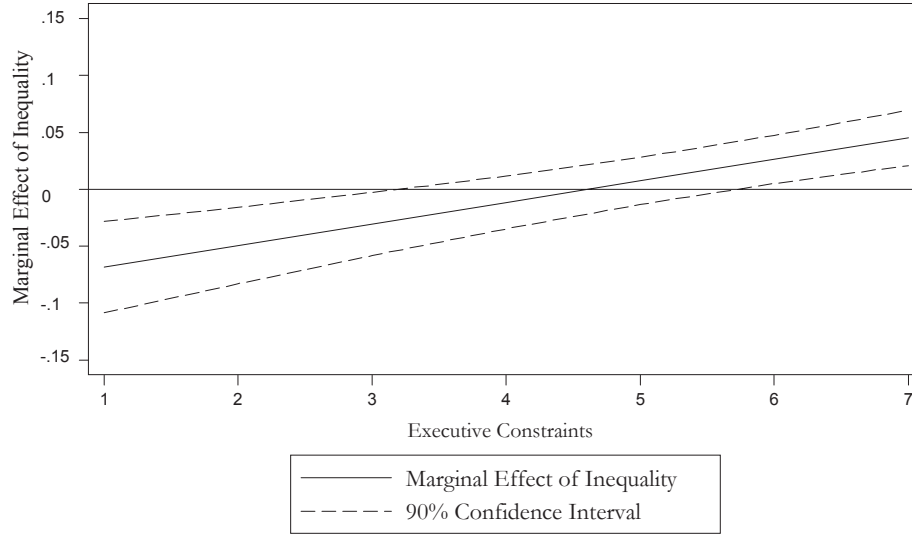
²¹ While the theory developed here makes a specific prediction about this relationship, Berry, Golder, and Milton (2010) argue that all conditional hypotheses should be interpreted symmetrically to capture a more complete picture of the empirical relationship.

²² Nearly 70% of the observed Gini coefficients fall below this value, so the range of real observations influenced by this effect is quite large.

(A)

Marginal Effect of Inequality as Executive Constraints Changes

Dependent Variable: Expropriation Risk



(B)

Marginal Effect of Executive Constraints as Inequality Changes

Dependent Variable: Expropriation Risk

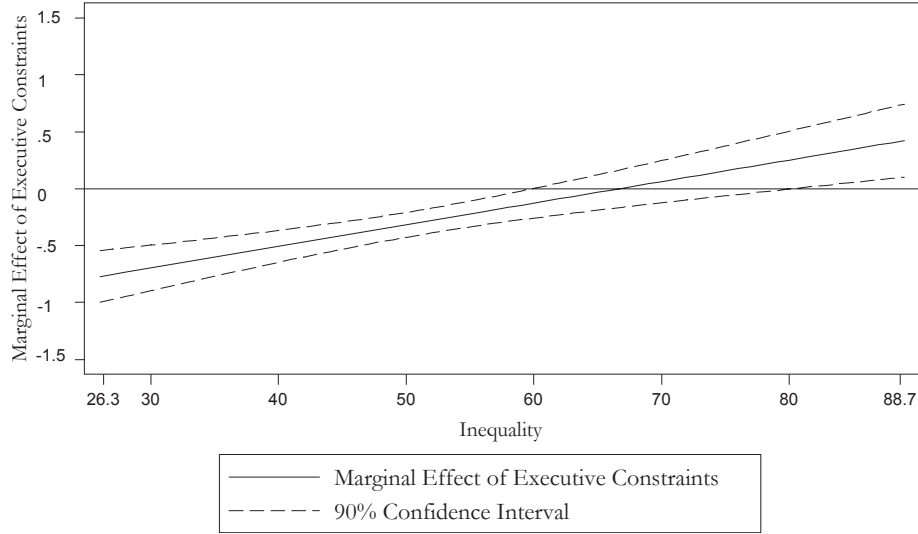


FIG. 2. Marginal Effects Plots from Estimates in Table 1, Model 1

limiting the otherwise strong influence of political institutions on risk.

Returning to Table 1, Model 2 introduces the instrumental variable process to correct for the measurement error in the estimates of income inequality. This equation is estimated with a General Linear Model procedure and reports Murphy–Topel standard errors for all coefficients. Since the model is estimated in a two-step procedure, Murphy–Topel

standard errors are adjusted to account for the fact that some regressors (*inequality* and the interactive term) are actually estimates and not the true parameter values (Murphy and Topel 1985).

The instrumental variable procedure continues to generate the same sign and levels of statistical significance for all key coefficients, though the magnitudes of these effects are now larger (roughly three times the size for *inequality* and about double for the

interactive term).²³ As above, substantive interpretation is aided through plotting the marginal effects, presented in Figure 3.

Panel A demonstrates that the main results are robust to the instrumental variable procedure. At low levels of *executive constraints*, income inequality has a negative and significant influence on risk. When chief executives face the highest constraints on their decision making, however, inequality tends to raise the risk of expropriation. The effect at the far right end of the graph is positive and just significant at the 90% level. Panel B plots the symmetric version of this interactive effect and again demonstrates that the risk-reducing effect of political institutions becomes smaller as inequality increases, until it becomes insignificant in the middle of the range and positive at the far right side.

To what extent are these results dependent on treating the dependent variable as continuous, instead of ordinal? Models 3 and 4 in Table 1 re-estimate the models using ordered probit regression, with and without the instrumental variable process respectively. For Model 3, interpretation is more complicated. Treating the dependent variable as ordinal requires that we analyze the impact of a particular change in independent variables on the probability of a country falling into a particular (1–7) category of expropriation risk, as opposed to simply leading to an “increase” or “decrease” in risk. Moreover, the interactive nature of the argument demands that these probabilities be calculated at varying levels of *inequality* and *executive constraints*.

Table 2 presents these results by reporting the predicted probabilities of a country falling into each of the seven categories of risk at a “low” and “high” level of income inequality (defined as the 20th and 80th percentile, Gini coefficients of 40.4 and 62.4) and at the 20th, 40th, 60th, and 80th percentiles of the key modifying variable *executive constraints*.²⁴ All other variables in the model are held at their mean values.

Space constraints prevent a detailed discussion of each estimated probability, but some examples will suffice to demonstrate the continued impact of inequality even in this more complicated framework. To be consistent with the prior results, we would expect a shift from low to high inequality to increase expropriation risk when political institutions create a highly constrained chief executive. Looking at the

column for p (Risk = 2), a relatively low level of investment risk, and *executive constraints* set to the 80th percentile, we observe exactly this pattern. For instance, a country with a low level of inequality, such as Israel (Gini = 41.7), has a 15% probability of finding themselves in this risk category. If domestic income inequality increased in Israel to about the level found in Botswana (Gini = 66.2), the likelihood of Israel still being in this risk category drops to around 1%.

Given the results above, we would also expect that at high levels of inequality, increasing constraints becomes less effective at minimizing risk. This too is reflected in the predicted probabilities reported in Table 2. Staying in the same column, a country with high inequality and *executive constraints* in the 40th percentile has a 26% probability of having a relatively low level of risk (2). A country with similarly high inequality and *executive constraints* at the 80th percentile, however, has only a 1% probability of having this same low risk.

Additional examples abound; for instance, when *executive constraints* are in the 60th percentile, countries with low inequality have about a 32% probability of falling into risk category three. If inequality worsens (roughly the increase between the Ukraine and Guatemala, two countries in this particular risk category), the probability drops precipitously to around 3%. Although more nuanced, these results are fully consistent with those previously reported.

Table 2 does clearly indicate the continued relevance of political institutions when it comes to determining expropriation risk. Countries with few constraints on chief executives are unlikely to fall into low (less risky) categories, just as those countries with high levels of constraints are overwhelmingly concentrated in the three least risky categories. Nevertheless, the results indicate that inequality affects the risk facing overseas investment, and the strength and direction of this effect are consistent with both theoretical expectations and the above results.

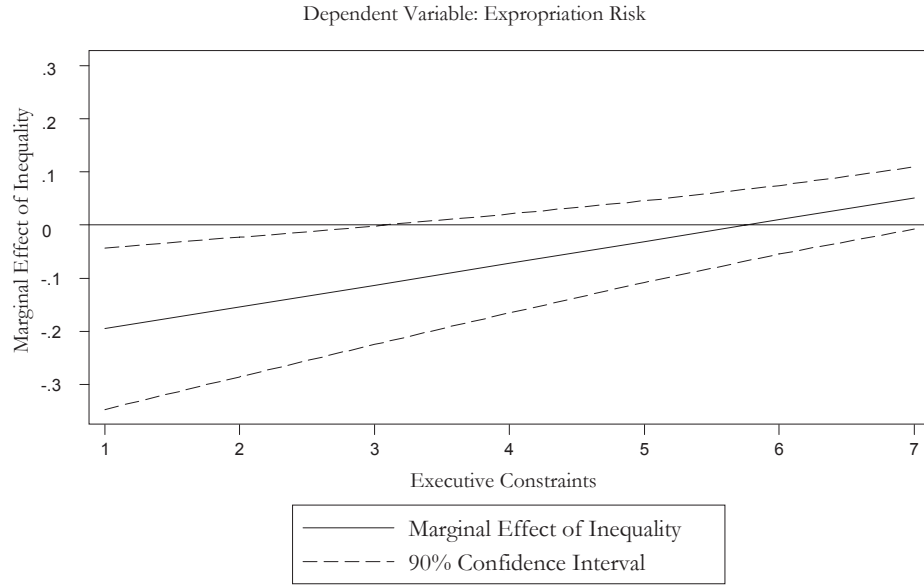
Model 4 presents the final component to this robustness analysis. This is a complicated model to estimate, since it must include multiple instrumented terms as regressors in an ordered probit model. One option would be to generate individual predicted (that is, instrumented) values of inequality and the interactive term and then use these estimates as regressors in the ordered probit using *expropriation risk* as the dependent variable. The Murphy–Topel correction could then be applied to standard errors in this second stage. An alternative, pursued here, is to consider the two stages as constituting a recursive equation system and estimate the models simultaneously. Estimation of these types of models is still very much in development. Here I follow Roodman (2009) and treat the first-stage instrumental variable regression as part of a recursive set of equations. The system is recursive because each equation demonstrates a unilateral causal dependence; the instrument predicts the

²³ Although not reported here, first-stage estimates meet the criteria for 2SLS applications described in Sovey and Green (2011). Regarding the relevance of the instrument *log wheat-sugar ratio*, the F -statistics are greater than 10 for each instrument (10.5 for the first-stage predicting *inequality*, and 20.6 for the first-stage predicting the interactive term). Tests for the exclusion restriction follow Easterly’s (2007) approach by including an additional potential instrument measuring the portion of the country located in the tropics. The Chi-square value from this test is 0.06 ($p = .81$), thus failing to reject the null hypothesis that additional instruments should be included in the estimation stage. For further discussion regarding instrumental relevance, see Bound, Jaeger, and Baker (1995) and Baum, Schaffer, and Stillman (2003).

²⁴ These probabilities are calculated using the *Clarify* package for Stata (King, Tomz, and Wittenburg 2000).

(A)

Marginal Effect of Inequality as Executive Constraints Changes



(B)

Marginal Effect of Executive Constraints as Inequality Changes

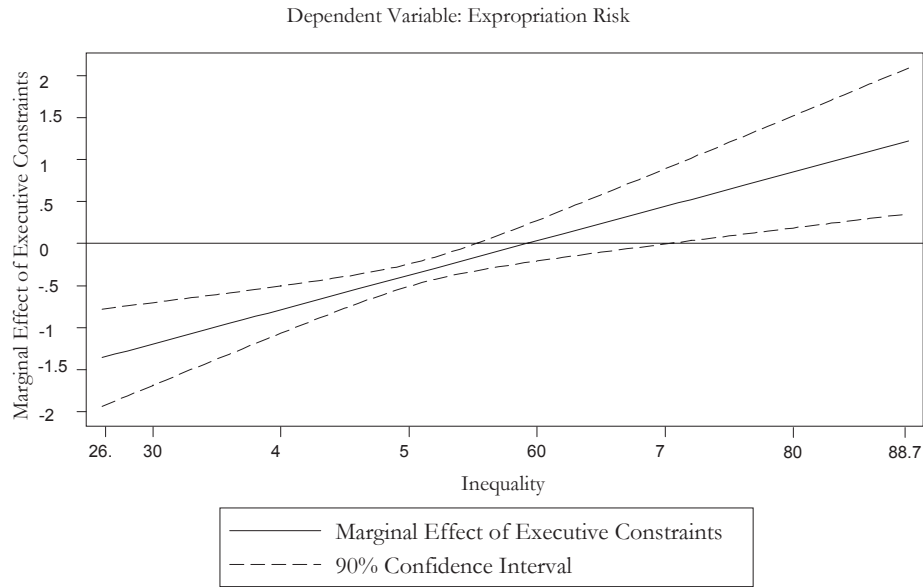


FIG 3. Marginal Effect Plots from Estimates in Table 1, Model 2

degree of income inequality, which in turn predicts risk of expropriation, but there is no simultaneous equations problem since expropriation risk does not influence the level of income inequality theoretically or empirically (Gujarati 1988; Wooldridge 2006). Roodman's (2009) procedure uses a maximum likelihood approach which allows the joint log-likelihood functions to be maximized simultaneously, increasing efficiency and removing the

necessity of any standard error corrections in the ordered probit model.

The results of this estimation procedure are presented in Table 1, Model 4. Note that only the full model in the second stage is reported. All reported coefficients continue to have the expected sign and statistical significance. The *inequality* coefficient is negative and significant, albeit at the 10% level, and the interaction term retains an almost identical

TABLE 2. Substantive Effects of Inequality at Different Executive Constraints Levels

<i>Exec. constraints percentile</i>	<i>Inequality</i>	<i>p (risk = 1)</i>	<i>p (risk = 2)</i>	<i>p (risk = 3)</i>	<i>p (risk = 4)</i>	<i>p (risk = 5)</i>	<i>p (risk = 6)</i>	<i>p (risk = 7)</i>
20	Low	.000	.000	.001	.007	.03	.02	.94
	High	.000	.003	.03	.11	.25	.08	.53
40	Low	.03	.07	.26	.32	.23	.03	.07
	High	.49	.26	.20	.05	.01	.001	.000
60	Low	.26	.26	.32	.12	.03	.002	.002
	High	.89	.08	.03	.004	.000	.000	.000
80	Low	.77	.15	.07	.01	.001	.000	.000
	High	.99	.01	.003	.000	.000	.000	.000

(Notes. Predicted probabilities based on results in Table 1, Model 3; “low” and “high” inequality defined as the 20th and 80th percentile, respectively.)

magnitude to the model without instruments (Model 3) and is highly significant. This continued relevance of inequality in all four estimation strategies constitutes robust evidence of the role of income inequality for determining levels of expropriation risk for foreign investment.²⁵

Implications and Conclusions

Focusing on the relationship between income inequality and the risk of expropriation for overseas investment helps resolve nagging questions about why, how, and under what circumstances income inequality shapes political outcomes. This paper developed an argument linking high inequality to a reduction in the credibility of host governments’ policies toward foreign investment. Consistent with this theory, the empirical results demonstrate that high levels of income inequality tend to raise the risk of expropriation when chief executive are highly constrained in their decision making and face competition from other branches of government. However, when executives are more autonomous and face few constraints, this effect is not present. Investors believe these executives, insulated from popular pressures, are unlikely to respond to inequality in ways which threaten their financial interests.

Careful empirical testing of this theory revealed that inequality also reduces the otherwise strong influence of political institutions on investment risk. As inequality increases, the protective influence of executive constraints weakens, until at mid-levels of inequality even highly constrained chief executives are unable to convince investors that their financial commitments are safe. Thus, inequality matters by directly influencing risk ratings and by mitigating the otherwise strong influence of political institutions on risk. These results are robust across a wide variety of estimation strategies including an instrumental variable approach to account for measurement error in aggregate estimates of inequality.

²⁵ To further establish the robustness of these results, I also estimated models (not reported here) using an alternative calculation of the Gini coefficient from Easterly (2007) and models substituting the standard regime indicator *Polity* for executive constraints. The results of all of these analyses were substantively identical to those reported above.

The principle contribution of this article, then, is to more clearly identify the circumstances where inequality has a formative impact on a specific political outcome. Nevertheless, the results make several other noteworthy contributions. For starters, it is clear that inequality’s influence can still be usefully understood through the median voter logic, though the emphasis is not on populist expropriations and nationalizations per se but rather the reduced credibility of host country policies in the eyes of foreign investors. Future research should examine this linkage further. For instance, do other institutional variations in host countries with high inequality, such as electoral systems or party structures, mitigate or enhance the credibility of foreign investment policies? Alternatively, can investors alleviate their fears by investing in certain sectors over others? The latter of these would require looking at actual FDI flows, not just risk perception, but could provide important insights into this complex relationship.

Second, the findings begin to paint a more compelling picture of the political roots of “good institutions” such as property rights. Despite the influence of these arguments in contemporary political economy, we lack a concrete understanding of the factors underpinning strong or weak property rights. The few studies that exist on this subject have highlighted concrete political institutions (for example, Weymouth 2011), but this paper shows that interests, in the form of different coalitions of individuals with distinct preferences, also influence the creation and maintenance of institutions for economic development.

Third, the findings suggest that future work would benefit from thinking carefully about the political consequences of inequality across regimes. Although Gallagher and Hanson (2009:67) have argued that “authoritarian rulers can face incentives similar to those facing democratically elected rulers” and that “they are not immune to redistributive pressures,” the focus of the research here suggests a different picture. Inequality has a decidedly stronger effect on risk in regimes where leaders do face constraints on their rule and limitations on their decision making; in short, the types of regimes where median voters are more influential. Unconstrained leaders may

find some form of redistribution necessary to continue their tenure in power, but it appears unlikely that these redistributive pressures are met in a way that renders their policies toward foreign investment less credible. Future research in this area would greatly enhance our understanding of the political impact of income inequality.

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