

How can China invest in Countries where others are Expropriated?*

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Abstract

Poor rule of law is usually a binding constraint for foreign investment and lending. But recently Chinese firms disproportionately invest overseas in countries with weak institutions. How do they manage this exposure? Our model appeals to China's buying power as importer and also to its within-country coordination to act like a single agent. These two factors allow China to credibly commit to sizable trade sanctions in case the host country expropriates. Thus, purchasing power is used to sustain other investments, analogous to trade-credit between a small firm and its main buyer. This additional "stick" becomes more important for FDI in non-traded goods, which face weaker enforcement of compensations post expropriation or devaluations. Using data on outward Chinese FDI (2003-2007) we find support for our model. First, China shows revealed comparative advantage as investor in countries with *both* poor institutions and a large share of exports going to China. In contrast, simply having poor institutions is not a robust predictor of the Chinese share of FDI, suggesting that the interaction with oligopsonistic power plays a role. Second, we find that the effect is concentrated in non-traded goods; giving also less traction to explanations in which multinationals prefer to own the assets producing the exported good (e.g. Antrás, 2003). Third is the intensive margin, with Chinese projects being 50% bigger in size than those of other countries in the same destination. Overall, our results suggest an additional channel in which Chinese growth would expand capital flows to developing nations.

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1 Introduction

Modern economic research remarks stable property-rights institutions as a crucial factor for investment, especially if foreigners need to trust your country's rules against expropriation or default. For example, both Wei (2000) and Alfaro et al. (2008) blame poor institutions as the reason *why capital does not flow from rich to poor countries*. Unfortunately, institutions are difficult and slow to change. So if your country happens to have weak institutions it is much harder that it receives badly needed Foreign Direct Investment (FDI) or a sovereign loan.¹

In this context of an "institutional trap" for capital flows, it would be very useful to explore alternatives to foster FDI in the medium run; meanwhile institutions cannot be improved. Although alternatives have been elusive, during the first decade of the twenty-first century China seems to have found a way to invest in countries with poor governance. In this paper we want to understand how is it that China can have this shortcut and in which conditions this strategy can potentially be generalizable. With that purpose, we build a simple model in which the Chinese can better coordinate to effectively conduct trade sanctions against expropriator countries that export a large fraction to China. We later find support for our predictions using Chinese FDI investments abroad.

In response to the adoption of the "Go Global" policy,² China's FDI abroad has increased rapidly since 2003, becoming a growing source of outward foreign direct investment (oFDI). According to *fDiMarkets* data, in 2003 China represented 1.9% of Global FDI, but only three years later it became 3% of the global investment; growing at an annual rate of 17.5%. Although China is still a small fraction of global FDI, it is growing three times faster than global FDI and more than twice as fast as Chinese GDP.³ More importantly for our purposes, in recent years China's outward FDI into developing countries has been growing, disproportionately being invested in countries with more limited rule of law⁴. Notably, this

¹In the paper we refer to the total amount of FDI. When countries get very high levels of financial development, foreigners may increase relatively more the portfolio investments and debt, as argued by Hausmann and Fernández-Arias (2000). FDI *may* impact growth either by relaxing financial constraints or by incorporating new production methods to the economy (either directly in multinationals or as a result of spillovers). Javorcik (2004) and Javorcik and Spatareanu (2008) explore FDI spillovers and argue that firms with joint foreign-local ownership are more likely to have spillovers in the economy. Having mentioned this motivation, though, this paper will neither focus on the effect of FDI on growth (e.g. Borensztein et al., 1998) nor in Chinese FDI in response to the international financial crisis 2008-2010, where other forces may be at play.

²The policy is initiated in 1999 by the Chinese Government to promote the domestic enterprises to invest overseas in order to increase Chinese FDI, seek the diversification on its production, improve the quality of projects, expand financial channels with respect to the national markets and promote Chinese enterprises' image in the EU and US market.

³See Table 14

⁴Furthermore, among developing countries, China has become a leading source of FDI in Africa. It is geographically diver-

pattern of investment into poor-institutions is also present when China lends to sovereign and parastatal companies. For example, Gallagher et al. (2012) shows that out of all the investments of Chinese banks in Latin America between 2005 and 2011, 55% of the US\$ 73 billion went to Hugo Chavez's Venezuela, 13% went to Argentina and 9% to Ecuador; all countries with poor sovereign credit ratings that also export an increasingly relevant fraction to China. In short, there is important motivating evidence that China is investing and lending where others perceive they will be expropriated. Our model aims to offer one explanation for why it makes sense for China to do so.

A recent literature - mostly from Management and Business scholars - explored the determinants of the overseas' expansion of Chinese firms. The majority of these studies confirm the perception that Chinese FDI is attracted by destinations with high political and economic risks (e.g. Buckley, Clegg, Cross, Liu, Voss, and Zheng, 2007 ; Quer and Rienda, 2011; Kolstad and Wiig, 2012) as well as by economies with abundant natural resources. From the point of view of classical theories this is puzzling, because good institutions can reduce risk and costs of doing business for foreigners (Blonigen, 2005). A few studies attempted to explain this "Chinese exception", but with a focus on non-economic narratives. One family of theories lean on the fact that many Chinese multinationals are state-owned, and their investment decisions reflect political objectives, not necessarily consistent with the profit-maximizing strategies of private companies (Morck and Zhao, 2008; Yeung and Liu, 2008). The second family of explanations emphasizes that the Chinese business environment - more prone to both corruption and market incompleteness than some developed Western economies - has been a good boot-camp, which endowed Chinese corporations with capabilities that grant comparative advantage to invest in countries with poor contract enforcement.⁵

In contrast to this existing literature, we propose a formal political economy model in which a large country (China) is the main buyer of the output exported by a small country. This grants the larger country a special protection for investing in the small country, because in case the small economy decides to expropriate FDI, then the large country (China) could credibly sanction quickly and unilaterally by blocking a large share of the expropriating country's exports. This additional "stick" facilitates the good equilibrium of the game; in which the large country invests, the small country resists the temp-

sified, covering 48 countries in the African continent (OECD, 2008).

⁵In the report: Bribe Payers Index, 2011, Companies from China and Russia were viewed as the most likely to pay bribes, besides of that, Bribery is seen as most common in the public works contracts and construction sector.

But there are many firm capabilities that Chinese firms have developed. For example the reader may want to look at Sanderson and Forsythe (2012) who describe how the China Development bank learned how to structure loans to Chinese towns and provinces to finance infrastructure, a capability which was later very useful in the process of helping Chinese firms investing abroad.

tation to expropriate and thus, the large country does not need to punish. Importantly, this additional “stick” is irrelevant in countries with good institutions and/or low probability of expropriation. In those situations, FDI and lending comes from other developed economies, the one that have lower opportunity cost of funds, but lack the credible punishment technology. In consequence, the main testable prediction of the model is that Chinese outward FDI would be disproportionately important in cases where the recipient country has *both* weak institutions *and* exports a large share to China.

We test this proposition looking at share of a country’s inward FDI that is coming from China during the period 2003-2007, finding that the FDI share of Chinese origin is significantly bigger in countries with poor institutions and high exports to China. For example, a country with poor rule of law that exports 25% to China could have more than 2 percentage points of additional Chinese share of FDI, which almost doubles the global average. On the extensive margin we also find results. Chinese projects are 50% larger in their dollar amount when compared with other investors in the same destination and industry. Both facts are consistent with the idea that China feels more protected from expropriation in these countries.

Previous papers have explored the co-occurrence of exports and foreign direct investment. For example Antras (2003) argues that due to organizational frictions multinationals prefer to directly control the establishments that produce what they import, instead of having just arm’s length trade. This theory of international vertical integration indicates a positive correlation between the share of inward FDI coming *from* a particular country, and the share of exports destined *to* that same country. Our theory also predicts a positive correlation between these two variables, but instead of concentrating in organizational contract incompleteness; we focus on the holdup problem arising from political economy considerations. In our theory we do not rely on vertical integration at home (we assume FDI is essential) , but focus on a sanction that impacts the expropriator government. Empirically, our theory can be distinguished from Antras (2003) because his theory explains this positive correlation only for FDI aimed at producing tradable goods (those that will be exported to, say, the US). In contrast, our theory also encompasses non-tradables that are subject to holdup due to relevant sunk investments, like infrastructure or even banking.

Functionally, our theory belongs to the general literature on international sanctions, usually discussed for reasons like sovereign defaults, trade and human rights.⁶ As in Eaton and Engers (1992) our model

⁶Obstfeld and Rogoff (1996) describe the complexities of punishing countries that default to their sovereign debt. Fuchs and Klann (2010) show how China uses its power to block imports to deliver a short-to-medium term punishment to countries that received the Dalai-Lama. Like them we emphasize trade as tool for retaliation Unlike them, we also show that this matters for economic rather than human-rights behavior of countries.

has a receiver and a sender; with credibility playing a central role. Unlike them, for tractability reasons, we keep the model finite because we also add a preliminary stage where different investors with heterogeneous technology bid for the right to do FDI in a recipient country. Our paper is also related to Dixit (2005), who shows that in situations of lawlessness a credible threat can foster investment. It is also related to the corporate finance theory on trade credit across firms; where the main buyer can be a source of credit because it has some power to punish - by blocking purchases - if it is not repaid⁷. Our innovation is to apply these principles to the case of multinational investment.

Dooley et al. (2007) ask a slightly different question than ours: why did China not expropriate past American FDI in their borders? Their explanation is that, given that a large fraction of Chinese international reserves are parked in the New York Federal Reserve, then any expropriation by the Chinese could have been sanctioned by retaining these reserves. This explanation may seem similar to ours, in the sense that there is a differential technology for punishment. Nonetheless several features render our mechanism more feasible and the sanctions more credible. The first challenge would be implementing those sanctions, since the incentives of the New York Fed and those of an American multinational operating in China are not aligned, with the US political system providing little room for a negotiation. In fact Maurer (2013) describes how the US - for national security reasons - institutionally isolated the Executive from investors' disputes overseas to reduce what he calls "*The Empire Trap*". In our case, we model this *within* investor-country conflict and argue that only China could act as a single agent because of the central planning nature of its economy and the involvement of the communist party in business, which facilitates the application of the Coase Theorem in intra-national negotiations. A second difference is that our sanctions entail an international conflict between a small country and China, unlike the China-US conflict in Dooley et al. (2007) which could create World War III, especially because the sanction of Dooley et al. (2007) is to a stock, while our story of export sanctions is just to the export flow. Finally, if the New York Fed were to block access to Chinese reserves, all financial instruments that were considered safe would no longer be perceived to do so, generating another global financial turmoil, which of course could impact more negatively the US than China. In short, our rationalization entails a more credible sanction.⁸

The mechanisms we model have precedents in history. In his essay "*National Power and the Structure of Foreign Trade*" Albert O. Hirschman (1945) describes how pre-WWII Germany politically controlled small

⁷For example, this happens in Agricultural contracts when a large firm has contracts for outgrowing the crop, as in Sugar cane. This connects us to the broader economic literature on the interlinking of contracts (for a review see Bell, 1988).

⁸Special thanks to Guillermo Calvo for pointing out Dooley et al. (2007)'s argument for FDI protection.

neighboring nations due to the threat of trade sanctions, since Germany was a crucial market for their exports. Along the same lines Schuler (2000) describes how in 1938 the Mexican government expropriated American (Standard Oil) and Dutch (Shell) oil investments to create Petroleos Mexicanos (PEMEX). The American government, which at the time was probably much less constrained to align itself with Standard Oil, immediately decreed trade sanctions. Moreover, the power of Standard Oil threaten tanker ships to avoid doing business with PEMEX. After all, Mexico ended up exporting its oil to Italy at a relevant haircut, just because the Fascist regime was already isolated and because Mussolini build a tanker ship for the Mexicans. Moreover, Maurer (2013) shows how Mexico at the end compensated US investors, indicating that the US threat was indeed credible. Our contribution to this historical literature is to formally model the mechanism and show that there is a modern equivalent in Chinese outward FDI, which we can explore with cross country quantitative empirical evidence.

Maurer (2013) also remarks that the US moved towards less direct involvement of US executive to protect investments after three institutional innovations that emerged during the last part of the 20th century. First is political risk insurance, which facilitated the ex ante pricing of risks rather the ex post gun-boat politics or trade sanctions. Second a system international investment disputes, which in the past were simply not allowed due to sovereign immunity. Third was the signature of bilateral investment agreements in which countries usually agree on arbitration procedures.

We think that the mechanism we study is not an obvious substitute for the above mentioned methods (including the World Bank's International Center for Settlement of Investment Disputes, ICSID), but maybe a complement for situations where the negotiation environment cannot provide enough expected penalty as to counter balance some countries' temptations to expropriate. In fact the ICSID is defined as a mechanism with "*facilities for conciliation and arbitration of international investment disputes.*", but not as a punishment device.⁹

In the model we also explore the circumstances under which Chinese investment might be efficient. When expropriation temptations are *an exogenous* characteristic of the recipient country, then an additional punishment tool for the Chinese simply extends the set of possible countries where investment can take place, which in our setting is Pareto improving. In that setup there are also rents for the Chinese FDI, even if we assume they may have lower productivity in their FDI. These rents arise because they are

⁹The Economist Intelligence Unit discusses the role of the ICSID in the 2012 expropriation of YPF by the Argentinean Government. It argues that "*the case seems likely to ultimately end up at the World Bank's International Centre for Settlement of Investment Disputes (ICSID), where a ruling on compensation could take years. Argentina has more outstanding cases at the ICSID than any other country, dating back from the 2001-02 debt default and devaluation, and has failed to abide by ICSID rulings to date.*" (EIU, April 27 2012. Article ID # 1588998943)

the only ones able to invest in those tough “sub prime” situations. In the model these rents are not bad by themselves, but symptoms of poor governance that prevents other (i.e. non-Chinese) potential investors to bid competitively. In an extension of the model we allow for a single re-investment possibility; which opens the room for an *endogenous* increase in the temptation to expropriate. Here we follow the tradition where the threat of autarky in the second round of investment sustains the cooperative outcome with low expropriation. But with a new investor that can securely re-invest in countries that were otherwise “sub-prime”, the autarky threat is no longer credible. This adds a second “moral hazard” effect that was not present in our benchmark model. In the short run, when investment is sunk, other foreign investors lose. But in the long run the developed country’s investors anticipate this Chinese-led-renegotiation, and they narrow down even further the set of countries that they consider “investment grade” for FDI, reducing investment by the multinationals that could have been the first best source of capital.¹⁰

Finally, it is worth contrasting our work with other research on the political economy of investment and China. First, some authors are concerned about the direction in which Chinese FDI impacts welfare of the recipient countries.¹¹ Although very important, the question of how FDI impacts growth and development is out of the scope of our current paper.¹² Second, many authors have remarked the relevance of political economy considerations in China. For example, Branstetter and Feenstra (2002) estimate how the Chinese government chooses economic policies to trade-off, on the one hand, the consumer benefits from *inward* FDI and exports and, on the other hand, the losses of State Owned Enterprises. In contrast, our work focuses on political economy issues when China invests *abroad*, so the relevant margin is how the Chinese government relates to *other* governments rather than the above mentioned internal trade-offs.

Nonetheless, we still argue that internal reasons are behind the comparative advantage of China as FDI source in tough destinations. Our point is that unlike in other large countries like the US, Chinese

¹⁰Having the option that the Chinese re-invest is analogous to having a renegotiation option for contracts. Similar results have been described in the analysis of micro-credit contracts, when the fact that other institutions lend in the same village make less likely that the borrower re-pays. Also in the lending relationships literature the existence of other banks may inefficiently reduce the incentives of banks to experiment by lending to new entrepreneurs (see Petersen and Rajan, 1995). One example to apply these principles could be the 2012 expropriation of oil company YPF by the Argentinean Government. If expropriation temptations are only exogenous, then having the Chinese re-investing in Argentina after the expropriation could be efficient. But if the Argentine government knows that the Chinese would re invest, they might be more likely to expropriate. In the long run this can make some non-Chinese investors to be much more selective on their lending

¹¹The main arguments is that, on the one hand, Chinese investment is really attractive for recipient countries with bad institutions which are seeking FDI to improve their economies, for example, it can offer the fresh capital to expand the local opportunities. On the other hand, there is a concern that the Chinese investment can be conducted with a view to exploiting their natural resources (Onjala, 2008;Haroz, 2011).

¹²Across countries, the question whether FDI causes growth and development is an important literature, but without many generalizable facts. Some contributions not already mentioned are Borensztein, De Gregorio, and Lee (1998) and Alfaro (2003).

winners from sanctions (i.e. firms investing abroad) and Chinese losers from sanctions (i.e. importer firms that break their trading relations) have an easier time negotiating under the umbrella of their single Communist Party.¹³

The paper is structured as follows. Section 2 formulates our theoretical framework, with some extensions that we leave for the Appendix. Section 3 summarizes the data and presents the basic stylized facts supporting our theory. Section 4 shows that our stylized facts remain robust to more formal testing in a regression framework. Section 5 argues that the findings seem unlikely to be a simple result of alternative explanations. Finally, section 6 concludes with some remarks.

2 Basic theoretical framework

This chapter introduces our basic model. The central assumption is that even if Chinese FDI may have lower productivity; China has a better punishment technology in case of expropriation, a combination that grants China comparative advantage as source of FDI in countries where expropriation concerns are a binding constraint for investment. Before describing the model, it is worth stopping for a second and explain what is the type of expropriation that motivates us. Although it is natural to think in a tradable natural resource like oil or minerals, which are vociferously expropriated *a la* Hugo Chavez or Cristina Fernandez¹⁴; we would like to focus on more subtle cases of non-traded goods with large upfront costs F , like roads, electricity grids, infrastructure or even banking. We argue that in the former case of tradable goods, if the government or a local firm have a large technological gap with the foreign investor, then even after a price shock that could have increase the temptation to expropriate, it might still be preferable to renegotiate the terms of the contract with the foreign company and divide the surplus. We think the problem might be harder for the above mentioned non-traded goods; for which it might be very hard to make customers pay for the service provided. This would be the case of electricity firms that are over-regulated with very low fares or the inability to have a paid-highway in a country with poor institutions and poor governments.¹⁵ As an illustration of this phenomenon, in the World Bank's Enterprise Surveys,

¹³Our work is associated of what has been recently called "*Chinese soft power*" in the International Relations literature (see Ellis, 2011). Our difference is that we explore this question with the tools of economics; with a formal model of an explicit game and quantitatively testing our theory.

¹⁴During his weekly live TV show, Hugo Chavez from Venezuela used to expropriate various firms and other types of property exclaiming the word "*expropiese*". Cristina Fernandez from Argentina announced on public TV the expropriation of YPF. A few days later she personally brought the expropriation law to the cemetery and left it in her husband's grave, tied with a string with the colors of the Argentine flag.

¹⁵In some cases is also tough for governments to allow free market prices for tradable goods, especially if there is a large fraction of consumption by households and their expenditures in that item are either salient or used by organized groups. In Venezuela gasoline is insanely cheap; in Argentina natural gas has very low prices. In contrast, beyond taxes, there is no current regulation for domestic Soybean price in Argentina, Coffee in Burundi or Copper in Chile.

the most frequent complaint of the surveyed firms in Africa was the lack of appropriate electricity.

2.1 Setup

This is a static partial equilibrium model where the cost of capital is not defined by foreign direct investment, but it is exogenously given. Our world has many small countries j , each one of them have predetermined rule of law and levels of exports x_j^i to one of the large countries i . Those long term institutional and trade patterns will be taken as given in this model, so we can concentrate on the decisions about FDI of large country i in each host country j . Just to clarify, the types of goods exported x_j^i are unrelated to the nature of FDI in this model, unlike in Antras (2003).

The perfect and symmetric information game has three periods: 0, 1, 2; which for simplicity does not include time discounting. Period $t = 0$ condenses the investment decisions, while period $t = 1$ has the expropriation decision and period $t = 2$ is about inflicting sanctions and realizing the payoffs.

In each small country there is an investment opportunity that cannot be financed by domestic investors so it is only performed if one large country i invests. The small country j is composed by a single agent, think of j 's government, that can make two decisions: (i) pick which foreign investor i would run the FDI project and; (ii) decide whether to expropriate or not expropriate FDI after the investment of size F is made. The way j decides is given by the following problem

$$\max_{i, exprop} u_j = \max_i \{b_j^i\} + exprop [e_j - \tilde{c}_j^i]$$

; where b_j^i is the endogenous bid an investor i is willing to pay for running the project, and naturally the recipient country j would prefer to have the biggest possible payment among all investors i . $exprop$ is a dummy variable for whether to expropriate or not. This will be determined by the net benefits of doing so $[e_j - \tilde{c}_j^i]$. The parameter e_j is the expropriation temptation, which is inversely related to the rule of law, while \tilde{c}_j^i is the maximum credible punishment that the country i can inflict to j in case it expropriates the investment. In particular, the sanction would be the fraction s in which the investor country reduces its purchases from the expropriator country j . This sanction s would be more punishing for country i if the government depends a lot from exports to finance itself, which we capture as τ ; and if the goods exported to i have a premium in their value when exported there, which we capture as ρ . More importantly, the higher the share exported to country i , the higher the punishment. We capture this relations with the following punishment $\tilde{c}_j^i \equiv (1 - \rho \cdot s \cdot x_j^i) \tau$. While e_j would remain an exogenous

country characteristic, the pair (b_j^i, \tilde{c}_j^i) will be determined by each investor countries.

There are $N + 1$ large countries that can potentially invest and these countries are, for simplicity, of two types: N countries are identical developed economies $i = DEV$, and the last investor country is $i = CHN$. To make it as simple as possible, each of these large countries is populated by two agents with incentives that are not fully aligned. One agent is the foreign investor and the other is an importer firm, that buys goods from all the small economies. Naturally, after the investment of size F is made, the investor firm in country i would benefit from a large *potential* sanction s , as a way to deter potential expropriations. But unfortunately the investor firm cannot decide the level of sanction s because it does not control trade with country j . That is a duty of the importer firm. The bargaining between the importer and the investor for the level of sanction s will be our shortcut to model the political process and the business-government relations. The utility of the investor is given by $u^{investor} = P \cdot s - z$; where P is the benefit of each unit of sanctions in terms of increasing reputation of being tough with expropriators; finally, the investor firms can make transfer payments z to other parties. The importer does not benefit from sanctions, but can produce them, generating a positive externality for the investor. Its utility is given by $u^{importer} = (1 - \phi) \cdot z - \psi(s, M^j)$; where $\psi(s, M^j)$ is the sanction cost function, which is increasing and convex in s , becoming even steeper when a large fraction of imports come from country j , M^j . Technically this requires $\psi_{sM} > 0$; $\psi_s > 0$; $\psi_{ss} > 0$. Notably, for every dollar of transfer z that the investor gives, only a fraction $(1 - \phi)$ reaches the importer. This “fee”, $\phi \in (0, 1)$, means a departure from a perfect Coasian solution to the externality problem. Below we make two essential assumptions.

Assumption # 1: *CHN* has lower internal negotiation frictions than other investor countries ($\phi^{DEV} > \phi^{CHN}$).

Here we mean that China is better at negotiating internal disputes between winners and losers of a policy. If you consider the imposition of a sanction, this creates both reputational benefits and lower expropriation concerns that overwhelmingly benefit the firms investing overseas. In contrast, the firms that were importing commodities from the just sanctioned country face the meaningful costs of finding new suppliers. Existing trading relationships are lost and the firm needs to incur in additional sunk costs to find a new producer. In a developed country those competing interest would lobby and exert pressure in government to impose sanctions, but this process takes time and we assume it is full of institutional frictions. In contrast, the Chinese government seems better at transferring utility across firms.

In particular, we view the complex career at the Chinese Communist Party as a technology to transfer utility from the decision makers in winning and losing firms. Another factor behind the assumption that $\phi^{DEV} > \phi^{CHN}$ is that the single party system in China could provide lower myopia about the future reputation of the country as investor, a concern that might be relatively more diluted in a multiparty democracy in a developed economy. Finally, no matter the specific reason for $\phi^{DEV} > \phi^{CHN}$, **our point is that China could act closer to a unitary agent.** This coordination has been implicitly assumed before. For example Blanchard and Kremer (1997) argue that Chinese authorities have higher coercive power vis-a-vis former Soviet republics. Maurer (2013) also describes how also the US acted like a unitary agent in cases of expropriation until the 1980s, approx¹⁶ We also need a second assumption related to oligopsonistic power

Assumption # 2: Valuable trading relationship

- (i) Asymmetric trade: China is relatively more diversified in its import sources, so M^j is small, and
- (ii) Re-locating exports to other countries after a valuable trading relationship is lost has steep convex costs.

China is a large buyer of products exported by economies with poor institutions, and each of these small economies are usually small producers without international market power¹⁷. The latter makes unlikely that a country by itself can threaten China by not sending its exports. China being a large buyer is interpreted as able to create a tougher punishment for expropriators; while China having a diversified set of countries that produce these goods fits in our model as a lower cost of sanctioning.

Note however that by market power we do not necessarily mean impacting global prices, but having a valuable trading relationship. It might be tempting to think that differentiated goods - in Rauch (1999)'s sense - are the only ones for which this may matter, since commodities are usually traded in exchanges. The trick is, however, that despite the existence of such formal exchanges, a large share of trade with China happens through relational contracts where the market price and the standardized characteristics of commodities are only *some* of the relevant attributes of the product, but not all. Logistics, delivery and processing are in fact central features of commodities like copper, coffee or soybeans. Sanderson and Forsythe (2012) remark how commodity purchases from China are based in contracts. Formally, we

¹⁶Our point has some similarities with Eaton and Fernandez (1995)'s claim that negotiation frictions among creditors can be an important friction in sovereign defaults. But this is a two edge sword, because it can be a better negotiation of the sanctions (if any), but also an easier renegotiation that could create moral hazard by the debtor. Our paper does not emphasize the coordination problems of creditors, but the negotiations between winners and losers of these sanctions within China.

¹⁷One exception might be Chile, which produces around 20-30% of global Copper. But Chile is a country that ranks very high in indexes of protection of property rights and foreign investment environment

need to assume that the costs of re-locating exports to a different country after being blocked by China are convex and steep enough, so finding new customers after being blocked by China is tougher than an export blocking from Denmark. Using again the Argentine example, Soybean oil is indeed a commodity traded in, among other places, the Chicago Board of Trade (CBOT). But despite this trade-ability and competition, the Chinese government was able to inflict a cost to Argentina because it took a while to re-direct an important fraction of the lost commerce with China. In contrast, China was easily able to source from Brazil and other producers.¹⁸ Another important assumption is that the large country is able to avoid triangulation of trade from one country to another (e.g. Argentine soybean oil shipped to Brazil and then redirected as “Brazilian” soybean oil). Although this is possible, and it certainly happens, the transaction costs are high¹⁹. The fact that China is a large importer of commodities is a necessary but not sufficient condition for being able to inflict punishment, since without significant frictions in the triangulation of trade the “punishment” would be ineffective.

There could be additional reasons we do not model that could be behind $\tilde{c}^{CHN}(x) > \tilde{c}^{DEV}$. For example, **reputational benefits might be higher** for countries that have a relatively recent history of investing abroad (e.g. the Bayesian updating about the toughness of Chinese punishment is higher when there are fewer observations, assuming signal precision is constant) as well as for countries with deep pockets that plan to significantly increase their quantity of outward FDI due to high liquidity.

Finally, to close the model in a simple way we argue that Chinese FDI is less productive so they do not outbid the developed economies in other countries.

Assumption 3: Productivity *Developed country’s FDI is more productive than the one for Chinese FDI: $\varphi^{DEV} > \varphi^{CHN}$*

Although the literature reviews cases where Chinese productivity is lower than in other countries, we should not interpret Assumption 3 at full face value, but instead think of it as a simple shortcut to condense all the non property-rights reasons why the multinationals from developed economies have relative advantages if they are not expropriated. This is defensible in the sense that despite being the second largest economy in the world, China has a much smaller fraction of Global FDI than other developed economies (see Table 14). One could dispense this assumption and move to a general equilibrium framework, but without obvious payoffs in terms of insights, so we chose this route.

¹⁸See this note <http://en.mercopress.com/2011/04/14/argentine-soy-oil-industry-diversifies-markets-following-china-s-ban>

¹⁹“According to Argentine sources, to access the Chinese market Argentine soy-oil must accept rebates of up to 30% per ton compared to the Brazilian soy-oil” cited from the link in the previous footnote

2.2 Solving for the equilibrium

Solving for the equilibrium level of sanctions The problem of the investor if expropriated is to get the highest level of sanctions, subject to avoiding veto of the importer (i.e. participation constraint on u^m) through the transfer z . Assuming the investor has all the bargaining power in a take it or leave it offer the problem becomes

$$\max_Y P(R) s - z \quad (1)$$

st

$$u^m(z, s) \geq 0 \quad (2)$$

$$z, s \geq 0 \quad (3)$$

Solving for z in Equation 2, which at the optimum would hold with equality, and then replacing in Eq 1 simplifies the problem to be an unconstrained optimization (because in our relevant case Eq 3 never binds). The problem is to pick s to maximize $P(R) s - \psi(s, M^j) / [1 - \phi]$; which implies a first order condition $P(R) = \psi_s(s, M^j) / [1 - \phi]$. Importantly, this characterizes an implicit function $s(\phi, M^j, R)$, and the impact of a higher negotiation “fee” on the equilibrium sanction is

$$\frac{\partial s}{\partial \phi} = \frac{-\psi_s}{\psi_{ss} (1 - \phi)} < 0$$

; importantly, country i 's social cost of punishment is given by the inefficiency in the negotiation $C^i = \phi z$, where z is the endogenous equilibrium transfer within country i .

On the recipient country we will not model all the agents, but simply assume that the utility of the recipient country's government is given by a direct or indirect proportional tax τ on exports. A good example is the Argentine Federal Government in Buenos Aires, which receives a significant share of revenues in the same form it did for the last 200 years: charging a direct or indirect fee to put grain on a ship. We also normalize total exports of country j to be 1, and assume that the trade sanctions do not necessarily make those exports to evaporate but generate a cost $0 < \gamma \leq 1$ per unit of sanction. The case $\rho = 1$ would be, for example, if the sanctioned export good previously sent to country i was a very differentiated good customized to country i ; in which all the costs of production are sunk and without any possibility to relocate to other markets in case of a sanction. In contrast, when $\rho = 0$ reallocation is costless. Our assumption is that $\rho > 0$ so it is costly to reallocate. In short, the utility of recipient country

j is $w^j = e_j - \tau \left[1 - \rho s x_j^i \right]$; where e_j is the temptation to expropriate. But since we assume that the base level of exports and taxes are exogenous to our model (determined by fundamental comparative advantage u other mechanism) we can simplify the utility of j 's government to be $w^j = e_j - \tilde{c}_j^i$; where $\tilde{c}_j^i = \tau \rho s x_j^i$ and $s = s(\phi, M^j, R)$ is determined endogenously in the negotiation within the investor country i . We want to show that the cost depends positively on the export share to country i , which is obvious from the definition of \tilde{c}_j^i ; but also that this dependence is disproportionately more important when the investor country i has better negotiation environment between the parties determining the sanctions (lower ϕ^i). This concept is simply.

$$\frac{\partial^2 \tilde{c}_j^i}{\partial \phi^i \partial x_j^i} = \tau \rho \frac{\partial s(\phi, M^j, R)}{\partial \phi} < 0 \quad (4)$$

; so the higher the frictions ϕ^i the lower the relevance of exports x_j^i for the credible punishment \tilde{c}_j^i .²⁰ If we assume that China, is a very large country that sources from many other destinations, then $\partial M^j / \partial x_j^i$ is never zero, but second order. In short, the asymmetric trade relationship where country i is a large share for j , but i is not fully dependent on j as source of exports is crucial for Inequality 4 to hold.²¹ Coordination costs for punishment matter because China has a tool to punish

Bidding for FDI Investors from each large country have productivity φ^i , generating output $Y(\varphi)$ with $Y'(\varphi) > 0$. The budget constraint is that output should be enough to pay for the sunk fix cost F , the

²⁰ It is important to stress that for the above result we have implicitly assumed that $\partial M^j / \partial x_j^i = 0$ or at least second order; which does not need to be true always since the share of imports by i coming from country j is $M_i^j = x_j^i / \sum_k x_k^i$. We did not make this explicit before to keep the calculation simple.

The equivalent cross derivative in Eq 4 when we take into account that $M_i^j(x_j^i) = x_j^i / \sum_k x_k^i$ is calculated by first:

$$\frac{\partial \tilde{c}_j^i}{\partial x_j^i} = \tau \rho \left[\frac{\partial s(\phi, M^j(x_j^i), R)}{\partial M^j} \cdot \frac{\partial M^j(x_j^i)}{\partial x_j^i} + s(\phi, M^j(x_j^i), R) \right]$$

; and then taking derivative with respect to ϕ

$$\frac{\partial^2 \tilde{c}_j^i}{\partial \phi \partial x_j^i} = \tau \rho \left[\frac{\partial^2 s(\phi, M^j(x_j^i), R)}{\partial \phi \partial M^j} \cdot \frac{\partial M^j(x_j^i)}{\partial x_j^i} + \frac{\partial s(\phi, M^j(x_j^i), R)}{\partial \phi} \right]$$

; for this to be negative we need that

$$\frac{\partial^2 s(\phi, M^j(x_j^i), R)}{\partial \phi \partial M^j} \cdot \frac{\partial M^j(x_j^i)}{\partial x_j^i} < \left| \frac{\partial s(\phi, M^j(x_j^i), R)}{\partial \phi} \right|$$

; note that $\partial s / \partial \phi$ is a negative number as proved before. Arguing that $\partial^2 s / \partial \phi \partial M^j$ is small is not the avenue we prefer. Instead, we claim that by China being a large country $\partial M^j / \partial x_j^i$ is very small.

²¹ An analogous *asymmetric* assumption needs to be made in the logic behind the reallocation costs ρ . For the sanctions to work we need that the cost of reallocation is large for the exporter and lower for the importer. We assumed that by simply omitting ρ from the cost function for the importer ψ ; yielding $\partial \psi / \partial \rho = 0$ which is sufficient but more stringent than what we need to make 4 hold.

benefit for the investor B and the benefit for the recipient country's government b . That means

$$Y(\varphi) - F = B + b$$

When there is more than one bidder, the rent B is (almost) zero since we assume all the bargaining power is on the recipient country (investors bid their true valuations in a second price auction). In that context it is straightforward to prove that equilibrium bids b^i would be just slightly below $Y(\varphi^i) - F$; while B^i would be close to zero ($B = \lim_{\epsilon \rightarrow 0} \epsilon$).²² In contrast, when only one investor is bidding, we assume that b^i is the result of Nash bargaining, in which they split the surplus 50-50 with the recipient country. This environment generates the following two lemmas, which could be summarized in Figure

Lemma 1. When maximum credible punishment that i can inflict is below the expropriation temptation ($\tilde{c}_j^i < e_j$), then the equilibrium strategy for i is to bid $b_j^i = 0$. In contrast, When the maximum credible punishment is large enough ($\tilde{c}_j^i > e_j$), then the investors with positive productivity bid $b_j^i > 0$.

We can solve for the optimal bidding in a second price auction. The optimal bidding for each investor is described in Figure 1. Note that as soon as $e_j < \tilde{c}^{DEV}$ then the developed economy always bids up to their full valuation and becomes the investor. When $\tilde{c}^{DEV} < e_j < \tilde{c}^{DEV}(x)$; then the Chinese realize that they are running alone, and given the Nash bargaining they get rents. They bid half their full valuation (which is equal to half the surplus created). Note that in recipient countries where exports to China are low (x_{low}^{CHN}), then China has no additional stick to punish and, thus, it is never the investor: $b^{CHN}(e_j, x_{low}^{CHN}) < b^{DEV}(e_j)$.

Given the assumption that all the surplus ends up in the recipient country (subject to the participation constraint of at least one investor i), we can get to our testable proposition if we assume that there is a population of small countries j with different exogenous levels of expropriation temptations $e_j \in [0, \infty)$ and exogenous levels of exports to China x_j , jointly distributed according to an arbitrary cumulative density function $\Lambda(e_j, x_j)$; with all countries playing the same game in partial equilibrium

Proposition 1. *Everything else constant, China has a higher share of overall inward-FDI in recipient countries that have both poor institutions and also a larger share of their exports to China.*

Proof. See Appendix and Figure 2

²²In that sense our modeling approach departs from attempts to offer optimal contracts that limit the temptation to expropriate (see for example Engel and Fischer, 2008)

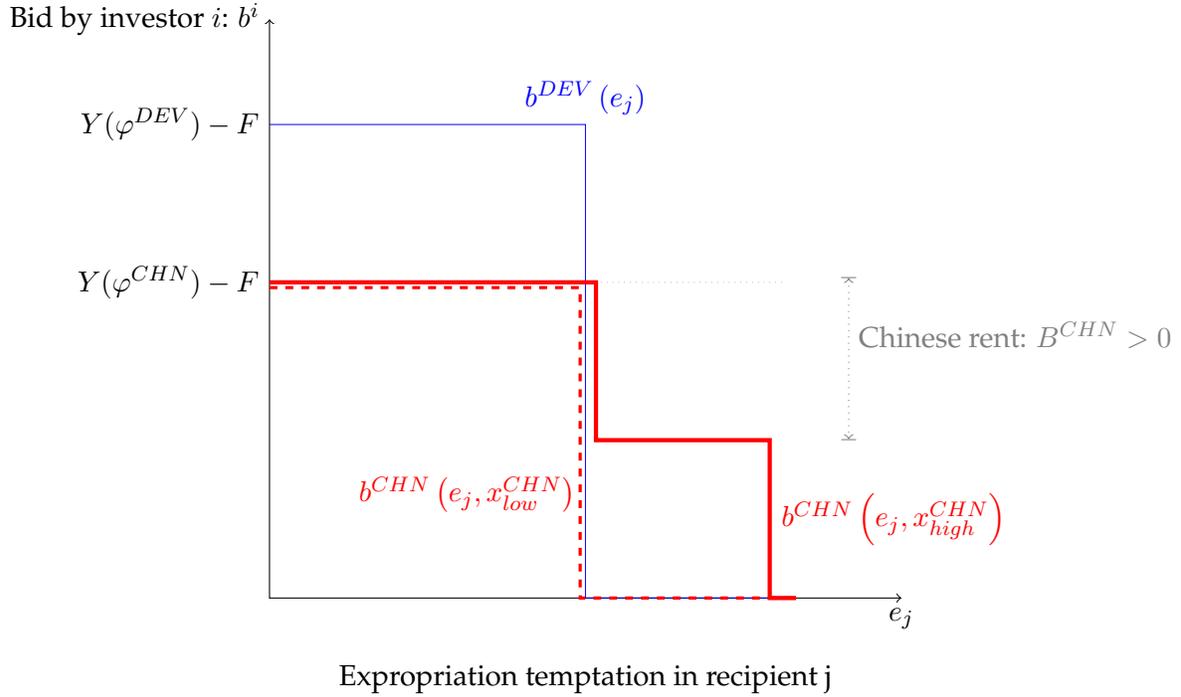


Figure 1. Equilibrium bidding schedules for each investor country i as function of the expropriation temptation in the recipient country e_j . Note that the Chinese bidding depends not only on e_j , but also on the share of exports to China x_j^{CHN}

Of course - given our simplified setup - each country would have either 0% or 100% of FDI coming from China. Here we follow Antras (2003) and verbally argue that there could be an additional source of randomness to have a smoother prediction with shares of Chinese FDI in each country to be a continuous variable as in our data. Formally model may not add additional insights at a cost of more mathematical burden.

2.3 Discussion of equilibrium.

Although a full dynamic model is beyond the scope of this paper, it's worth emphasizing why our mechanism might be different and more robust than other models. In our channel, the threat of damaging government revenues (quickly after expropriation) can improve the investor's expected returns even in a context of political instability. This differentiates our mechanism from bribes to the first "tollbooth government" (e.g. the one authorizing the upfront sunk FDI, like in the construction of an electricity grid). In cases of political instability every future government can be an additional "tollbooth" asking for bribes, in an inter-temporal version of Shleifer and Vishny (1993). In short, bribing the original regulator is not clearly not renegotiation proof because one cannot write a credible contract indicating that future

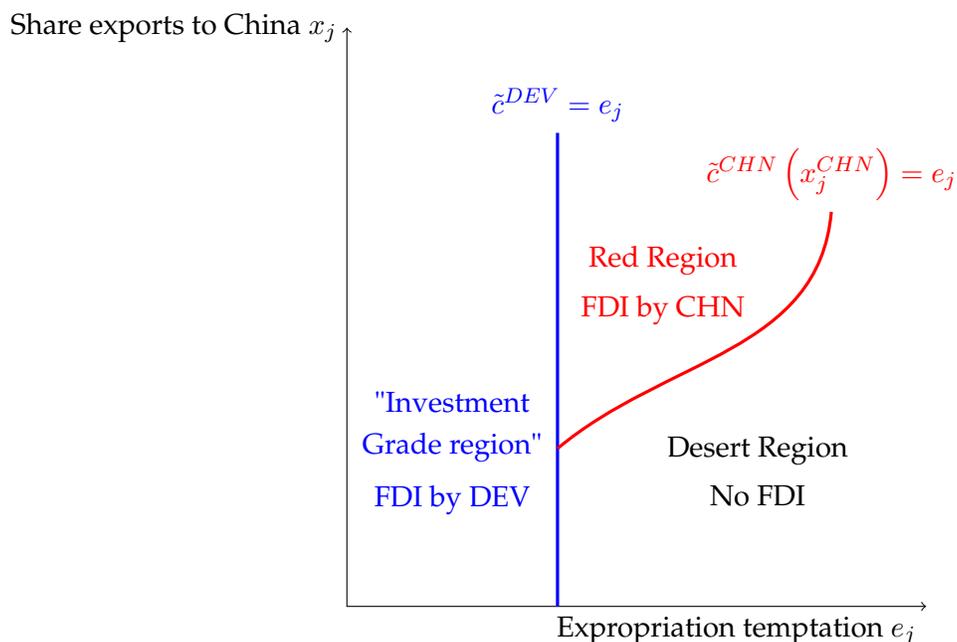


Figure 2. Characterization of the equilibrium on the different areas of the parameter space, depending on both the share of exports to China, x_j , and the expropriation temptation of the recipient country, e_j . We nicknamed regions according to who is investing.

governments would not ask for more money. Instead, our threat of trade sanctions can punish whoever is in power *in the future*, which can lower expropriation risk even for some cases of countries run by “roving bandits” with short horizons (Olson, 2000).

In the Appendix we extend our basic framework in three different ways to rationalize various historical events. First we explore the incentives to transfer FDI ownership from Developed economies to the Chinese in case there is an unexpected increase in the recipient country’s temptation to expropriate. This could be Pareto improving for investors since Chinese investors may face better property rights due to our mechanism. Second, we explore the welfare consequences when China invests in projects that were previously expropriated from other investors by the host country, what for simplicity we call “vulture FDI”. We argue that having the Chinese as an outside option for investment could reduce the “investment grade region” since punishing expropriators becomes tougher for developed economies. Autarky is no longer a credible threat when China can invest in sub-prime countries. Finally, we analyze the incentives to endogenously increase exports to China as a way to later use this relationship as a “collateral” that could make more Chinese FDI viable (see also 5)

Now we turn into the empirical sections to test our Proposition that China invests disproportionately in countries with *both* poor institutions and large share of exports to China.

3 Data and preliminary empirical evidence

3.1 Data sources and description

3.1.1 FDI Data from *fDi Markets*

Our FDI data comes from *fDi Markets*, a subsidiary of the Financial Times group, which is the only online database tracking FDI at the project-level covering all sectors and countries worldwide, providing data greenfield and expansion projects' capital investment. Mergers and acquisition as well as other equity investment are not included.²³ Comparing with the official aggregate FDI data compiled by the Ministry of Commerce of the People's Republic of China (MOFCOM); which includes mergers, acquisitions and equity investment; *fDi Markets* shows its advantages for our purposes. First, it is a disaggregated dataset that allows to follow greenfield investments in terms of destination, sector and business activity. Second, some authors (e.g. Salidjanova, 2011) argue that in general the MOFCOM data suffers from some opacity²⁴; while we do not necessarily agree with that statement, having data produced and compiled out of China, using a consistent methodology (and not simply collecting and harmonizing what each country reports) seems particularly useful given that we are working with countries with less than fully transparent institutions. Third is that *fDi Markets* data starts in 2003, almost at the beginning of the "Go Global" mandate for Chinese FDI abroad. Finally, focusing on new projects as opposed to M&A for existing capital makes it more relevant for development and not simply a transfer from one owner to another.

In the regressions we are just going to focus on the pre-2008 period to avoid the effect of the financial crisis. According to the database there were 1576 Chinese investments over the period: 2003-2010, representing 1.4% of the total number of FDI projects during this period in the world. Among all the Asian developing countries, China ranks second after India (2088, 1.9% of the total number of FDI). In Table 10, we see that the main destination is the Asian region, representing 20.74% of the total number of FDI projects (excluding Hong Kong and Taiwan). The US and Germany are the main recipient countries outside of Asia, with 8.44% and 8.38% of total Chinese FDI since 2003. As far as the distribution of the recipient countries by income level, the majority of Chinese outward FDI goes to high income countries. Our point is not that China is only investing in countries with poor institutions, but that it has a

²³For a paper describing the data see Alessia Amighini and Sanfilippo (2012)

²⁴The data from *fDi Markets* also counts with a set of other important information, such as employment estimates, although this information is beyond the scope of our paper.

comparative advantage on it. Overall, the trend of having more investments in Asia and in Developed Economies is consistent with a simple gravity model of FDI. Of course, in the regressions we control for this well known effect. Regarding the sectoral distribution in Table 9, slightly less than 2/3 of the Chinese FDI projects are in traded goods, and around a third is in non-traded sectors.

3.1.2 Other sources of data.

The share of a country's exports that are destined to China is calculated from the World Bank's WTI database (World Trade Indicator) as the value of exports from one particular country to China divided the total exports of this country. Table 12 in the Appendix shows the top 15 and bottom 15 countries according to this ratio..

The main institutional variable in our analysis is the Rule of Law index from the World Bank Institute's (WBI) Governance Indicators (cf. Kaufmann et al. 2008). The Rule of Law index measures "*the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence*". The index is normalized with mean zero and unitary standard deviation.²⁵ We will associate negative values of this measure as the empirical counterpart of poor institutions. To check for robustness, we also use similar WBI institutional indicators: Control of Corruption²⁶ and Regulatory Quality²⁷.

Additional control variables are GDP, culture and distance between the host economy and China.²⁸

In terms of economic and cultural distance we include standard controls like: Language, Distance to Beijing²⁹, Neighboring country, Colonial Relationship and being the same country in the past.³⁰ Table

²⁵The index ranges from -2.5 to 2.5, with higher numbers signifying better institutions. This index broadly reflects the arguments about the role of institution in attracting Chinese FDI: the study from Kolstad and Wiig (2012) indicates that Chinese investment is found to be attracted to resource rich countries with weak rule of law institutions.

²⁶This indicator reflects *perceptions of the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development*

²⁷This indicator reflects *perceptions of the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as "capture" of the state by elite and private interests.*

²⁸We also add a number of control variables that have been found to be of importance in previous studies of host country determinants of global FDI flows (see Chakrabarti (2001) or Blonigen (2005) for reviews).

GDP in many studies has been found to be robustly associated with FDI, and is commonly argued to reflect market size in host economies and hence market-seeking motives of investors (Buckley, et.al 2007, Cheung and Qian, 2008, Cheng and Ma, 2008). Nonetheless, Kolstad and Wiig (2012) suggests that market-seeking motives of investors are limited only for OECD countries. In our specification we control for flexible forms of GDP.

²⁹In fact, FDI is greater in nearby countries as in shown by Loungani et al. (2002).

³⁰Buckley, et.al 2007, it has confirmed that Chinese outward investment is associated positively with the proportion of ethnic Chinese in the host population. This argument suggests that Chinese firms will invest in countries with a large resident population of ethnic Chinese. According to the Buckley's analysis, such countries are mostly to be found in Asia, which accounts for some 88 per cent of all ethnic Chinese living outside of China, and the majority (66 percent) distributed more or less evenly among Indonesia, Thailand, Singapore and Malaysia, in where therefore the Chinese idiom is used to be the common language among their residents.

8in the Appendix displays a complete the list and description of all variables.

Table 1 reports some descriptive statistics for the estimation period. As mentioned before; we restrict the sample to exclude the years of the Global Financial Crisis of 2008-2009. Our estimation sample has 143 countries

Table 1. Summary statistics during the estimation sample period: 2003-2007

| Variables | N | Mean | SD | Min | Max |
|---|-----|-------|-------|--------|-------|
| Share of inward FDI coming from China (CFDI) | 143 | 0.029 | 0.106 | 0 | 0.998 |
| Export Share to China (exshare) | 143 | 0.04 | 0.093 | 0 | 0.751 |
| Rule of law (institution) | 143 | 0.068 | 0.976 | -1.691 | 1.951 |
| log GDP | 143 | 24.17 | 2.119 | 19.96 | 30.16 |
| 1if contiguous country (Contig) | 143 | 0.077 | 0.267 | 0 | 1 |
| 1ifcommon language or ethnicity (comlang_ethno) | 143 | 0.028 | 0.165 | 0 | 1 |
| 1if colony | 143 | 0.007 | 0.084 | 0 | 1 |
| 1 if Same country (Smctry) | 143 | 0.021 | 0.144 | 0 | 1 |
| Distance | 143 | 8.987 | 0.539 | 6.862 | 9.868 |

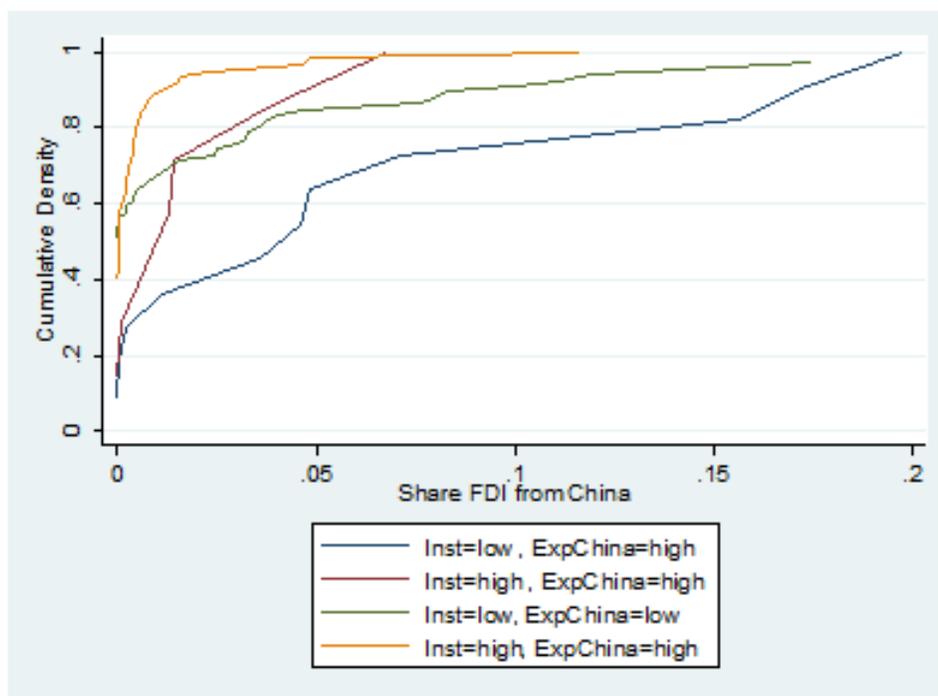
3.2 Preliminary evidence

The evidence supporting our theory comes even from a raw cut to s_{FDI}^{CHN} ; the share of FDI in a country coming from China. When we divide the sample in a two by two matrix, according to its level of institutional quality and exports to China, we clearly observe that the largest s_{FDI}^{CHN} are in countries with poor institutions that *also* ship a large fraction of their exports to China; precisely as in proposition 1.

Table 2 displays the means of s_{FDI}^{CHN} for each group indicating that conditional on exporting a large fraction to China, countries with poor institutions have twice as much share of Chinese FDI (5.8 pp instead of 2.4 pp). One could be worried that this difference in means might be simply the result of some zero investments or outliers. We graphically explore that possibility in Figure 3, which shows how the empirical cumulative density is shifted to the right for countries with poor institutions that also export a lot to China.

Of course many factors like distance and level of development of the country can be behind these differences. In the next section we explore our hypothesis correcting for these and other potential confounding factors using regression analysis

Figure 3. Empirical Cumulative Density of the FDI share coming from China, depending on the country's rule of law and share of exports to China



Each line represents a group of countries depending on whether they are above or below the average share of exports to China ($ExpChina: x^{CHN}$) and whether they have high or low rule of law (Inst). In the latter case the cutoff is zero given that the variable is naturally standardized with mean zero and unitary standard deviation. The distribution with poor institutions and high exports to China is statistically different from the rest (Kolmogorov-Smirnov test)

Table 2. Average shares of FDI from China by group of institutional quality and share of exports to China

(a) Average share of FDI received from China

| | Bad Institutions | Good Institutions |
|--------------------|------------------|-------------------|
| High Share X China | 0.058 | 0.024 |
| Low Share X China | 0.044 | 0.003 |

We define that if the institutional indicator of one country is greater than his average, so this country has a good institution, on the contrary, it has a bad institution; Also if one country has a high share exportation to China (great importing power), when his share is above on his average, on the contrary, it has a low share exportation to China (small importing power).

(b) Number of countries

| | Bad Institutions | Good Institutions |
|--------------------|------------------|-------------------|
| High Share × China | 19 | 14 |
| Low Share × China | 58 | 52 |

4 Regression analysis

Consistent with the theory and hypothesis formulated above, our empirical specification includes institutions and importing power (x^{CHN}) as well as their interaction as explanatory variables. More precisely, the main estimated equation is:

$$s_{FDI}^{CHN} j = \alpha + \beta_1 * institution_j + \beta_2 * x_j^{CHN} + \beta_3 institution_j * x_i^{CHN} + \gamma * Z_j + \mu_j + \varepsilon_j$$

where $s_{FDI}^{CHN} ic$ stands for China's share of overall FDI flow to economy i ; $institution_i$ stands for rule of law in economy i and x_j^{CHN} represents the country's export share to China. Z is a set of control variables discussed in the data section.

Our model predicts that $\beta_3 < 0$ meaning that when $institutions < 0$ (where zero is the normalized mean), then higher levels of exports to China are associated with more comparative advantage of China as an investor.

Since foreign investment is lumpy, we do not expect this relationship to hold year by year in our sample. As a result, instead of employing panel estimation techniques we restrict to a cross-section. We perform OLS estimations using the average of Chinese outward FDI to the recipient countries for the period 2003-2007.³¹

4.1 Extensive margin results

Tables 3 and 4 display the main evidence supporting our model, because the coefficient β_3 shows up as negative and statistically significant in a relevant range of cases.

In Tables 3 specification (2) we pool FDI in all sectors and find that the interaction between institutions and share of exports to China ($\hat{\beta}_3$) is significant; while the simple existence of Chinese importing power or Institutions do not appear as significant. A coefficient of minus 7.4 percentage points can be interpreted as additional 2 percentage points of Chinese FDI over the total, for a country that exports 1/4 of its value to China and has rule of law at the level of Argentina or Venezuela (i.e. $institutions \simeq -1$). When we decompose the effect between tradables and non-tradables in specifications (3) and (4), we observe that the aggregate effect that we reported on (2) was due to non-tradables; with a coefficient of a similar magnitude than in the aggregate. That means that the Chinese are disproportionately investing in infrastructure and other activities that they do not directly export.

³¹This is also consistent with other studies of FDI flows, which smooth FDI flows by using period averages. As mentioned before, to avoid our mechanism to be confounded with other phenomenon in the the Financial Crisis, we exclude the period 2008-2009.

Since the previous cross country regression might be subject to the “oranges and apples” problem of comparing countries that are radically different, in Table 4 we control for region fixed effect as well as by three dummies for income groups, as classified by the World Bank. Therefore, the estimates in Table 4 are now within region and group of similar income rather than across groups. Our previous conclusion supporting our hypothesis becomes even stronger with a point estimate of -12 percentage points; which could be interpreted as a 3 percentage point increase in in the share of Chinese FDI, when keeping the same example above.

In conclusion, our main results in these regressions reinforce the raw findings we presented in Section 3: China tends to invest disproportionately more in countries with poor institutions that *also* ship a large fraction of their exports to China.

Table 3. Linear regression explaining the share of country’s FDI coming from China. Basic specification; cross section of countries adding up 2003-2007.

| | Share of inward FDI from China: $s_{FDI i}^{CHN}$ | | | |
|--------------------------------------|---|--------------------|----------------------|-------------------|
| | (1) | (2) | (3) | (4) |
| Share Exports to China (x^{CHN}) | 0.163*** (0.002) | 0.032 (0.701) | 0.06** (0.052) | 0.112 (0.169) |
| $x^{CHN} \times$ Institutions | | -0.074* (0.096) | -0.079*** (0.001) | -0.04 (0.408) |
| Institutions | | 0.008 (0.613) | -0.006 (0.436) | 0.01 (0.578) |
| GDP per capita (log) | | -0.02 (0.219) | 0.004 (0.379) | -0.021 (0.200) |
| Population (log) | | 0.005* (0.063) | 0.003** (0.014) | 0.004 (0.128) |
| Distance (log) | | -0.012 (0.486) | -0.007 (0.581) | -0.006 (0.73) |
| Culture | No | Yes | Yes | Yes |
| Sector | All | All | Non Tradable | Tradable |
| Sample of Years | 2003-2007 | 2003-2007 | 2003-2007 | 2003-2007 |
| N | 143 | 143 | 141 | 135 |
| R^2 | 0.0208 | 0.0858 | 0.2073 | 0.0935 |

p-values in parentheses ***p<0.01, **p<0.05. *p<0.1 . Culture includes all the cultural variables indicated in the data section.

Table 4. Linear regression explaining the share of country's FDI coming from China. Basic specification; cross section of countries adding up 2003-2007.

| | Country's share of inward FDI from China: s_{FDI}^{CHN} | | | | | |
|--------------------------------------|---|----------------------|-------------------|-------------------|--------------------|-------------------|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Share Exports to China (x^{CHN}) | -0.034 (0.773) | 0.002 (0.963) | 0.076 (0.522) | 0.059 (0.606) | 0.13** (0.014) | 0.105 (0.276) |
| $x^{CHN} \times$ Institution | -0.088 (0.242) | -0.122*** (0.000) | -0.025 (0.752) | | | |
| Institution | -0.00002 (0.999) | -0.004 (0.651) | -0.0009 (0.97) | -0.004 (0.849) | -0.01 (0.304) | -0.002 (0.926) |
| GDP per capita (log) | -0.006 (0.799) | 0.002 (0.769) | -0.006 (0.82) | -0.005 (0.822) | 0.003 (0.667) | -0.005 (0.825) |
| Population (log) | 0.003* (0.533) | 0.003** (0.012) | 0.003 (0.505) | 0.002* (0.616) | 0.002** (0.079) | 0.003 (0.508) |
| Distance (log) | 0.01 (0.806) | -0.036 (0.128) | 0.024 (0.577) | 0.014 (0.721) | -0.03 (0.254) | 0.025 (0.532) |
| Culture Sector | yes All | yes Non | yes Tradable | Si All | Si Non | Si Tradable |
| | | Tradable | | | Tradable | |
| Region FE | yes | yes | yes | yes | yes | yes |
| Income Group FE | yes | yes | yes | yes | yes | yes |
| N | 136 | 134 | 128 | 136 | 134 | 128 |
| R^2 | 0.175 | 0.327 | 0.181 | 0.1728 | 0.2864 | 0.1808 |

p-values in parentheses ***p<0.01,**p<0.05. *p<0.1; clustered by region. Institutions correspond to rule of law as described in the appendix. To capture non linearities we include three income groups and five world regions as classified by the World Bank. Culture includes all the cultural variables indicated in the data section.

4.2 Intensive margin results

This subsection shows that Chinese FDI is also larger in size in countries where rule of law is a concern and when China is a large destination country. But first we do the exercise with only with FDI in tradable goods, which might relatively less sensitive to expropriatory devaluations. Table 5 shows that in the two subsamples of countries with poor institutions, no matter whether they export a lot to China or not, the Chinese projects tended to be bigger in size than other countries after correcting by size of the investor (GDP) distance and destination / industry fixed effects. Nonetheless in Table 6 we restrict to the non tradable sector, which as mentioned before could be more sensitive to poor rule of law. In that case we see more precise support for our prediction, where the China effect is large (50% bigger projects) for destinations with poor institutions and high share of exports to China, while the effect is insignificant in all the other three sub-samples. Our conclusion is that the size of the investments are also consistent with the mechanism in our model. The additional enforcement technology of the Chinese could support

a larger investment.

Table 5. Project size test for only tradable sectors

| Variable | 1. High export & Poor government | 2. High export & Good government | 3. Low export & Poor government | 4. Low export & Good government |
|-----------------------------|----------------------------------|----------------------------------|---------------------------------|---------------------------------|
| 1 if china is investor | 0.438** (0.019) | -0.057 (0.821) | 0.398* (0.074) | -0.756*** (0.000) |
| log GDP of investor | 0.236 (0.732) | 0.088 (0.937) | 1.076* (0.074) | -1.321* (0.062) |
| log Distance | 0.06 (0.293) | 0.087* (0.086) | 0.138** (0.014) | 0.019 (0.452) |
| Sample of Years | 2003-2007 | 2003-2007 | 2003-2007 | 2003-2007 |
| Sector | All | All | All | All |
| Fixed Effect (industry) | YES | YES | YES | YES |
| Fixed Effect (host country) | YES | YES | YES | YES |
| N | 4044 | 4277 | 2854 | 11505 |
| R^2 | 0.2485 | 0.2005 | 0.3720 | 0.1941 |

P-values errors in parentheses ***p<0.01,**p<0.05. *p<0.1

Source: Author's calculation

Table 6. Project size test for only non tradable sectors

| Variable | 1. High export & Poor government | 2. High export & Good government | 3. Low export & Poor government | 4. Low export & Good government |
|------------------------|----------------------------------|----------------------------------|---------------------------------|---------------------------------|
| 1 if china is investor | 0.53*** (0.001) | -0.046 (0.848) | 0.097 (0.757) | -0.18 (0.266) |
| log GDP of investor | 0.011 (0.984) | 0.335 (0.651) | -0.834** (0.04) | -0.205 (0.612) |
| log Distance | -0.036 (0.607) | 0.077 (0.164) | 0.14*** (0.007) | 0.011 (0.532) |
| Sample of Years | 2003-2007 | 2003-2007 | 2003-2007 | 2003-2007 |
| Sector | All | All | All | All |
| FE by industry | YES | YES | YES | YES |
| FE by host country | YES | YES | YES | YES |
| N | 2236 | 4738 | 2167 | 10176 |
| R^2 | 0.3967 | 0.2771 | 0.4542 | 0.2638 |

P-values errors in parentheses ***p<0.01,**p<0.05. *p<0.1

Source: Author's calculation

5 Exploring alternative explanations

Is intra-firm trade causing our results? Sending more FDI to destination countries from where you import more can be caused by *intra-firm trade*. For example, one can argue that the Chinese want to own the copper mines and soybean fields that produce the products they import; analogous to what Antras (2003) modeled for the case of the US; where almost 40% of imports come from intra-firm transactions. This channel obviously links FDI with import shares. Adding one more layer, one can argue that the value of ownership might be more important in places with poor institutions, where contracts are harder to enforce. This could potentially explain our interaction coefficient “Exports to China \times Institutions” ($\hat{\beta}_3$). In the International Business literature, there is a similar rationalization called “resource seeking” FDI, a view under which China may want to secure the resources it imports. As plausible as it sounds, however, this alternative explanation does not seem to explain our findings. The crucial counter-argument we provide is that this family of theories would predict that the tradable sector is receiving the disproportionate investment by China. But Tables 3 and 4 showed that the effect is not in tradable goods like copper or soybean; but in non-tradables like roads, transmission lines or banks. We are not claiming that the ownership of tradable assets is unimportant for China, but simply that our facts are unlikely to be explained by this alternative theory

Is the power and size of the country driving the results? One can argue that the results we observe are because China is a large country (second to the US in its share of global GDP); or because it has one of the largest armies in the world. In fact, in Box 1 we show a case in 1938 when the US quickly punished Mexico with trade sanctions for the expropriation of the American owned Standard Oil.³² If the same mechanism were driving our results, then we might observe in other large countries a similar pattern. We make precisely that falsification test using US investments abroad and export shares to the US. Unsurprisingly, we find quite different patterns for modern US investment vis-à-vis the Chinese pattern. First, for the US the coefficient on institutions is always positive and statistically significant. Moreover, the US has even larger comparative advantage for FDI in countries that export to the US, but that have *good* institutions. The coefficient on the interaction “Exports to China \times Institutions” is positive rather than negative, meaning that they tend to make more FDI with countries that have higher levels of rule of law. These results make less likely that our main tests are being confounded by this alternative

³²But we argue that US sanctions for FDI expropriations are less effective than when a few companies could easily control the political process.

explanation.

Table 7. Falsification test. Analogous to Regression Table ?? but for the United States instead of China as an investing source

| | (1) | (2) | (3) | (4) |
|-----------------------------|---------------------|--------------------|--------------------|--------------------|
| Importing Power | 0.377*** (0.000) | 0.37*** (0.001) | 0.413** (0.025) | 0.45*** (0.001) |
| Importing Power×Institution | | 0.029 (0.756) | 0.183* (0.09) | 0.09 (0.414) |
| Institution | | 0.06*** (0.008) | 0.04 (0.101) | 0.05** (0.021) |
| GDP | | 0.004 (0.73) | 0.0008 (0.946) | 0.007 (0.483) |
| Distance | | -0.04 (0.252) | 0.03 (0.544) | -0.08* (0.071) |
| Culture | No | Yes | Yes | Yes |
| Sample of Years | 2003-2007 | 2003-2007 | 2003-2007 | 2003-2007 |
| Sector | All | All | Non Tradable | Tradable |
| N | 132 | 132 | 131 | 126 |
| R ² | 0.1299 | 0.2788 | 0.2063 | 0.3437 |

P-values errors in parentheses ***p<0.01,**p<0.05,*p<0.1

Endogenous trade to get loans

For simplicity we treated trade with China (x^{CHN}) as a predetermined variable. Nonetheless, there are countries with poor institutions and with some exports to China, but not enough to sustain very large investments. Their lack of foreign finance may lead these countries to engage in further fundamental transformation - in Oliver Williamson's sense - and build a stronger relationship with China so they can later use it as "collateral" for a loan or investment. In terms of Figure 2 this would be a purposeful agreement with China to move the country vertically, from the gray zone into the red-zone where the relationship sustains investment. A relevant case seems to be Venezuela post 2008 which has received more than \$40 billion dollars according to Sanderson and Forsythe (2012). Box # 2 describes the case showing how the China-Venezuela deals increase credible punishment through the use of guarantees and commodity-based collateral. In short, although we are not modeling the endogeneity of trade, the main channel remarked in our paper is still present, since multi-market contact allows China to invest with less exposure to expropriation risk. (see also Section 7.3).

Other alternative explanations. Two related but different alternative explanations for our facts would be that the Chinese are either (i) giving “gifts” to the recipient country or are (ii) exploiting synergies between non-tradable goods and the product they export (e.g. building a road to get the product to the port). Regarding aid and gifts, they should not be recorded as FDI greenfield. Regarding synergies with exports to China, one can plausibly think that the firms/countries that benefit the most from exporting have incentives to build complementary infrastructure, as predicted by the theory of private provision of public goods (e.g. Bergstrom, Blume, and Varian, 1986). It is much less obvious, however, why Chinese firms do it through ownership rather than as an arms-length transaction, which would not be classified as FDI. Even if in some cases Chinese construction companies are building a particular infrastructure, that is not sufficient to understand why is it that they want to own the assets. One possible explanation is coordination. As described by Sanderson and Forsythe (2012) different Chinese firms in Ethiopia could build the infrastructure, finance the project, export the product, while another Chinese firm is the main buyer. Certainly firm capabilities are important for this coordination and in the same book there is an extensive discussion on how the China Development Bank learned first to invest in Chinese Provinces with relatively poor access to finance, and only then expanded massively overseas. This level of coordination is close to what Blanchard and Kremer (1997) remark happened in Russia until the 1980s, a form of coordination mediated by government coercion. But for operating overseas Chinese need to go beyond a strong national authority to coordinate. Thus, even in this more convoluted story one needs to have the buying power in the last stage of the game as a way to guarantee the stability of the other agreements, which makes us come back to the spirit of our model.

6 Concluding remarks

Modern economic research remarks rule of law almost as a prerequisite for investment, especially if foreigners need to trust your country's rules. Unfortunately, however, institutions are hard and slow to change. But despite this institutional inertia China has been able to lend to countries with poor rule of law, especially if they export a large share to China.

We explain this by the interaction of oligopsonistic power, combined with China's comparative ability to coordinate policy actions within the country and act as a single agent in case of expropriation. In short, we argue that that China could use this to create a superior commercial mechanism to enforce contracts overseas, mitigating the pervasive problem arising from the "*lack of a supranational legal authority, capable of enforcing contracts across borders*" (Obstfeld and Rogoff, 1996).

Our empirical analysis is consistent with our simple model of an "institutional shortcut" to secure FDI. First, Chinese FDI is disproportionately directed to countries with poor institutions when a large share of exports goes to China. In contrast, simply having poor institutions does not seem a robust predictor. Second, we find that the effect is disproportionately for FDI in *non-tradable* goods; meaning that our results are not explained by models in which multinationals prefer to own the assets producing what they import (e.g. Antras, 2003). Third is the intensive margin, with Chinese projects being 50% bigger in size than those of other countries in the same destination, but when both conditions are met: poor institutions and high export share to China.

We want to end by remarking two practical implications and a challenge. First, for non-Chinese multinationals our results suggest the potential benefits (although not the costs) of penetrating countries with poor institutions through a joint venture with Chinese companies. Even if Chinese multinationals may not provide knowledge of the destination market, which is one of the standard missing inputs remarked by Khanna and Palepu (2010), they can in principle provide better *de facto* property rights when that is the binding constraint for investment. What do we do not know, however, is how much of the joint investment would be backed by the "full power of the Chinese government". A second implication of our work is an additional channel in which high Chinese growth might expand capital flows to developing nations, since higher share of exports going to China could guarantee larger amounts of FDI and sovereign lending. To finish we have to acknowledge one data limitation of our study that forced us to focus solely on FDI, since we have good data by source. Future researchers may want to formally test our theory as better global data on Chinese lending to sovereigns becomes available.

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7 Extending the Model: acquisitions, re-investment and endogenous export-FDI relation.

Before testing Proposition 1 we would briefly discuss a additional predictions when we extend our basic framework We would consider three cases. First we explore the incentives to transfer FDI ownership from Developed economies to the Chinese in case there is an unexpected increase in the recipient country’s temptation to expropriate. Second, we explore the welfare consequences when China invests in projects that were previously expropriated from other investors, what for simplicity we call “vulture FDI”. Third we analyze the incentives to increase exports to China as a way to later use it as “collateral” that could make more Chinese FDI viable. The reader that is not interested in these additional predictions can simply jump to our empirical tests that continue in section 4.

7.1 Ex-post acquisition of the asset by another foreign investor

In our basic framework there is no motive for a change in ownership, but here we consider an increase in the expropriation temptation as a motive to rationalize Chinese acquisitions.

Imagine that after investment F is sunk but before the potential expropriation takes place (i.e. $t = 1$), the recipient country unexpectedly suffers an increase in its temptation to expropriate e_j , represented by an

horizontal shift to the right of a country j in Figure 2, which we'll denote Δe_j . For simplicity we assume that this jump had zero ex-ante probability in the beliefs of investors. We assume that the two foreign investors split the surplus of the acquisition in proportions α and $(1 - \alpha)$, remembering the host country cannot run the project on its own. In this context, there can be only one type of profitable trading: *a greenfield foreign investment originally made by the Developed economy is acquired by the Chinese investor*. If Δe_j is large enough so the host country has a new expropriation temptation $e_j^{new} = e_j + \Delta e_j$ in the "red zone" of Figure 2, then the Developed country's investors are expropriated, while Chinese are not, since the latter have better *de facto* property rights.

Additional_implication #1 *If a recipient country j with high level of exports to China faces a sudden and unexpected shift in the expropriation temptation Δe_j ; this happening after investment is sunk but before any expropriation takes place; then for some Δe_j the developed investor will sell the asset to the Chinese.*

Even if we cannot provide econometric evidence this extension of the model can explain what happened in early 2012; when the Argentine government started to explore the expropriation of YPF; the oil company controlled at the time by the Spaniard Repsol. During the months before the announcement of expropriation Repsol had an agreement to sell the assets to Sinopec; the State Owned Chinese Oil Corporation.³³ Under the light of our model, this move would be rational because Chinese investment would be more protected from expropriation, which is reflected in a higher asset valuations by the Chinese corporation.

7.2 Endogenous incentives to expropriate and "vulture" FDI

So far we have assumed that expropriation temptations are constant or have exogenous and unexpected changes. In that context, Chinese FDI was always constrained-efficient because it moved the frontier of projects that could get financed.³⁴ Now we will analyze a twisted version of the game where a recipient country's government can expropriate and then have a second period of "sub-prime" expropriation risk $e_j^{new} = e_j + \Delta e_j$. For simplicity let's assume that the original level of expropriation temptation was $e_j = \tilde{c}^{DEV}$; so it was the "worst" country that still had investment from the developed economy.

³³According to information published by the Chinese web newsletter caixin.com ; Sinopec had a non-binding agreement to purchase YPF's assets in Argentina from (the Spaniard) Repsol, valued \$15 billions. The next subsection explores why Sinopec may have decided not to buy the Argentinean asset given that China may re-invest *after* Argentina expropriated the Spaniard company

³⁴Even though the social return of these *additional* projects was lower since China had lower productivity

We now introduce the possibility of a single “continuation” game in which after the first investment is sunk, there is a possibility to develop a second investment. This creates a decision for the host country. If it expropriates the first round investor they would abandon the country and the only potential investors would be the Chinese. Is it worthwhile? The answer depends on costs and benefits

The additional benefits of expropriation for the host are given by e_j plus the potential future re-investment in the second period. But since e_j^{new} is now in the “sub prime” region, only China would invest assuming that exports to China are indeed high. But the host can face costs from changing the investor between the first and the second, with two effects that go in the same direction. First is that in the “subprime grade” region only the Chinese would invest and that reduces overall surplus by $\Delta Y \equiv Y(\varphi^{DEV}) - Y(\varphi^{CHN}) > 0$, given the assumption that the Chinese are less productive. Second, the Chinese now have bargaining power, since they are now the only potential investors in j . We assume a 50-50 Nash bargaining with the recipient government. Adding up these two channels reduces the second period bidding from $b^{DEV}(e_j^{Prime})$ to $b^{CHN}(e_j^{Subprime})$;

This combination of costs and benefits makes the host government to endogenously expropriate the first period investment if³⁵

$$Y(\varphi^{CHN}) > 2[Y(\varphi^{DEV}) - e_j] - F$$

Importantly, the *endogenous* temptation to expropriate in this modified game is increasing in the productivity of the Chinese: the closer China gets to the technological frontier (i.e. the smaller the gap $\varphi^{DEV} - \varphi^{CHN}$), then the more tempting to expropriate because the Chinese outside option is a better substitute to the developed economy’s FDI. We should contrast this with the case in which China was not a viable outside option (i.e. $\varphi^{CHN} = 0$), in which case expropriating countries would have been punished with autarky, which in our model means zero FDI and zero utility for j in reinvestment.

As Chinese productivity grows $\varphi^{CHN} > 0$, the entry of China would imply a lower punishment for countries that decide to expropriate and jump out of the “investment grade” region; creating a moral-hazard problem for the recipient country. In practice, here we are referring to an additional difficulty of sustaining collective punishment to expropriators, similar to the point raised by Bulow and Rogoff (1989).

³⁵The cost is $b^{DEV}(e_j) - b^{CHN}(e_j + \Delta e_j) = \{Y(\varphi^{DEV}) - F\} - \{\frac{1}{2}[Y(\varphi^{CHN}) - F]\} = Y(\varphi^{DEV}) - 0.5Y(\varphi^{CHN}) - 0.5F$. The inequality for investment is $Y(\varphi^{DEV}) - 0.5Y(\varphi^{CHN}) - 0.5F < e_j$

This additional moral hazard creates inefficiencies, because the option that the Chinese can invest in “sub-prime” places can shrink the “investment grade” region in the long run, as shown in Figure 4. Note that the development country’s anticipation reduces their “investment grade” region only when exports to China are above a threshold, because for low levels of x^{CHN} the threat for expropriators is still autarky.

Since in our model we assumed that $\varphi^{CHN} < \varphi^{DEV}$, this moral-hazard channel creates inefficiencies from the possibility of the Chinese making “sub prime” investment in what used to be an investment grade country. Note however that this moral-hazard channel that increases expropriation will not be there if China can commit itself to avoid “vulture” re-investing in countries or projects that just happen to be expropriated.³⁶ Some historical cases may fit this extension of the model, like Maurer (2013)’s account of Cuba’s turning into the USSR as an alternative investor given the tough punishments inflicted by the US after Castro took power.

***Additional_implication #2** The possibility of having Chinese re-investment after an expropriation to a developed country’s investor can, in the long run, reduce the investment grade region since autarky after expropriation to a developed country investor is less of a credible threat.*

7.3 Endogenous increase in exports to China to get more credit

In our basic framework if x_j^{CHN} is low then a host country with poor rule of law (i.e. high e_j) is in the “desert region”; where it is not incentive compatible for any investor i to enter. To get FDI, country j may need to increase its exports to China - which in an extension we could allow at the margin, looking like a vertical movement of the country in Figure 2, going from the “desert region” into the “red region” where only the Chinese invest. Although we do not model this choice of x^{CHN} explicitly, it is trivial to show that this can endogenously generate the simultaneous choice of higher exports to China and higher FDI from China. Note however that this endogeneity does not challenge the testing of our model. If agents understand the forces they’ll be using them to improve investment prospects.

***Additional_implication #3** Countries with poor rule of law and few options for credit may engage in an agreement with China to increase exports to that destination, build a valuable trading relationship, and then use that relationship as a collateral to sustain Chinese foreign investment.*

³⁶It’s worth saying that for simplicity and to fix ideas we have focused on the case of China as potential “sub-prime” re-investor, but the argument can go through with other potential “sub prime” investors after an expropriation.

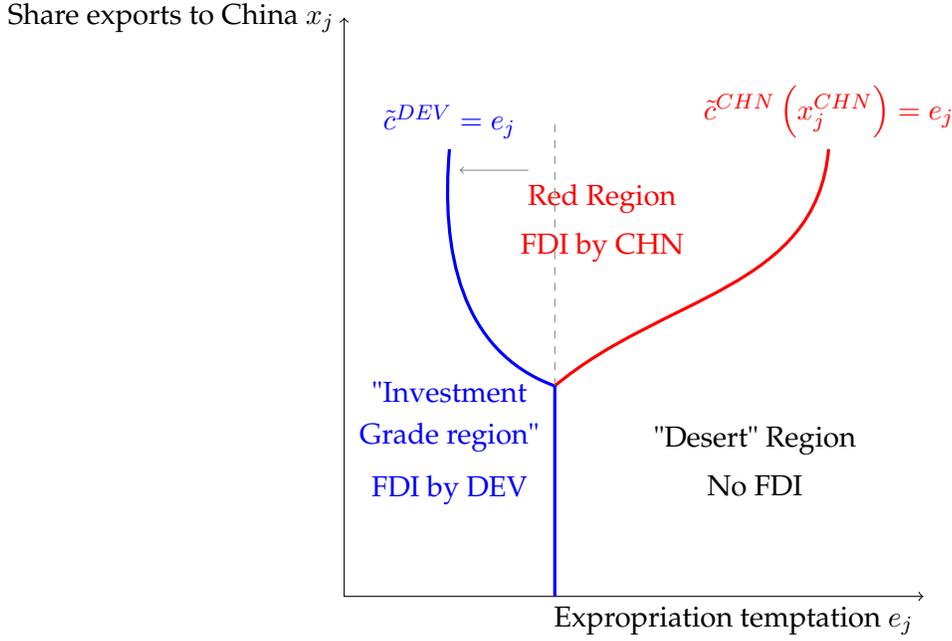


Figure 4. Characterizing the equilibrium of the game when China can re-invest in destinations that (endogenously) decided to expropriate. Note this is different from Figure 2 because the “investment” grade region shrinks in the countries that could get Chinese FDI. The gray dashed line depicts the equilibrium boundary between “investment grade” and “sub prime” region when China does not invest in previously expropriated places

8 Appendix: Proofs

Proof of Proposition 1

Assume that \tilde{c}^i represents the highest credible punishment for investor country i . Given lemmas 1 to 3; we know that $\tilde{c}^{DEV} < \tilde{c}^{CHN}$ and since we assumed that developed economies have more technology and, thus, the bids $b^{DEV} > b^{CHN}$ if these are non zero. Then for values $e_j < \tilde{c}^{DEV}$ the investor will be the developed economy. In contrast, for countries j where $e_j \in (\tilde{c}^{DEV}, \tilde{c}^{CHN})$ the investor will be China if we assume that $\Lambda(\tilde{c}^{CHN}) < 1$. Finally, for countries with $e_j > \tilde{c}^{CHN}$; both bids are zero and there is no investment. While the punishment strategy of the developed economy is not dependent on exports, we have assumed that $\tilde{c}^{CHN}(x_j)$ is increasing in x_j . If we now define the mean level of expropriation temptation, as \bar{e} ; and an analogous value for the exports to China \bar{x} ; then the share of points in the upper right quadrant defined by these two line in Fig 2 has a higher share of Chinese investment.

9 Additional Tables.

This section includes supplementary material. The first two tables describes the sources of data and classification. Table 8 focuses on the variables and details of the definitions used in the regressions, while Table 13 describes our classification of traded and non-traded goods using the industry categories in fDiMarkets' data. The next tables offer different cuts of the FDI data and exports. Table 9 displays the sectoral distribution of Chinese FDI. Table 10 cuts the same data but showing the geographic distribution of Chinese investments. Table 11 shows the list of countries in the sample and Table 12 describe the top 15 and bottom 15 countries in terms of share of exports to China. Table 14 plots the world rank of FDI origin countries by year during our sample.

Table 8. List of variables and description

| Nombre | Description | Source |
|---------------|---|---|
| CFDI | Share of country's FDI coming from China | FDImarkets |
| institution | Rule of law index | World Bank Institute |
| exchina | Share of exports to China | WTI (World Bank) |
| GDP | Log recipient country's GDP | WBDI 2010 |
| distance | Log Distance between China and recipient country | http:// www.cepii.fr/ |
| comlang_ethno | Dummy, 1 if a language is spoken by at least 9% of the population in both countries | http:// www.cepii.fr/ |
| Colony | Dummy, 1 for pairs ever in colonial relationship | http:// www.cepii.fr/ |
| smctry | Dummy, 1 if countries were or are the same country | http:// www.cepii.fr/ |
| contig | Dummy, 1 for contiguity | http:// www.cepii.fr/ |

Table 9. Sectoral distribution of Chinese outward FDI flows between 2003-2010.

| Sector | N° | % of total |
|---|-------------|-------------|
| Communication | 183 | 11.61% |
| Financial Service | 152 | 9.64% |
| Metals | 138 | 8.76% |
| Automotive OEM | 116 | 7.36% |
| Industrial Machinery, Equipment & Tools | 101 | 6.41% |
| Electronic Components | 95 | 6.03% |
| Consumer Electronics | 79 | 5.01% |
| Coal, Oil and Natural Gas | 77 | 4.89% |
| Business Services | 70 | 4.44% |
| Software & IT services | 65 | 4.12% |
| Business Machines & Equipment | 54 | 3.43% |
| Textiles | 47 | 2.98% |
| Alternative/Renewable energy | 41 | 2.60% |
| Consumer Products | 35 | 2.22% |
| Chemicals | 34 | 2.16% |
| Food & Tobacco | 31 | 1.97% |
| Other sectors | 258 | 16.37% |
| Total | 1576 | 100% |
| Tradable Sector | 991 | 62.88% |
| Non Tradable Sector | 585 | 37.12% |

Source: Authors' calculations based on *fDi Markets* data

Table 10. Geographical distribution of Chinese outward FDI flows between 2003-2010; by project.

| Country | N of projects | % of projects |
|-------------|---------------|---------------|
| USA | 133 | 8.44 |
| Germany | 132 | 8.38 |
| UK | 92 | 5.84 |
| Hong Kong | 88 | 5.58 |
| India | 83 | 5.27 |
| Russia | 72 | 4.57 |
| Vietnam | 56 | 3.55 |
| Taiwan | 45 | 2.86 |
| Brazil | 40 | 2.54 |
| France | 37 | 2.35 |
| Japan | 36 | 2.28 |
| Thailand | 34 | 2.16 |
| Singapur | 32 | 2.03 |
| Indonesia | 32 | 2.03 |
| Australia | 31 | 1.97 |
| Malaysia | 27 | 1.71 |
| Philippines | 27 | 1.71 |
| Spain | 27 | 1.71 |
| Italy | 26 | 1.65 |
| Netherlands | 26 | 1.65 |
| Others | 500 | 31.73 |
| Total | 1576 | 100.0 |

Source: Authors' calculations based on fDi Markets data

Table 11. List of countries in the sample

| Country name | | | | |
|--------------------------|--------------------|---------------|------------------|------------------------|
| Albania | Costa Rica | India | Mongolia | Slovenia |
| Algeria | Cote d'Ivoire | Indonesia | Morocco | South Africa |
| Argentina | Croatia | Iran | Mozambique | South Korea |
| Armenia | Cuba | Ireland | Namibia | Spain |
| Australia | Cyprus | Israel | Nepal | Sri Lanka |
| Austria | Czech Republic | Italy | Netherlands | St Lucia |
| Azerbaijan | Denmark | Jamaica | New Zealand | St. Vincent & Grenadin |
| Bahamas | Dominican Republic | Japan | Nicaragua | Sudan |
| Bahrain | Ecuador | Jordan | Niger | Swaziland |
| Bangladesh | El Salvador | Kazakhstan | Nigeria | Sweden |
| Barbados | Eritrea | Kenya | Norway | Switzerland |
| Belarus | Estonia | Kuwait | Oman | Syria |
| Belgium | Fiji | Kyrgyzstan | Pakistan | Tanzania |
| Benin | Finland | Latvia | Panama | Thailand |
| Bhutan | France | Lebanon | Papua New Guinea | Togo |
| Bolivia | Gabon | Lithuania | Paraguay | Trinidad & Tobago |
| Bosnia & Herzegovina | Gambia | Luxembourg | Peru | Tunisia |
| Botswana | Georgia | Macau | Philippines | Turkey |
| Brazil | Germany | Macedonia FYR | Poland | UAE |
| Brunei | Ghana | Madagascar | Portugal | UK |
| Bulgaria | Greece | Malaysia | Qatar | Uganda |
| Burkina Faso | Guatemala | Maldives | Russia | Ukraine |
| Cambodia | Guinea | Mali | Rwanda | United States |
| Cameroon | Guinea Bissau | Malta | Saudi Arabia | Uruguay |
| Canada | Guyana | Mauritania | Senegal | Venezuela |
| Cape Verde | Honduras | Mauritius | Seychelles | Vietnam |
| Central African Republic | Hong Kong | Mexico | Singapore | Yemen |
| Chile | Hungary | Moldova | Slovakia | Zambia |
| Colombia | Iceland | | | Zimbabwe |

Table 12. Top 15 and bottom 15 countries according to x^{CHN} , the share of exports to China (2003-2007)

| Top15 countries | | | Bottom 15 countries | | |
|-----------------|--------------|-----------|---------------------|------------------------|-----------|
| Rank | Country | x^{CHN} | Rank | Country | x^{CHN} |
| 1 | Sudan | 0.75 | 171 | Cape verde | 0 |
| 2 | Mongolia | 0.61 | 170 | Dominica | 0 |
| 3 | Cook Islands | 0.34 | 169 | Seychelles | 2.09E-10 |
| 4 | Benin | 0.31 | 168 | East Timor | 1.57E-08 |
| 5 | Yemen | 0.272 | 167 | St Lucia | 1.07E-05 |
| 6 | Oman | 0.27 | 166 | Bhutan | 3.54E-05 |
| 7 | Hong Kong | 0.26 | 165 | Djibouti | 4.82E-04 |
| 8 | South Korea | 0.21 | 164 | Grenada | 7.57E-04 |
| 9 | Japan | 0.13 | 163 | Yugoslavia | 7.71E-04 |
| 10 | Chile | 0.12 | 162 | Andorra | 9.80E-04 |
| 11 | Kazakhstan | 0.102 | 161 | St. Kitts and Nevis | 2.27E-04 |
| 12 | Peru | 0.100 | 160 | Bosnia and Herzegovina | 3.35E-03 |
| 13 | Australia | 0.099 | 159 | El Salvador | 8.98E-03 |
| 14 | Singapore | 0.089 | 158 | Lithuania | 1.33E-03 |
| 15 | Philippines | 0.089 | 158 | Kuwait | 1.48E-03 |

Source: Authors' calculations using World Bank's www.wits.worldbank.org. $x^{CHN} = (X_i \text{ to China}) / (\text{Total } X_i)$

Table 14. Main sources of outward FDI (Billions of dollars), 2003-2007.

| Rank | Year | | | | |
|-------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------|
| | 2003 | 2004 | 2005 | 2006 | 2007 |
| 1 | USA 173 | USA 166 | USA 152 | USA 164 | USA 208 |
| 2 | UK 67.3 | Japan 89.7 | Germany 58.7 | UAE 114 | UK 72.9 |
| 3 | Japan 55.2 | Germany 51.8 | UK 54.8 | Germany 69.8 | Germany 72.5 |
| 4 | Germany 54.7 | UK 41.7 | Japan 49.7 | UK 55.6 | Japan 70.6 |
| 5 | Canada 41.6 | France 35.3 | Canada 40.8 | Japan 48 | UAE 57.4 |
| China | 13. China 14.1 | 17. China 12.3 | 18. China 9.69 | 17. China 18.9 | 8. China 29.9 |

Source: Authors' calculations with data from fdiMarkets

Box 1. In the past the US imposed strong and fast trade sanctions to expropriator countries

In the past, the US had events of relatively fast and powerful trade retaliations after the expropriation of American companies abroad. According to the historical account of Schuler (2000), in 1938 the US imposed trade sanctions after the Mexican Government expropriated the Oil companies operating in Mexico. He indicates that the powerful and non counterbalanced lobby of the expropriated oil companies was a crucial requirement to get this fast retaliation. The Dutch and British, whose companies were also expropriated, displayed trade sanctions against Mexico, as well as an important diplomatic power to avoid other countries to cooperate with Mexico. After unsuccessfully looking at new buyers in democratic countries, the newly created State Owned Enterprise PEMEX re-directed its oil exports to the Fascist governments in Italy and Germany. Since Mexico had a hard time trading with various countries, many agreements included barter, like the Italian-Mexican agreement of 1939 to exchange Mexican Oil for Italian Synthetic Fiber (rayon) and also oil Tankers. Schuler (2000) not only describes in detail the problem of the Mexican authorities to find other buyers for their oil, but also the trouble to find logistics companies that were not afraid of losing their long term relationship with Standard Oil and Shell. Ultimately, Mexico sold its oil; pretty much like Argentine soybean oil exporters have been able to reallocate their production after a few years. But this takes time and reduces the flow of profits and tax revenues. The real costs and the destruction of valuable trading relationships are true and expensive costs that cannot be under-emphasized, even for commodities.

Box # 2. Chinese investments in Venezuela

Even if Venezuela exported significant oil to China, for geographic reasons they export a large share to the US. So to increase lending and FDI they needed further guarantees. And they did it. On the one hand they set up an account in a Chinese bank where oil revenues will be payed in advance. This means this stock of money would be lost by Venezuelans in case they default on their contracts. On the other hand, Chinese-controlled ships take possession of oil during their travel from Venezuela to the US, owning the product in during travel. Therefore, any expropriation would be even more painful for Venezuela since would be losing also their exports in transit to other important markets. Overall, this could be summarized by the words of the Governor of the China Development Bank (CDB) in 2011 *“We believe at CDB we have in place a comprehensive risk control mechanism. Most of the loans are related to the commodity trade, and as we see oil prices are rising and China as one of the major importers of oil, and we think to put in place a servicing mechanism such as oil for loans, we are effectively keeping the risks to a minimum level”* (Chen Yuan, quoted by Sanderson and Forsythe, 2012)

Table 13. Sector Classification as Tradable and Non-Tradable

| Tradable sectors | Non Tradable sectors |
|-----------------------------------|------------------------------|
| Aerospace | Alternative/Renewable energy |
| Automotive Components | Business Services |
| Automotive OEM | Communications |
| Beverages | Financial Services |
| Biotechnology | Healthcare |
| Building & Construction Materials | Hotels & Tourism |
| Business Machines & Equipment | Leisure & Entertainment |
| Ceramics & Glass | Real Estate |
| Chemicals | Software & IT services |
| Coal, Oil and Natural Gas | Space & Defense |
| Consumer Electronics | Transportation |
| Consumer Products | Warehousing & Storage |
| Electronic Components | |
| Engines & Turbines | |
| Food & Tobacco | |
| Medical Devices | |
| Metals | |
| Minerals | |
| Non-Automotive Transport OEM | |
| Paper, Printing & Packaging | |
| Pharmaceuticals | |
| Plastics | |
| Rubber | |
| Semiconductors | |
| Textiles | |
| Wood Products | |