Corruption and foreign direct investment phases: The moderating role of institutions

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Abstract

We examine the effect of corruption and institutions on inward foreign direct investment (FDI) along different investment phases in host countries. We contribute to the literature by distinguishing the propensity and the stock of FDI to better clarify the relationship between corruption and FDI, and by substantiating an integrated formal and informal institution-based view. The results support both the 'corruption as sand' theory and the 'corruption as grease' theory after controlling for the location selection processes of multinational enterprises. We also show that investment freedom and press freedom negatively moderate the relationship between corruption and the propensity and the stock of FDI. Our conclusions may inspire governments in their policy decisions towards controlling corruption and promoting FDI.
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INTRODUCTION

Defined as 'the abuse of entrusted power for private gain' (Cuervo-Cazurra, 2016, p. 36), corruption is widespread in countries where institutions are weak and where public officials enjoy discretionary and monopoly power (Aidt, 2003; Tanzi, 1998). How does corruption affect foreign direct investment (FDI)?[1] Despite a large number of studies (Barassi & Zhou, 2012; Cuervo-Cazurra, 2008; Egger & Winner, 2005; Habib & Zurawicki, 2002), how corruption affects a country's inward FDI is still ambiguous. On the one hand, some research points out that 'corruption as sand' hampers FDI (Javorcik & Wei, 2009; Wei, 2000). On the other hand, other studies argue that 'corruption as grease' is probably not bad for FDI (Barassi & Zhou, 2012; Egger & Winner, 2005). The Organization for Economic Co-operation and Development (OECD) Foreign Bribery Report (2014) demonstrates that even though governments have set laws, regulations, and policies on corruption, some multinational enterprises (MNEs) are still willing to pay bribes to obtain competitive advantages. How does corruption possibly have both positive and negative effects on FDI? Our research addresses this gap by analyzing the mechanisms of how corruption affects FDI positively and negatively in an integrated framework. Given that

**Corruption and foreign direct investment phases** Jingtao Yi et al.

168

international business strategies are often embedded in institutional conditions (Peng, Wang, & Jiang, 2008), we focus on formal and informal institutions, which we expect will help clarify the relationship between corruption and FDI.

The findings that corruption may foster inward FDI seem counterintuitive, because corruption would significantly add to the costs of entry and the costs of operations for MNEs (Habib & Zurawicki, 2002; Kaufmann, 1997). However, corruption can also be efficiency-enhancing in overcoming cumbersome bureaucratic procedures (Aidt, 2003; Field, Sosa, & Wu, 2003), which is especially true in many developing counties (Cuervo-Cazurra, 2008; Zhou & Peng, 2012). Given the two opposing views, we argue that the overall effect may be heterogeneous for MNEs in different investment *phases*, especially for firms willing to participate in corrupt actions. Corruption may act as barrier to entrants for its high costs and uncertainty, while it may help incumbent firms that are ready to deal with corruption to gain advantages (Zhou & Peng, 2012).

The locations for FDI are strategically chosen, not randomly selected, by MNEs (Barassi & Zhou, 2012). In the selection process, MNEs need to balance the costs and benefits of the investment in a country that exhibits more corruption. For entrants, corruption acts as an entry barrier (Campos, Estrin, & Proto, 2010) and creates additional costs (Kurtzman, Yago, & Phumiwasana, 2004). This supports the 'corruption as sand' theory on FDI (Mauro, 1995). However, according to the 'corruption as grease' theory, if the benefits from corruption outweigh the costs, MNEs may choose to take the risk and be ready to stretch advantages through corruption. Once MNEs select a country with increased corruption, that corruption may instead act as 'grease' for operations to gain more benefits (Rose-Ackerman, 1975). Therefore, we make distinctions between propensity and stock of inward FDI by recognizing the discrepancy between the likelihood of MNEs to choose invest in a corrupt host country and the stock of their increased investment.

By studying a sample of 38,768 bilateral FDI country pairs, we find that host-country corruption tends to reduce FDI propensity in the *pre-entry* phase, and that corruption results in higher FDI in the *post-entry* phase. The results support that institutions, both formal and informal, negatively moderate the relationship between corruption and FDI (in both propensity and stock). Figure 1 illustrates our research framework.

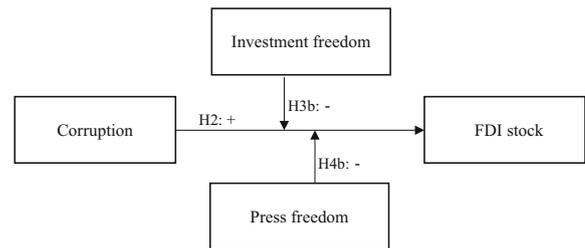**(a)** *Pre-entry phase*
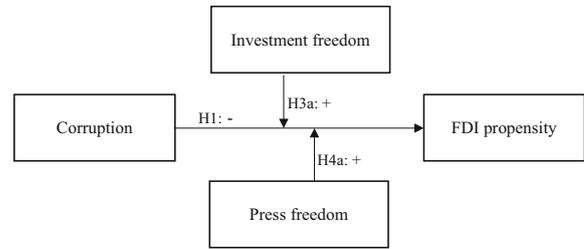
(b) *Post-entry phase*

Figure 1 Conceptual model.

Our study endeavors to make two contributions. First, by distinguishing the two phases of FDI (pre-entry and post-entry), we re-examine the triggering and enhancement mechanisms of how corruption affects the investment decisions of potential entrants and incumbent firms. Second, this paper contributes to the institution-based view of business strategy (Meyer & Peng, 2016; Peng et al., 2008) by clarifying the relationship between corruption and FDI under different institutional conditions. The existing literature typically has a focus on formal institutions (i.e., laws and regulations). Our study further identifies informal institutional conditions (i.e., religion and media) that may influence the relationship between corruption and FDI. By integrating the differential impacts of institutions, our study helps establish boundary conditions for the causal relationship between corruption and FDI.

THEORY AND HYPOTHESES

The ownership, location, and internalization (OLI) paradigm provides insights for FDI activity (Dunning, 1988). Of the three elements, location has attracted much attention. The location of FDI is driven by markets, resources, efficiency, and strategic assets (Dunning, 1998; Peng, 2017). Location is important in FDI decisions due to the linkages of spatial effects on MNE performance. Thus,

Corruption and foreign direct investment phases   Jingtao Yi et al.

169

identifying the factors exerting the strongest impact on investment is important.

Previous studies address corruption as one of the key factors reflecting the attractiveness of a location (Habib & Zurawicki, 2002; Wheeler & Mody, 1992). Corruption is determined by a country's institutional environment, relating to bribes, bureaucratic inefficiency, and economic and political risks (Cuervo-Cazurra, 2016; Habib & Zurawicki, 2002; Stevens, Xie, & Peng, 2016), which foreign investors may take into account for FDI location decisions. Previous studies have two competing views of the consequences of corruption on FDI: a negative one that sees 'corruption as sand' that limits the incentives of FDI, and a positive one that sees 'corruption as grease' that enables the MNEs to operate more effectively. We argue that the asymmetric effects of corruption on FDI in different investment *phases* can account for such apparent theoretical contradictions.

FDI and 'Corruption as Sand'
As a negative view, the 'corruption as sand' theory identifies how corruption creates additional costs and uncertainties for MNEs, leading to a reduction in FDI (Cuervo-Cazurra, 2008; Habib & Zurawicki, 2002; Wei, 2000). This theory is supported in three ways. First, corruption increases the costs (Kaufmann, 1997; Murphy, Shleifer, & Vishny, 1993) and time (Habib & Zurawicki 2002) of doing business. Second, in the case of firms that choose to participate in corruption, firms must devote resources to managing bribes, reducing profitability (Kaufmann, 1997). Third, since bribery is illegal and corruption contracts are not enforceable in courts, MNEs have to bear additional contract-related risks and uncertainty (Boycko et al., 1993; Cuervo-Cazurra, 2008; Pinkham & Peng, 2017). Hence, corruption has a negative effect on FDI because doing business in the host country results in increased costs and uncertainties for MNEs.

Furthermore, studies have looked into the consequences of corruption for the host economy. First, economic growth and investment may suffer from corruption (Gupta, Davoodi, & Alonso-Terme, 2002; Mauro, 1995; Murphy et al., 1993). Second, corruption may reduce the productivity of public resources (e.g., infrastructure) (Bardhan, 1997; Lambsdorff, 2003). For these reasons, corruption decreases a country's attractiveness.

The disadvantages mentioned above present disincentives for foreign investors, especially during their pre-entry location selection process.

Corruption is often ranked as one of the most important barriers for entrant firms (Campos et al., 2010). To distinguish from incumbent investors already in a host country, we argue that the negative effect mostly affects potential entrants. In other words, corruption decreases the propensity of FDI by scaring away some potential entrants. In sum, corruption raises the costs and uncertainties of investment, hurts economic growth and efficiency, and acts as a powerful barrier to new investors. Therefore:

> **Hypothesis 1:** Corruption in a country has a negative impact on the propensity of FDI.

FDI and 'Corruption as Grease'
Despite the fact that corruption hurts economic growth and decreases the likelihood of new entry, corruption persists. This is because corruption may act as 'grease' for some firms to earn extra benefits (Egger & Winner, 2005) and preferential treatment (Lee & Weng, 2013). It is argued by Leff (1964) that corruption may be a way to introduce market mechanisms and missing incentives in an environment of onerous or poorly-implemented regulations. If the revenue effects outweigh the cost effects, corruption may stimulate FDI, which is particularly the case in some developing countries (Cuervo-Cazurra, 2008).

In the case of government and bureaucratic failures, corruption may be an efficiency-enhancing 'lubricant' for rigid economic regulations (Aidt, 2003; Leff, 1964; Zhou & Peng, 2012). MNEs take advantages of corruption as 'grease' in three ways. Firms may pay bribes in the host country in order to (1) speed up the bureaucratic processes to obtain legal permits that would otherwise create difficulty in doing business (Boddewyn and Brewer 1994; Lui 1985); (2) gain access to publicly funded projects (Tanzi & Davoodi, 2000); and (3) avoid regulations and thereby benefit from monopoly power (Tanzi, 1998). As such, the costs and uncertainties created by corruption may be offset by the benefits. It is important to note, of course, that some firms will participate in corruption to advance their ends, while many others will choose not to.

Despite the fact that corruption acts as a distorted or imperfect mechanism to enhance efficiency, some firms may likely prefer that than the alternative in weak or significantly misguided institutional environments. This 'grease' effect happens especially for incumbent firms that have already taken advantage of corruption. Once the MNEs that

Corruption and foreign direct investment phases   Jingtao Yi et al.

170

participate in corruption are familiar with the rules under corruption, they may invest more since they increasingly have more benefits than costs from the corruption. Conversely, firms that choose not to participate in corruption may still gain valuable knowledge in mechanisms with which to sidestep corruption, blunting its impact.

To better understand these mechanisms, we need to distinguish between pre-entry and post-entry investment phases of FDI. Without this significant distinction, prior studies combine the likelihood of a country becoming an FDI host into the estimation of FDI stock in the host country (Hakkala, Norbäck, & Svaleryd, 2008). They show that corruption may decrease the probability that a firm invests in a host country (Hakkala et al. 2008; Javorcik & Wei, 2009). However, some earlier work finds a positive impact of corruption on FDI after the host-country selection mechanism of firms is controlled (Barassi & Zhou, 2012). In sum, the net benefit of corruption, in terms of sidestepping inefficient or broken institutions, may outweigh the negatives of increased costs and uncertainties for MNEs. As a result, corruption may act as 'grease' to incumbent investors. Therefore,

> **Hypothesis 2:** Once a country is already selected as the host country by an MNE, the level of the country's corruption has a positive impact on its FDI stock.

Taken together, corruption is likely to act as both 'sand' and 'grease' *simultaneously*. For entrants, corruption acts as a powerful entry barrier and adds potential costs and uncertainties, discouraging their decision to invest. However, for incumbent firms, corruption may be treated as a channel for the firms to obtain extra privileges and profits, encouraging them to invest more. Therefore, the overall effect of corruption is heterogeneous for MNEs in different investment and decision phases.

Corruption, Institutions, and FDI
Institutions have an essential role in supporting or distorting the effective functioning of the market mechanism (North, 1990; Peng, 2003; Peng et al. 2008). Institutional differences are significant for MNEs operating in multiple institutional contexts (Globerman & Shapiro, 1999; Meyer & Peng, 2016). Strong institutions can reduce information asymmetries (Estrin, 2002; Meyer, Estrin, Bhaumik, & Peng, 2009), and thus influence foreign investors' business decisions by moderating the costs of doing business (Stevens et al. 2016).

The quality of institutions is an important determinant of FDI (Blonigen, 2005). Investment decisions of MNEs depend on expected costs and benefits under boundary institutional conditions (Zhou & Peng, 2010). Since the transaction costs of engaging in markets with weak institutions are relatively high, MNEs have to devise strategies to overcome these constraints (Stevens et al. 2016). Studies also find that institutions decrease corruption (Badinger & Nindl, 2014). Therefore, the relationship between corruption and investment decisions needs to be considered under the context of different institutions.

When we talk about institutions, we often refer to formal institutions, including competition, legal, and information institutions (Zhou & Peng, 2010). Strong formal institutions may raise the costs of corruption and then increase likelihood of FDI. To have a better understanding of how institutions work, we need to consider it under the context of *informal* 'rules of the game' (Helmke & Levitsky, 2004). Strong informal institutions, mainly through norms (e.g., religion, media, and culture), can also put pressure on corruption and therefore affect the incentives of FDI (Sartor & Beamish, 2014; Stevens et al., 2016). Thus, we hope that a closer investigation of corruption on FDI will enrich the literature by identifying some of the hidden drivers underlying MNEs' investment behaviors.

Formal Institutions: Investment Freedom
Investment freedom, a typical formal institution, reflects an effective investment framework that supports all types of firms rather than just large or strategically important ones, and encourages rather than discourages innovation and competition (Heritage Foundation, 2015). Investment freedom provides fertile ground for the creation of a variety of instruments and mechanisms that finance entrepreneurship, paving the way for investment (Herrera-Echeverri, Haar, & Estévez-Bretón, 2014, p. 1923). Therefore, investment freedom is often found to be an important determinant of economic growth (Bengoa & Sanchez-Robles, 2003) and FDI (Herrera-Echeverri et al., 2014; Quazi, 2007).

In a country with a high level of investment freedom, such freedom reduces the costs of doing business because there are fewer procedures or limitations for businesses (Herrera-Echeverri et al., 2014; Quazi, 2007). MNEs have the freedom to choose when and where to invest under transparent and fair institutions so that MNEs can save time

Corruption and foreign direct investment phases   Jingtao Yi et al.

171

and resources by avoiding complex procedures. Fewer procedures and limitations make it less necessary to engage in bribery to accomplish business goals. Therefore, open and fair investment freedom may compensate for the negative effects of corruption for potential entrants. Overall, an open and fair investment environment reduces corruption, removes restrictions, and reduces business costs for foreign investors in the pre-entry phase. Thus,

Hypothesis 3a: Investment freedom negatively moderates the relationship between the level of corruption and the propensity of FDI.

Transparent and fair bureaucratic procedures reduce the power of officials and thus reduce the need for bribery, since the benefits from corruption are limited. Under open and fair investment freedom conditions, officials prefer to allow more firms in the market rather than taking bribes only from incumbent firms to share the risks (Campos et al., 2010; Sun, Peng, Lee, & Tan, 2015). Therefore, the entry costs for potential entrants and the monopoly power for incumbent firms may decline. Overall, investment freedom lowers the needs to bribe and reduces the benefits from bribery for incumbents who have already been helped by corruption. Hence,

Hypothesis 3b: Investment freedom negatively moderates the relationship between the level of corruption and the stock of FDI.

Informal Institution: Press Freedom

Press freedom, reflecting the monitoring capacities of the society, is a representative informal institution. Article 19 of the Universal Declaration on Human Rights states that 'everyone has the right to freedom of opinion and expression; this right includes freedom to hold opinions without interference and to seek, receive, and impart information and ideas through any media and regardless of frontiers.' A free and independent press helps to reduce information asymmetry and to bridge the gap between citizens and governments (Besley, Burgess, & Prat, 2002), which helps governments to obtain feedback on their policies and also encourages political participation from the public (Karppinen, 2007; Leeson, 2008).

A free and independent press can demonstrate a true reflection of the policies and practices of the host country and thereby encourages the flow of information to firms likely to invest in the country,

which then provides an enhanced investment and business climate (Pal, 2011) and encourages economic growth (Alam & Ali Shah, 2013; Roll & Talbott, 2003).

Press freedom plays an important role in monitoring, reporting, and denouncing official abuses (Stapenhurst, 2000) and reducing corruption (Besley & Burgess, 2002; Brunetti & Weder, 2003; Djankov, McLeish, Nenova, & Shleifer, 2002; Freille, Haque, & Kneller, 2007). Overall, a free and independent press is likely to discourage corruption and attract FDI inflows due to the transparency it brings to the monitoring of institutions and climates. In summary, a free press acts as a deterrent to corruption, reducing invisible entry barriers and hence attracting more potential investors. Therefore,

Hypothesis 4a: Press freedom negatively moderates the relationship between the level of corruption and the propensity of FDI.

Under a free and independent press, officials lower the demand for bribery while MNEs also reduce the supply for bribery due to the high monitoring role of the press. Since the free press raises the risks to take advantage of corruption both for firms and governments (Brunetti & Weder, 2003; Dutta & Roy, 2016), the benefits from corruption for incumbent firms are limited. This relationship acts as a disincentive for MNEs to invest more in a country with higher levels of corruption. Hence, press freedom reduces the positive impact of corruption on FDI stocks. Overall, press freedom increases the risks of both demand and supply of bribery and limits the benefits for incumbent firms from corruption. Therefore,

Hypothesis 4b: Press freedom negatively moderates the relationship between the level of corruption and the stock of FDI.

METHODOLOGY

Sources of Data

We test our hypotheses using data on bilateral FDI flows from 34 OECD home countries to 159 host countries (including the 34 OECD countries), covering both developed and developing countries. The FDI data come from the OECD between 2003 and 2011 (inclusive).[2] Such data have previous been used in related research (Barassi & Zhou, 2012;

Corruption and foreign direct investment phases   Jingtao Yi et al.

172

Cuervo-Cazurra, 2006). We include all the countries for which data are available.

We employ the latest available survey in each country to form a cross-sectional dataset and merge it with five country-level data datasets: the Corruption Perception Index (CPI) by Transparency International, the World Development Indicators (WDI) by the World Bank, the Press Freedom Index provided by Freedom House, the Economic Freedom Index by Heritage Foundation, and geographic indexes by CEPII. We exclude observations with missing information, statistical errors, and/or outliers for our main variables of interest. Our final sample consists of 38,768 observations (bilateral country pairs) over 9 years. In comparison with earlier work, our sample represents one of the most comprehensive databases. Table 1 presents a summary of the variables, measures, and data sources.

Variables and Measures

Dependent Variables
Following Barassi and Zhou (2012), we measure the first dependent variable, *FDI propensity* (the propensity that investors would invest in a host country), by a dummy variable that takes 1 if the FDI inflows are positive and 0 otherwise. Following Bénassy-Quéré, Coupet, and Mayer (2007) and Godinez and Liu (2015), we measure the second dependent variable, *FDI stock,* using data from the OECD International Direct Investment statistics. It is measured as the natural log of FDI stocks invested from the home country to the host country by total bilateral FDI stocks in 1999 US dollars' price measured using purchasing power parity (PPP).

Independent Variable
Our independent variable is *host-country corruption.* Following Cuervo-Cazurra (2008), Habib and Zurawicki (2002), and Javorcik & Wei (2009), we

Table 1 Variables, measures, and sources of data

	Variable	Measure	Source
Dependent variables	FDI propensity	Equal to 1 if FDI stock is positive, 0 otherwise	OECD
	FDI stock	The natural log of FDI stocks invested from the home country to the host country by total bilateral FDI stocks at 1999 US dollars' price measured using purchasing power parity (PPP)	OECD
Independent variable of interest	Host-country corruption	Indicator of the level of corruption in the host country, from 0 (low) to 10 (high) (10 minus the original score for corruption perception index)	Transparency International
Moderators	Host-country investment freedom	Indicator on the level of investment freedom in the host country, from 0 (low) to 100 (high) (100 minus the original score for corruption perception index)	Heritage Foundation
	Host-country press freedom	Indicator on the level of press freedom in the host country, from 0 (low) to 100 (high) (100 minus the original score for press freedom)	Freedom House
Control variables	Host-country GDP	Natural log of gross domestic product in purchasing power parity in US$	World Development Indicators Database, World Bank
	Trade dependence	The percentage of trade volume to GDP	World Development Indicators Database, World Bank
	Distance	Natural log of the greater circle distance between the centers of the home and host country in miles	CEPII
	Common border	Dummy indicator of the existence of a common border between the home and host country, 1 or 0	CEPII
	Common language	Dummy indicator of the existence of a common language between the home and host country, 1 or 0	CEPII
	Common colony	Dummy indicator that the home and host country were colonies of the same colonial power after 1945, 1 or 0	CEPII
	Colonial link	Dummy indicator that the home and host country were ever under a colonial relationship, 1 or 0	CEPII

Corruption and foreign direct investment phases   Jingtao Yi et al.

173

use the CPI provided by Transparency International. It measures the perceived levels of public sector corruption across countries annually, which has been used as the means for measuring the prevalence of corruption in a society (DiRienzo, Das, Cort, & Burbridge, 2007). For explanatory simplicity, we subtract the original index from 10, so higher scores indicate higher level of corruption.

Moderators

Following Meyer et al. (2009), our first moderator, *host-country investment freedom*, is measured by the index developed by the Heritage Foundation. This measure provides information about a broad notion of institutions, focusing on the freedom of individuals and firms in a country to pursue their activities. This index evaluates a set of regulatory restrictions that are imposed on investment in each country, including national treatment of foreign investment, foreign investment code, sectoral investment restrictions, expropriation of investments without fair compensation, foreign exchange controls, and capital controls. The higher value implies the greater investment freedom.

The second moderator, *host-country press freedom*, is measured by the index provided by Freedom House (Alam & Ali Shah, 2013). This index includes information about: (1) laws and regulations that influence media content; (2) political pressures and controls on media content (including harassment or violence against journalists or facilities, censorship, and self-censorship); (3) economic influences over media content. We subtract the original index from 100 so that a higher score indicates a free and non-captured press system.

Control Variables

We control for two sets of variables: factors from the host country and factors from bilateral country pairs. First, we control the host-country factors following the gravity model, which has been utilized in research on the factors of bilateral FDI flows (Bevan & Estrin, 2004; Cuervo-Cazurra, 2006; Wei, 2000). The basic gravity model explains FDI flows based on the proximity-concentration hypothesis (Brainard, 1997). Because MNEs can achieve greater economies of scale in larger countries, those countries will likely attract more FDI (Linnemann, 1966). Therefore, we control for the country's gross domestic product (*GDP*). We measure geographic *distance* between countries using a great circle distance provided by CEPII. Distance indicates the existence of transportation costs that

would affect FDI (Linnemann, 1966). *Trade dependence*, which measures the percentage of trade to total GDP for the host country, is used as a proxy for trade openness, which represents the attitudes towards foreign investments. It is taken from the World Bank's WDI database. A higher trade dependence would increase the returns from exporting from the host country to other locations, thus increasing MNEs' incentives to commit to undertaking FDI in that host country (Barassi & Zhou, 2012).

Second, we control for bilateral factors between the host country and the home country. A complementary index aside from distance is whether countries share a physical border (Feenstra, Markusen, & Rose, 2001). We measure *common border* by a dummy variable that is coded 1 if there is a common border between countries and zero otherwise. A common language can facilitate FDI between two countries because it helps in information transfer and reduces psychic distance (Cuervo-Cazurra, 2006). We measure *common language* using a dummy variable that is 1 if there is a common language between countries and 0 otherwise. The existence of a colonial relationship or a common colonizer indicates political similarities, because colonial powers traditionally imposed their administrative institutions across their colonies (Cuervo-Cazurra, 2006). We use dummy variables to measure *common colony* and *colonial link*, respectively.

Estimation Strategy

The two-stage analysis of corruption and FDI stock has attracted increasing attention from empirical researchers (Barassi & Zhou, 2012; Hakkala et al. 2008). To control for endogeneity, specifically selection bias, we employ a two-stage Heckman model to test our hypotheses (Heckman, 1979; Shaver, 1998). In the first stage, we use a probit model for the estimation of propensity of FDI in the host countries, in which we can obtain inverse Mills ratios (*imr*) to be included in the second-stage regression. We also include an additional variable to meet the exclusion restrictions requirement in the first-stage regression (Angrist & Pischke, 2008; Sartori, 2003). Our exclusion restriction variable is the growth rate of GDP, which reflects attractiveness for investors when making a location choice. However, it likely has no effect on the amount of FDI once a firm has selected the host country. Thus, it can serve as an ideal exclusion restriction to be included in the first-stage selection model.

Corruption and foreign direct investment phases Jingtao Yi et al.

174

The second stage in our model links our second dependent variable, FDI stock, to the explanatory variables and interaction terms for the subsample of existing FDI stock partners. In addition, a statistically significant inverse Mills ratio (*imr*) in all models confirms the appropriateness of using the Heckman selection model. We apply the natural logs to the dependent variable (FDI stock) and independent variables to help make the error term to homoscedastic (Wei, 2000).

RESULTS

Table 2 presents the summary statistics and correlation matrix. In our sample, approximately 63% of the country pairs are positive FDI partners—indicating FDI flows. As expected, there are high levels of correlation among variables because many country-level characteristics are correlated. As with other country-level studies (Cuervo-Cazurra, 2006; Habib & Zurawicki, 2002), some of the variables show high correlation coefficients. We mean-center variables in the interaction terms to avoid potential problems of multicollinearity and increase interpretability of interactions (Wang, Hong, Kafouros, & Wright, 2012). Following Cuervo-Cazurra (2008) and Wang et al. (2012), we also lag all independent variables by 1 year, taking into account that the institutions may take some time to influence the FDI decision.

Based on our two-stage Heckman regression model, Table 3 reports the results for regressions with FDI propensity as the dependent variable in the first-stage and also results for the second-stage model where only positive FDI stock pairs are included, with FDI stock as the dependent variable. Models 1 and 4 are the baseline models that include only control variables. Models 2, 3, 5, and 6 are models with all dependent variables, moderators, and interaction terms. Models 1–3 provide the results of the first-stage probit regression, and Models 4–6 provide the results from the second-stage Tobit regression. Figure 2 depicts the results that support our hypotheses.

Models 2 and 3 test Hypothesis 1, which proposes that corruption has a negative impact on the propensity of FDI taking place. The coefficient of corruption is significant and negative. Hence, Hypothesis 1 is supported. We also include the main effects for investment freedom and press freedom. Consistent with our expectations, our results show that investment freedom and press freedom increase FDI propensity.

Models 5 and 6 test Hypothesis 2. We find corruption to have a positive and significant coefficient. Therefore, Hypothesis 2, which posits that corruption has a positive impact on FDI once a country is selected as the host country in the aggregate (despite varying levels of participation in corruption by firms), is supported. Additionally, we find investment freedom and press freedom also lead to the increase of FDI stock significantly.

Model 2 tests Hypothesis 3a, which states that investment freedom negatively moderates the relationship between the level of corruption and the propensity of FDI. The coefficient of the interaction term between corruption and investment freedom is significantly positive in the first stage, which is the opposite to the coefficient of corruption. We therefore conclude that the negative impact of corruption on FDI propensity is weakened as investment freedom increases, thus supporting H3a.

Model 3 focuses on Hypothesis 3b, which proposes that investment freedom negatively moderates the relationship between the level of corruption and the stock of FDI. The coefficient of the interaction term between corruption and investment freedom is significantly negative in the first stage, while coefficient of corruption is positive. We therefore conclude that the positive impact of corruption on FDI stock is weakened as investment freedom increases, thus supporting H3b.

Model 5 deals with Hypothesis 4a, which posits that press freedom negatively moderates the relationship between the level of corruption and the propensity of FDI. The coefficient of the interaction term between corruption and press freedom is significantly positive, as opposite to the coefficient of corruption. It can be concluded that the negative impact of corruption on FDI propensity is weakened as press freedom increases, thus supporting H4a.

Models 6 tests Hypothesis 4b, which addresses that press freedom negatively moderates the relationship between the level of corruption and the stock of FDI. The negative coefficient of the interaction term between corruption and press freedom and the positive coefficient of corruption suggests that the positive impact of corruption on FDI stock is weakened as press freedom increases. Hence, H4b is supported.
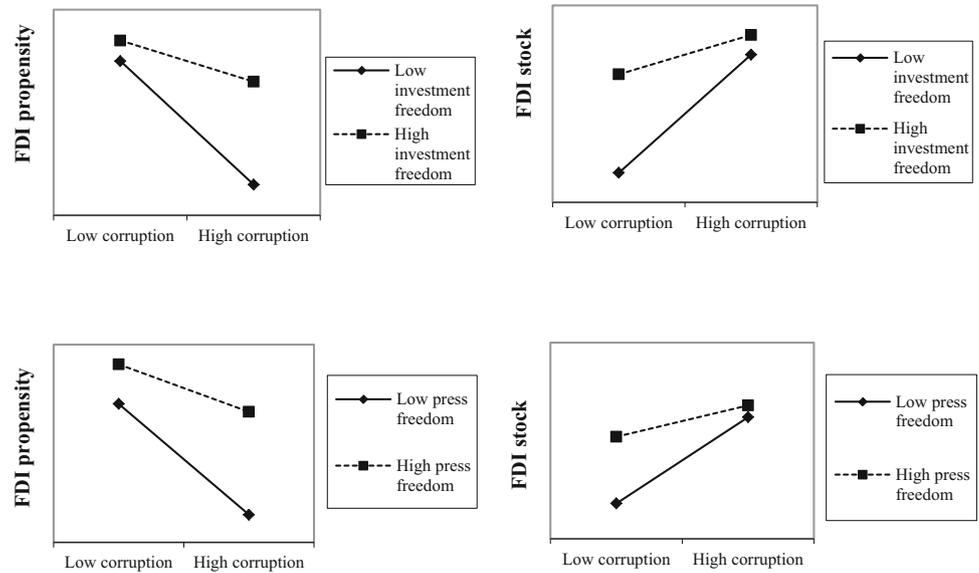
Corruption and foreign direct investment phases   Jingtao Yi et al.

175

Table 2 Summary statistics and correlation matrix

Variables	Mean	Std.	Max	Min	1	2	3	4	5	6	7	8	9	10	11	12
FDI propensity	0.630	0.483	1	0	1											
FDI stock	2.844	3.444	13.260	0	0.766	1										
Host-country corruption	5.759	2.205	9	0.3	− 0.362	0.008	1									
Host-country investment freedom	52.735	20.200	95	0	0.304	0.351	− 0.707	1								
Host-country press freedom	53.568	23.488	92	4	0.286	0.342	− 0.687	− 0.696	1							
GDP	25.230	1.995	30.373	19.837	0.494	0.545	− 0.331	0.169	0.191	1						
Trade dependence	91.230	55.037	447.058	22.090	0.079	0.093	− 0.266	0.054	0.239	− 0.146	1					
Distance	8.514	0.886	3.008	9.881	− 0.292	− 0.312	0.266	− 0.265	− 0.264	− 0.127	− 0.106	1				
Common border	0.022	0.148	1	0	0.245	0.242	− 0.119	0.123	0.106	0.119	0.017	− 0.385	1			
Common language	0.916	0.288	1	0	0.052	0.147	− 0.044	0.047	0.044	− 0.047	0.029	0.047	0.130	1		
Common colony	0.008	0.087	1	0	− 0.037	− 0.039	0.029	− 0.040	− 0.030	0.029	− 0.048	0.015	0.127	− 0.018	1	
Colonial link	0.033	0.179	1	0	0.154	0.209	− 0.042	0.041	0.039	0.042	− 0.016	− 0.076	0.152	0.127	− 0.018	1

Corruption and foreign direct investment phases   Jingtao Yi et al.

176

Table 3 Two-stage analyses of FDI

Independent variables	FDI propensity			FDI stock		
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Host-country corruption		− 0.025*** (0.006)	− 0.024*** (0.006)		0.136*** (0.044)	0.083* (0.048)
Moderators						
Host-country investment freedom		0.001** (0.001)	0.001* (0.001)		0.010*** (0.002)	0.022*** (0.004)
Host-country press freedom		0.007*** (0.001)	0.007*** (0.001)		0.022*** (0.004)	0.006*** (0.002)
Interactions						
Host-country corruption × Host-country investment freedom		0.011*** (0.003)			− 0.003*** (0.001)	
Host-country corruption × Host-country press freedom			0.004** (0.002)			− 0.002*** (0.001)
Control variables						
GDP	0.294*** (0.005)	0.293*** (0.005)	0.292*** (0.005)	0.497*** (0.026)	0.643*** (0.030)	0.675*** (0.029)
Trade dependence	0.003*** (0.000)	0.003*** (0.000)	0.003*** (0.000)	0.004*** (0.000)	0.004*** (0.001)	0.005*** (0.001)
GDP growth	0.018*** (0.002)	0.068*** (0.002)	0.007*** (0.002)			
Distance	− 0.306*** (0.010)	− 0.276*** (0.011)	− 0.277*** (0.011)	− 0.247*** (0.035)	− 0.335*** (0.035)	− 0.334*** (0.036)
Common border	0.272** (0.100)	0.365*** (0.113)	0.368*** (0.113)	0.914*** (0.110)	0.898*** (0.108)	0.895*** (0.107)
Common language	0.487*** (0.031)	0.430*** (0.033)	0.431*** (0.033)	1.815*** (0.078)	1.856*** (0.076)	1.886*** (0.076)
Common colony	− 0.946*** (0.083)	− 0.787*** (0.094)	− 0.786*** (0.094)	− 0.722** (0.289)	− 0.968*** (0.298)	− 0.951*** (0.300)
Colonial link	1.344*** (0.091)	1.424*** (0.089)	1.423*** (0.089)	0.545** (0.113)	1.014*** (0.121)	1.048*** (0.002)
Imr				− 1.725*** (0.184)	− 0.275*** (0.028)	− 0.180 (0.206)
Constant	− 4.716*** (0.151)	− 5.161*** (0.189)	− 5.113*** (0.189)	− 6.938*** (0.678)	− 11.401*** (0.834)	− 12.040*** (0.872)
Year effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	30361	30361	30361	12885	12885	12885
Wald χ^2	7621.95	7982.47	7994.12			
R^2				0.283	0.294	0.295

Corruption and foreign direct investment phases   Jingtao Yi et al.

177

Figure 2 Moderating effects on the propensity and stock of FDI.

Robustness Tests

To ensure the robustness of our results, we conduct two additional sensitivity tests. First, we use alternative dependent variables, the percentage of FDI to GDP, to run the regression. In addition, we use an alternative index 'control for corruption' by the World Bank's Governance Indicator (ranging from − 2.5 to 2.5) to measure corruption for a sensitivity check. Our main results remain largely unchanged.

Second, we analyze whether multicollinearity is driving the results by excluding variables to check for the significance of the coefficients (Greene, 2000), and we find no evidence. The analyses that exclude press freedom in Models 2 and 5 in Table 3, and that exclude investment freedom in Models 3 and 6 in Table 3 generate similar results.

DISCUSSION

Contributions

In this paper, we have developed an integrated framework to account for the asymmetric effects of corruption on FDI, explaining how the triggering and enhancement mechanisms of corruption affect the FDI decision. Two contributions thus emerge. First, we add nuance to the impact of corruption on FDI by examining the FDI decision in different investment phases. We support *both* the 'corruption as sand' theory and 'corruption as grease' theory by identifying different FDI phases and distinguishing the propensity and stock of FDI in the host country. Our framework suggests that the overall effect of corruption on FDI is asymmetric for pre-entry and post-entry FDI phases.

Second, this paper underscores the importance of understanding how institutions of the host country shape the internationalization of firms, particularly with respect to location selection and decision-making processes. We contribute to the institution-based view by addressing the effects of both the formal and informal institutions in the host country on the relationship between corruption and FDI. Since institutional influences vary across different types of organizations, we need to study the mechanisms under the context of specific institutional conditions (Meyer & Peng, 2016; Peng et al., 2008). Further, our study adds to the existing literature that tends to neglect the role of informal institutions by substantiating an integrated formal and informal institution-based view.

Policy and Managerial Implications

A number of policy and managerial implications emerge (Lundan, 2018; Van Assche, 2018). If a country chooses to reduce corruption, the benefits would vary. If a country did not already have significant FDI (like Venezuela), reducing corruption while improving government and market institutions is likely to encourage MNEs to invest there. However, if a country already had significant FDI (like China), reducing corruption may not necessarily increase further inflows of FDI. However, since controlling for corruption is important for social and political development, controlling for corruption in some countries is still necessary,

✳
178

Corruption and foreign direct investment phases   Jingtao Yi et al.

even though it will potentially dampen FDI. Our results suggest that controlling corruption may disadvantage the economy in some areas, particularly in the short run, but improving investment freedom and press freedom can compensate for this.

Our research helps managers of MNEs better understand how to deal with corruption in certain foreign countries. We demonstrate that the additional costs and uncertainties related to corruption in the host-country limits incentives to invest. However, we also demonstrate that MNEs then choose between known higher costs and greater expected benefits. Once choosing a corrupt host country, it means that investors choose—and are ready—to deal with corruption and earn benefits from it. Overall, managers need to know how corruption can be both 'sand' for potential entrants and 'grease' for incumbent firms, but only among firms willing to participate in corruption. In short, managers should base FDI decisions—both the 'go/no go' decisions during the pre-entry phase and the 'how much to invest' decisions during the post-entry phase—in the context of formal and informal institutions of the potential host countries.

Limitations and Future Research Directions

Some limitations of our study can suggest future research directions. First, we have used bilateral FDI data, which are highly regarded in corruption research in international business (Cuervo-Cazurra, 2008; Habib & Zurawicki, 2002). However, bilateral data represent aggregate-level data and the analysis assumes that foreign investors from a home country are homogeneous who hold a homogeneous view of a host country. Further research can use firm-level datasets to do more fine-grained quantitative research to better understand the heterogeneity in MNEs' internationalization within a host country.

Second, the type of corruption rather than the level of corruption deserves more attention in future research. Scholars have distinguished between pervasive (widespread and certain) and arbitrary (uncertain) corruption, and found that different types of corruption have different effects on MNEs' decisions (Cuervo-Cazurra, 2008; Rodriguez, Uhlenbruck, & Eden, 2005). We did not account for this effect in our analysis, but it clearly needs further investigation.

Third, while we investigate both formal and informal institutions, it is not clear whether the relationships between formal and informal institutions are substitutes or complements (Peng, 2003; Zhou & Peng, 2010). Some studies argue that informal institutions will be gradually substituted if the voids of formal institutions are filled (Dyer & Singh, 1998), while other research predicts that formal institutions will enhance informal institutions rather than substituting them (Zhou, Poppo, & Yang, 2008). However, we provide little evidence on this mechanism, which can benefit from additional research. In addition, a broader perspective of formal and informal institutions are needed in the future research. For example, other proxies of formal institutions (e.g., rule of law) and informal institutions (e.g., ethics) and their socio-political underpinnings need more future investigation.

Fourth, an investment project cycle may include several stages including due diligence, stakeholder engagement, contract negotiations, operations, and post-investment. Due to data limitations, we only divide the FDI into pre-entry and post-entry phases. Future research can account for the different effects of corruption on FDI decisions among different stages.

Finally, the heterogeneous effects of corruption in developing and developed countries need more future research (Bailey, 2018). Some studies have also argued that the corruption distance matters in FDI process (Godinez & Liu, 2015), which implies the different effects of corruption on FDI between developing and developed countries.

CONCLUSION

Prior research on corruption and FDI has usually explained the one-sided effect of corruption on FDI and tended to neglect the analysis of informal institutions on the relationship. We make and substantiate the case that corruption can be *both* 'sand' and 'grease' simultaneously, and that the overall effect is asymmetric for firms in different investment phases, depending on their propensity for bribery. Formal and informal institutions, specifically investment freedom and press freedom, deserve more attention from managers when making FDI decisions and from officials when formulating economic and investment related policies.

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Corruption and foreign direct investment phases   Jingtao Yi et al.

179

NOTES

[1.] For the purposes of this article, FDI exclusively refers to inward FDI.

[2.] The OECD Benchmark Definition of Foreign Direct Investment provides operational guidelines on FDI statistics. The dataset we used (from 2003 to 2011) relates to the 3rd edition of the Benchmark Definition (BMD3). The OECD completed the 4th edition and updated FDI statistics since 2013. To avoid the inconsistency of FDI statistics, we used the dataset from 2003 to 2011, which contains an adequate number of observations and years.

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Corruption and foreign direct investment phases   Jingtao Yi et al.

180

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Corruption and foreign direct investment phases   Jingtao Yi et al.

181

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