Monopoly Money: Foreign Investment and Bribery in Vietnam, a Survey Experiment

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Prevailing work argues that foreign investment reduces corruption, either by competing down monopoly rents or diffusing best practices of corporate governance. We argue that the mechanisms generating this relationship are not clear because the extant empirical work is too heavily drawn from aggregations of total foreign investment entering an economy. Alternatively, we suggest that openness to foreign investment has differential effects on corruption even within the same country and under the same domestic institutions over time. We argue that foreign firms use bribes to enter protected industries in search of rents, and therefore we expect variation in bribe propensity across sectors according to expected profitability. We test this effect using a list experiment embedded in three waves of a nationally representative survey of 20,000 foreign and domestic businesses in Vietnam, finding that the effect of economic openness on the probability to engage in bribes is conditional on policies that restrict investment.

In a series of hard-hitting investigative articles, the *New York Times* demonstrated that Walmart paid over $24 million in bribes to Mexican officials between 2002 and 2005. The bribes were predominantly used to obtain investment permits from local officials, which allowed the company's Mexican subsidiary, Walmex, to get a head start on their competition. "Permits that typically took months to process magically materialized in days" (Barstow 2012). Follow-up investigations demonstrated that Mexico was not an isolated incident; similar transgressions were found in Brazil, India, and China (Clifford and Barstow 2012). Walmart is not alone. Recently, Siemans AG and GlaxoSmithKline have also been cited in high-profile bribery cases in emerging markets (Lichtblau and Dougherty 2008; McDonald 2013). The behavior of such iconic Western corporations in highly globalized, developing countries raises troubling questions for the role of multinational corporations in foreign markets.

For students of international political economy (IPE), it is difficult to square these corruption scandals with the extant literature, which has reached a tentative consensus that openness to foreign direct investment (FDI) is correlated with lower corruption. The debate over FDI and corruption has now predominantly moved to the mechanism generating the observed association. Some argue that competition from foreign-invested enterprises (FIEs) drives down monopoly rents and therefore lowers incentives to bribe (Bohara, Mitchell, and Mittendorff 2004; Larrain and Tavares 2004; Rose-Ackerman 1978; Sandholtz and Gray 2003). Others stress the diffusion of corporate governance from FIEs to local enterprises (Kwok and Tadesse 2006). In sharp contrast to the prevailing view, others argue FDI increases corruption, pointing

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Previous versions of this article were presented at the annual American Political Science Association conference, the International Political Economy Society conference, University of California–San Diego, Stanford University, Duke University, Rochester University, University of Krakow, National University of Singapore Business School, Princeton University, and George Washington University Business School. Valuable advice was provided by Randy Stone, Tim Buthe, Jennifer Tobin, Mike Tomz, Nita Rudra, Stephen Weymouth, Steph Haggard, Stephanie Rickard, Helen Milner, and Dennis Quinn. The data were provided by the USAID-funded Vietnam Competiveness Initiative (VNCI), for which Edmund Malesky is a paid consultant, helping to design and administer the survey. Data used in the survey and replication files are available at Edmund Malesky's page on Dataverse (http://thedata.harvard.edu/dvn/faces/StudyListingPage.xhtml?vdcId=762).

American Journal of Political Science, Vol. 00, No. 0, xxx 2014, Pp. 1–21

© 2014, Midwest Political Science Association DOI: 10.1111/ajps.12126

to the liability of foreignness and the role that bribery plays in overcoming the advantages of competitors from host countries (Hellman, Jones, and Kaufmann 2002; Søreide 2006; Tanzi and Davoodi 1997). It is important to realize that although the three alternative theories are broad in nature, all of them articulate specific firm-level predictions for how FIEs will behave in host countries.

These predictions are testable. Unfortunately, most of the research on the subject relies on highly aggregated cross-national designs where measures of corruption are regressed on aggregate inflows of FDI. Competition and diffusion are not measured independently of aggregate FDI measures, so the specific causal pathway linking FDI and corruption remains ambiguous. Moreover, with a few isolated exceptions (e.g., Pinto and Zhu 2008), the literature has not delved deeply into when and why FIEs would seek to bribe officials in some countries and therefore exacerbate corruption in emerging markets. Consequently, the Walmart, Siemans, and Glaxo incidents are seen as anomalies to a larger trend, rather than independent events to be theorized and explained.

In this article, we attempt to identify the source of these theoretical and empirical contradictions by resolving some of the challenges previous research has had in isolating the causal mechanisms underlying the negative relationship between FDI and corruption. Specifically, we seek to evaluate the firm-level predictions of previous work regarding foreign entry and bribe propensity. To this end, we rely on a within-country design to avoid the difficulties of operationalization and causal identification that have plagued previous research. The approach facilitates the use of survey experiments to measure actual behavior in paying bribes during business entry, rather than abstract perceptions of corruption. Furthermore, we use variation in FDI restrictions within the country to operationalize underlying competition within a sector, which helps mitigate against the potential reverse causality of focusing on aggregate capital flows. Importantly, we find critical variation within the same country (Vietnam) and same institutional context over time in the bribe propensity of FIEs.

We conclude that the "rent dissipation hypothesis" is correct that FDI can reduce corruption by competing down monopoly rents in unrestricted sectors. Nevertheless, our results demonstrate that in restricted sectors, which require special licensing procedures, FIEs actually contribute to further corruption, providing credence to the "liability of foreignness" perspective. We find little evidence for the "corporate governance diffusion hypothesis," which predicts less bribery by foreigners under all circumstances. Our theoretical logic is straightforward—money talks. Sectors where foreign investment is restricted by licensing or regulatory barriers afford artificial monopoly rents to any firm that is able to enter. As such, a foreign firm's bribe for entering a restricted sector is significantly more valuable than under normal circumstances, especially if a host government's intention to maintain restrictions well into the future is credible. Although each successive bribe within an individual sector provides diminishing returns for all entrants, the opportunity cost of not bribing early can be substantial, particularly in emerging markets. For some potential entrants, even the risk of punishment under international and home country laws, such as the OECD Anti-Bribery Convention or the U.S. Foreign Corrupt Practices Act (FCPA), is well worth taking. Walmart offers a case in point—in the years following its first documented bribe in 2003, local subsidiary Walmex quickly amassed a dramatic 62% market share (100% share in some localities) in the lucrative retail food market, contributing to net profits of $12 billion by 2011 (Jones 2012), 500 times the reported bribe amount.

We argue that the inferences drawn from that literature are too broad-brush. It is not FDI, in itself, that leads to reductions in corruption; rather, it is the erosion of monopoly rents, primarily through the removal of restrictions on FDI entry, that lowers the value for bribing by allowing more foreign firms to enter. Viewing the relationship in this way suggests a clear-cut, observable implication—in markets not fully open to foreign investment, reductions in corruption should be concentrated within those sectors that are fully exposed to foreign competition, not throughout the country generally. Rather than viewing bribes solely as an additional "tax" imposed on businesses engaging in activities such as obtaining business licenses, moving goods through ports, or passing regular (or irregular) business inspections (Wei 2000), we follow Kaufman et al. (2000) and Kolstad and Søreide (2009) in allowing for the possibility that foreign firms are strategic and complicit in using bribes to gain access to rents in protected domestic sectors.

Our main empirical contribution is our research design, which offers a novel method for measuring corruption while mitigating concerns about reverse causation and endogeneity. Specifically, we test our theory through original, firm-level survey experiments conducted in three waves of an annual survey in Vietnam between 2010 and 2012. Our dependent variable is measured using the unmatched count technique (UCT) or LIST experiment, which is designed to measure, as accurately as possible, the level of corruption experienced by an individual firm when registering its business. In total, the survey experiment boasts 19,363 domestic private enterprises (DPEs) and 3,888 FIEs.

As we highlight in the section "FDI in Vietnam," Vietnam offers a useful test for a link between openness and bribery due to a relatively high rate of corruption and because of a series of liberalizing reforms, namely, the signing of several bilateral trade agreements, including one with the United States (USBTA) in 2000, and World Trade Organization (WTO) accession in 2006. Critical for our test, these reforms were not implemented uniformly across all sectors. Investment in certain sectors (Group A sectors) required special government approval for many years after the signing of trade agreements, and in some cases still does. Focusing on the one-way removal of Group A investment restrictions rather than other metrics of economic integration, such as exposure to trade and FDI, ameliorates the threat of reverse causality that plagues most studies of FDI inflows and corruption.

We find that Group A projects were far more lucrative than projects in nonrestricted industries. After addressing endogeneity bias, in a given year, restricted sectors average 2.4% greater industrial concentration and 13% higher profit margins. Further, we find that 19.4% of all firms that registered after the year 2000 paid bribes during the registration process. While foreign firms are no more likely than domestic firms to bribe overall, those attempting to enter restricted sectors have a 41.3% predicted probability of engaging in bribery, 26.9 percentage points higher than their domestic competitors in restricted sectors and 21.1 percentage points more likely to bribe than foreign firms in nonrestricted sectors. Removing investment restrictions reduces FIE bribe propensity by 24 percentage points in a given sector.

The International Political Economy (IPE) of Corruption

Three branches of the literature explore the causal relationship between FDI inflows and corruption: (1) the rent dissipation hypothesis, (2) the corporate governance diffusion hypothesis, and (3) the liability of foreignness hypothesis. All three provide clear firm-level predictions on behavior in host country markets.

One strain of IPE scholarship finds that opening a country to FDI or trade flows reduces petty corruption by lowering monopoly rents and bribe schedules (Bohara, Mitchell, and Mittendorff 2004; Larrain and Tavares 2004; Rose-Ackerman 1978; Sandholtz and Gray 2003).[1]

[1]Treisman (2000) also identifies a relationship between corruption and openness (measured by imports/GDP), but concludes that the effect is substantively small.

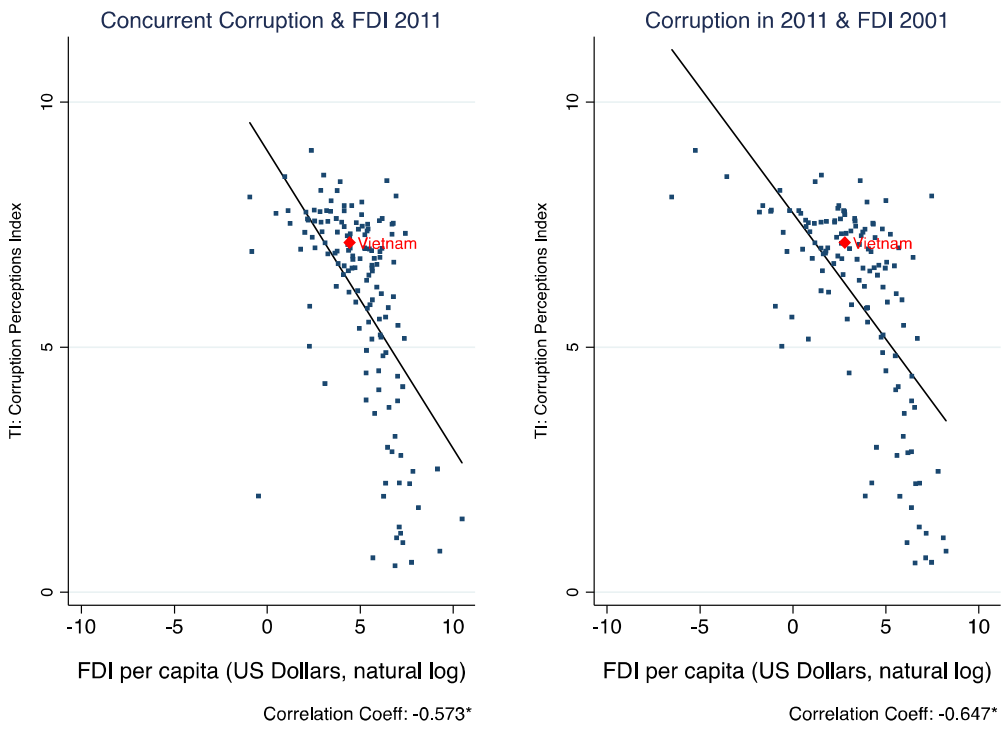
According to the rent dissipation hypothesis, FIEs entering a new market should bribe less than the earlier domestic (and foreign) entrants because the payoff for bribery is declining. A simple scatterplot of corruption indicators from Transparency International set against a measure of the importance of FDI in a country's economy (FDI per capita) illustrates the observed relationship (see Figure 1). There are a couple of things to notice about the plot. First, the relationship is somewhat noisy, indicating a high level of unexplained variation in corruption perceptions. Second, the strength of the correlation is similar, regardless of whether we use a contemporaneous measure of FDI (Panel A) or lagged FDI per capita from 10 years before (Panel B), a finding that helps illustrate the great confusion in the field about the direction of causality.

An alternative mechanism for the same association is that multinational corporations (MNCs) reduce corruption by diffusing better modes of corporate governance to domestic firms and government actors. The idea is that adoption of Western business practices and international preferences for transparency has a positive effect on how governments do business (Gerring and Thacker 2005; Sandholtz and Koetzle 2000). Kwok and Tadesse (2006) articulate three pathways for the diffusion: (1) regulatory pressure to reduce corruption from individual FIEs and their home governments; (2) demonstration of the fact that corruption is not a normal way of doing business; and (3) professionalization, as young workers leave FIEs to start their own businesses, carrying the positive corporate governance practices acquired from working in the FIEs with them. Notice the clear firm-level implication of the corporate governance diffusion hypothesis is that FIEs should be less likely to pay bribes than their domestic counterparts.

Another group of scholars offers the reverse theoretical relationship—foreign investors are attracted to less corrupt business environments (Gatti 2004; Lambsdorff 1999; Mauro 1995; Smarzynska and Wei 2000; Wei 2000; Wei and Wu 2002) or competition for capital "disciplines" governments into reducing corruption in order to generate more attractive investment locations (Goodspeed, Martinez-Vazquez, and Zhang 2011).

A final group of scholars has disputed the notion that openness reduces corruption, arguing that FIEs can actually exacerbate corruption in some environments (Manzetti and Blake 1996). Using survey data drawn from transition economies, these scholars find that foreign firms are just as likely to engage in corruption as their domestic counterparts, and significantly more likely to engage in corruption in economies where the policy-making process is captured by large domestic operations with local connections and knowledge (Hellman, Jones,

FIGURE 1 Cross-National Correlations between FDI and Corruption



and Kaufmann 2002; Pinto and Zhu 2008; Søreide 2006). Others go further, arguing that FIEs face higher incentives to bribe for two reasons. First, they need to overcome the liability of foreignness in competing against domestic firms with deeper market knowledge and better local connections. Second, relatively small transactions from the perspective of MNCs have a sizable impact on the living standards of local officials, and therefore they can be more persuasive (Tanzi and Davoodi 1997). The liability of foreignness hypothesis also articulates a clear firm-level prediction, but one that is the opposite of the two previous alternatives. According to these scholars, FIEs should be *more* likely to pay bribes than domestic competitors on average.

While the three hypotheses are a helpful starting point, they are too underspecified for empirical testing, as they treat all foreign firms similarly without paying enough attention to how investors' behavior is modified by the context in which they are operating. Most critically, we suggest that industrial sector and domestic protections play a critical conditioning role in the bribe propensity of FIEs. Once these are taken into account, one can develop more precise predictions about when and where to expect bribery by FIEs. To this end, we build on economic and business literature that has highlighted how excessively high profit margins indicate insufficient competition, which can incentivize corruption by investors. Several recent studies offer evidence suggesting that corruption is closely associated with natural monopolies, such as extractable resources (Bjorvatn and Søreide 2012; Kolstad and Søreide 2009), utilities (Dal Bó and Rossi 2007), and infrastructure (Kenny, Klein, and Sztajerowska 2011). It is the attractiveness of high profit margins associated with such monopolies that provides venal bureaucrats and officials with authority over such economic sectors the opportunities to demand bribes and kickbacks (Ades and Di Tella 1999; Clarke and Xu 2004; Svensson 2003).

Less well documented is the fact that a similar pattern exists when the lack of competition is a consequence of artificial state controls over certain economic activities, which raise costs to entry (Djankov et al. 2002; Dreher and Gassebner 2013). Heterogeneity across regulatory barriers allows for wide variation in the level of economic rents available across sectors. As a result of these regulatory protections, service sectors (such as insurance provision, healthcare, and banking) can sustain artificial monopolies and therefore provide the same types of opportunities for corruption as natural monopoly sectors like resource extraction and utilities. In markets restricted by statute, ensuring economic rents by obtaining first-mover advantages, or "queue jumping," can be a very tempting strategy

for incoming investors (Lui 1985). This type of activity has been called "rent creation," a process during which firms seek access to rents created by state policy (Bhagwati 1982; Krueger 1974).

Consequently, we argue that bribing one's way into a high-margin sector is a two-way street. Businesses are motivated to bribe, and gatekeeper bureaucrats are in turn motivated to demand bribes and keep access constrained (Bliss and Di Tella 1997; Djankov et al. 2002; Shleifer and Vishny 1993).[2] The literature on state capture (Hellman, Jones, and Kaufmann 2003; Kaufmann et al. 2000) has explored this two-way street in a different context, demonstrating that incumbent firms play a role in shaping the regulations by bribing bureaucrats and capturing the policymaking process. However, as Frye (2010) points out, the relationship is still in the hands of bureaucrats or politicians who can renege or renegotiate the contract—in our case, by removing barriers to entry. However, to maintain rent streams, gatekeepers must also maintain limits to entry (Benmelech and Moskowitz 2010; Rajan and Zingales 2003; Shleifer and Vishny 2003). Thus, there is a tension between accepting bribes to allow firms to gain entry to protected markets and allowing too much entry, such that it increases competition and dissipates rents.

Testable Hypotheses

The theoretical discussion reveals a clear empirical prediction that we analyze below. Foreign firms faced with the prospect of paying a bribe in a low-margin sector, such as garment manufacturing, will simply decide to produce in another country if the bribe price equals or exceeds the expected marginal profit. Similarly, bureaucrats serving as gatekeepers are savvy enough not to demand bribes in these sectors, for fear that they will end up being responsible for losing valuable FDI projects. Under these circumstances, we should expect the rent dissipation hypothesis to prevail. All this changes, however, in sectors where entry is restricted by licensing requirements or business permits. Foreign firms have a significant incentive to offer bribes to enter these sectors because of the high rents available post-entry. Similarly, local gatekeepers can demand greater compensation for allowing entry.[3] We argue that foreign firms attempting to enter restricted sectors that offer higher economic rents are far more likely to bribe during entry. The restriction provides a credible commitment that the rents are protected for the foreseeable future, as the bureaucrat has no power to change national legislation necessary to remove them, thereby further incentivizing the investor. Under these circumstances, the liability of foreignness hypothesis is most appropriate. Thus, we hypothesize the following:

H1: The propensity of foreign firms to bribe at entry is higher in restricted sectors.

Firms are willing to pay bribes for entry into these sectors, but only as long as politicians continue to limit entry and preserve the economic rents. It is important to note how this perspective differs from the corporate governance diffusion hypothesis, which predicts lower corruption by FIEs regardless of the industrial sector or investment restrictions, as companies simply abide by Western practices.

A further prediction of our theory is that removal of restrictions should lead to a dissipation of these rents, limiting the ability of politicians to charge for entry into lucrative sectors. As countries sign investment arrangements as part of economic integration, restrictions to entry, and consequently the expected benefits of corruption, fall. We expect bribery propensity to decrease as well.

H2: The removal of investment restrictions leads to reductions in bribery as a result of more FIEs, and consequently more competition, entering that sector.

While our inquiry focuses on the relationship between foreign investment and corruption, our theoretical argument concerns investment restrictions broadly and should apply to domestic investors as well. If restrictions create sector-level monopoly rents, then domestic firms should be just as eager to enter as FIEs, resulting in observable increase in entry-bribe propensity for both categories of firms. Our empirical analysis should be able to test this relationship, as the survey was conducted on both domestic and foreign firms in the same four-digit sector.

H3: The propensity of domestic firms to bribe at entry is higher in restricted sectors.

Nevertheless, there are several important reasons why the relationship may be more difficult to observe for domestic firms. The first reason is a simple technicality. Although some Group A restrictions apply to domestic

[2]Dreher and Siemers (2009) find similar cross-national evidence suggesting that restrictions on capital flows incentivize bribe payments.

[3]This logic is consistent with existing theories of endogenous harassment on the part of overzealous bureaucrats (Myrdal 1968). In either scenario, the propensity that a bribe will be expected and provided is parameterized by the rents available in a particular sector.

firms, the majority are intended exclusively for FIEs. Of the 30 sectors listed as restricted in the 2005 Common Investment Law, only seven required special procedures for domestic firms as well (Vietnam National Assembly 2005).[4]

Consequently, most domestic firms do not encounter the same bribe-demanding gatekeepers, which also reduces their risk of bribing during entry. In our empirical analysis below, we divide Group A restrictions into two groups: (1) restrictions only on foreign firms, and (2) restrictions applied to both foreign and domestic firms. This allows us to test whether the findings on restrictions travel to domestic firms as well.

Even within the special set of Group A sectors restricted for domestic firms, several factors complicate the relationship between restrictions and corruption among domestic firms. First, in most emerging markets, few firms have the size and capital necessary to provide complex services and are consequently crowded out of these industries by foreign or state competition (De Backer and Sleuwaegen 2003; Dunning 1993, 376). Because the pool of domestic firms ready to enter such sectors is relatively small, so is the pool of likely bribers. This is not the case for FIEs, among whom there are likely many potential entrants and for whom early entry can prove extremely profitable. According to the Vietnamese Enterprise Census, private firms are significantly smaller than their competitors in the restricted sectors, averaging 22 employees and 5 billion Vietnamese Dong (VND) ($25,000 USD) in assets, compared to 134 employees and 268 billion ($13.4 million USD) in assets for FIEs in the same industry.[5] Second, domestic firms may be able to leverage alternative assets, such as taking advantage of connections or trading favors with gatekeepers, in order to enter protected sectors. These substitutes for corruption would not register as a bribe in our survey instrument, which explicitly references bribe payments. Finally, we must remember that restrictions are enacted deliberately. While the motive highlighted in this article concerns protection from competition, political motives such as those concerning public security and media cannot be excluded—especially in authoritarian countries like Vietnam. This logic suggests that some domestic firms that enter restricted sectors may be selected because they are seen either as core industry movers or as loyal regime partners.

[4]See Appendix 2 in the supporting information for more details.

[5]Our data reveals that both labor and capital size are associated with entrance into a restricted industry among domestic firms. A probit analysis reveals that each 1-point increase on the 8-point equity at establishment scale increases the probability of entrance into a restricted sector by 1%, and each 1-point increase in employment at establishment increases the probability of entry by 4%. Technical capacity matters as well; entrepreneurs with university degrees and MBAs have a higher presence in restricted industries. Most importantly, domestic firms with political connections, especially government connections, are highly overrepresented (40% versus 25%) in restricted sectors. See Appendix 6 in the supporting information for details.

FDI in Vietnam

Analysts of the Vietnamese economy often highlight the important contributions FDI has made to economic growth, trade, employment growth, and poverty alleviation throughout the country (Tran 2007). Indeed, over the past two decades, Vietnam has benefited tremendously from FDI inflows. Even before entry into the WTO, Vietnam was among the most attractive developing countries for FDI projects. After WTO entry in 2006, however, FDI inflows exploded to 10% of GDP (Hoang 2013; World Bank 2010).

While recognizing the importance of FDI attraction, many prominent Vietnamese observers have also argued that Vietnam's increasing exposure to global economic forces is exacerbating corruption, not reducing it. In the summer before the 2011 Communist Party Congress, Vu Quang Viet, a Vietnamese American economist and close adviser to leading Vietnamese reform figures in the 1980s and 1990s, surveyed the policies of economic openness and decentralization, concluding, "This has helped make Vietnam more dynamic, capable of attracting more foreign direct investment (FDI), opening up the economy outwardly and generating much more wealth, and thus offering more spoils for abuse and bribery which have reached an unprecedented scale under the current regime" (Viet 2010, 17).

Indeed, as Figure 1 demonstrates, Vietnam's reputation for corruption, despite large FDI inflows, has remained largely unchanged. Comparatively speaking, Vietnam is very close to the regression line, implying that the relationship between FDI and corruption is typical of the broader pattern. As such, Vietnam serves as a "typical case," offering a useful opportunity to analyze the mechanisms responsible for cross-case variation.[6] Probing a little deeper, Vietnam's placement resembles a large cluster of countries with moderately high FDI inflows but slightly higher than expected corruption. This cluster includes the Southeast Asian neighbors Indonesia, Thailand, and Cambodia; the African countries Nigeria, Algeria, and Morocco; and the Central American countries Bolivia and Guatemala. Consequently, the

[6]See Lieberman (2005) and Seawright and Gerring (2008) for a discussion of case selection strategies in cross-case analysis.

fine-grained firm-level data of this study may provide broader insight into the emerging markets of Southeast Asia, and to the broader class of "frontier markets," which are exposed to global investment but still have large protected sectors, and have yet to develop strong and independent legal systems (Speidell and Krohne 2007). The finding may be less applicable to developed countries with more competitive markets and independent judiciaries.

Restrictions on FDI Entry in Vietnam

Although the role of FDI in Vietnam's development story has been well documented, systematic restrictions on FDI, some of which have remained in place since the very first iteration of the Foreign Investment Law (FIL) in 1987, have not. Under the FIL in 1996, Vietnam liberalized FDI entry dramatically across many sectors (Vietnam National Assembly 1996). A few sectors, however, were only partially liberalized according to the law.

These sectors, known as "Group A" projects, require special approval from the prime minister's office to receive an investment entry license. The stark difference between Group A and other projects became clearer after Vietnam decentralized FDI registration to the provincial level in the late 1990s. While provinces could now register any FDI investment up to a specified amount locally, Group A projects still required central approval and a prime ministerial signature (Malesky 2008).

The Vietnamese government has been quite clear about the motivation for many of these restrictions in each FIL. Article 29 of the 2005 Common Investment Law (Law 59–2005-QH11), for instance, declares that Group A restrictions apply to all sectors that impact national defense, security, social order, safety, and public health, before specifically enumerating the sectors that would be so affected (including publishing, finance, and real estate; Vietnam National Assembly 2005). The relationship between activities like the production of sugar and national security, however, is not obvious, which has led to speculation about alternative motives. Although not stated in the legal documents listing conditional sectors, a protectionist element has also explicitly played a role in their maintenance. While opening up their economy, Vietnamese officials have not shied away from declaring that the state-owned enterprises (SOEs) should dominate the commanding heights of the economy (Hayton 2010, chap. 1). The 2001–2010 *National Strategy for Socio-Economic Development* is explicit on this point, stating that "the leading role of the State economic sector is to be enhanced, governing key domains of the economy; State enterprises are to be renewed and developed, ensuring production and business efficiency" (Central Committee of the Communist Party of Vietnam 2000, 10). Even after USBTA entry, the trade and investment regime still favored SOEs, allowing cheap entry of inputs that SOEs relied upon while restricting entry in the sectors SOEs dominated. As Auffret (2003, 5) put it, describing the bifurcated nature of Vietnam's commitment to international openness, "Vietnam has so far been able to liberalize the trade regime while maintaining a policy bias in favor of domestic-market-oriented industries, particularly those dominated by state-owned enterprises (SOEs)."[7] Group A restrictions are a key element of this bifurcation, allowing foreign capital and expertise to enter into these sectors, but ensuring that the competition is never so severe as to threaten the existence of SOEs in the sector.

Leading up to the USBTA in 2000, over 30 different broad economic sectors were protected by restrictive conditions on foreign investment. International commitments have inspired the full opening of 10 of these sectors over time. Yet 21 sectors remain restricted throughout our period of observation. Vietnam's 2007 WTO resulted in a commitment to liberalize additional conditional sectors, but little progress has been made on the domestic legislation necessary to formally lift the restrictions.[8]

This is not to say that foreign capital did not find its way into sectors while they were restricted. Our data show foreign entry into almost all restricted sectors over the period of observation. Nevertheless, the additional restrictions served to dampen competition and generate high rents for those lucky enough to enter them. To demonstrate this point, we gathered annual information on restrictions from revisions to Vietnam's FILs and other legal documents related to foreign investment. Although restrictions exist within multiple dimensions, which at times vary depending on location and license size, the most apparent is the blanket sector-level restriction, which we code as a dichotomous variable during each year the sector was classified as a "Group A" restricted sector.

The majority of Vietnam's investment restrictions apply solely to foreign firms. Today, a total of 14 important sectors, including telecommunications, radio and TV broadcasting, transportation, and distribution, all require special procedures only for FIEs. There are, however, seven sectors where restrictions apply to domestic private firms and FIEs alike (including natural resources, publishing, education, and real estate; Vietnam National

[7] In Appendix 7 (Model 5) in the supporting information, we take advantage of this protectionism in the two-stage instrumental variables strategy, using the lagged state share in a sector to predict the probability of restrictions.

[8] See Appendix 2 in the supporting information for a complete listing of restricted sectors.

Assembly 1998, 2005). Interestingly, while sectors restricting FIEs have been lifted over time, the same seven sectors have been closed to domestic companies throughout the reform era. Below, we leverage the variation between these sectors and those that are exclusively restricted to foreign investment to isolate the effect of restrictions on domestic firms.

Analyzing the Impact of Restrictions on Market Concentration and Rents

To analyze the effect of these restrictions, we operationalized rents at the International Standard Industrial Classification (ISIC) four-digit level, based on financial disclosures collected during Vietnam's Enterprise Census (General Statistical Office GSO 2012).

To assess sector-level variation in rents, we utilize two common measures of rents from the economics literature: a Herfindahl-Hirschman Index (HHI)[9] of market share (Rosenbluth 1995), and profit margins (Boone 2005).

Figure 2 studies the average HHI and natural log of profit margin experienced in Vietnam in a given year in both restricted and unrestricted four-digit ISIC sectors. Clearly, Group A sectors have become significantly more concentrated than nonrestricted sectors over time. For the entire time period under observation, restricted sectors averaged well above the 0.25 HHI that signifies severe market concentration, the potential for anticompetitive behavior, and the availability of monopoly rents. Beginning in about 2003, however, restricted sectors became increasingly more concentrated, crossing 0.35 HHI in 2010. By contrast, nonrestricted sectors started off similarly concentrated but have steadily inched downward to below a 0.2 HHI, as domestic and foreign business entry has increased competition in these sectors. The pattern is even starker when it comes to profit margins. Nonrestricted sectors have seen their margins decrease steadily over time with increased competition; while restricted sectors have seen their margins explode, particularly after WTO entry in 2006, which opened up lucrative opportunities for export, temporary entry barriers at home were created through the phase-in of domestic treatment requirements. While not perfectly correlated with HHI, the proportion of economic sectors subject to Group A investment restrictions has also declined from about 33% of all four-digit sectors in 1997, observed in our sample, to 13% in 2012.[10]

After addressing the problem of endogenous regulation (Bhagwati 1982) in a two-stage regression analysis and accounting for market, we find that restricted sectors lead to 2.4% greater industrial concentration and 13% larger profit margins. In short, exogenous barriers to investment have important effects on foreign firms' expected profitability. A foreign enterprise lucky enough to enter a restricted sector can be assured of extraordinary market power and economic rents. Given our theory, we expect that foreign firms attempting to start Group A projects are far more likely to pay more for this privilege.

Data and Research Design

To test the relationship between FDI and corruption, we take advantage of the annual Vietnam Provincial Competitiveness Index (PCI) survey.[11] Our experiment was repeated in three subsequent years to ensure that our findings were consistent and durable, as single-shot surveys have been criticized for potential contamination by both other questions in the survey and real-world events outside of the control of researchers (Gaines, Kuklinski, and Quirk 2007).

Our final sample is composed of 19,363 domestic firms and 3,888 FIEs, which registered after 2000 and are located throughout the country's 63 provinces.[12] In all three years, the sample frame for selection was the list of registered domestic firms and FIEs in the General Tax Authority database of registered operations. The survey response rate was about 30% for domestic operations and 25% for FIEs, much higher than rates commonly reported in the international business literature (White and Luo 2006), but still small enough to create concerns about reliability (Dillman et al. 2002). As a result, it is reasonable to ask whether nonresponse creates selection bias that might affect our conclusions (Jensen, Li, and Rahman 2010). In Appendix 4 in the supporting

[9] Herfindahl-Hirschman Index ($HHI = \sum_{i=1}^{N} S_i^2$), where S represents a particular firm's share of sector-level revenue; HHIs range from 0 to 100.

[10] Although the correlation between restrictions and potential economic rents appears strong, there is reason to be suspicious that the apparent relationship could be spurious, caused by omitted firm-level features driving both variables. We test the robustness of the relationship using HHI and the average profit margin of firms (ln(Profit/Revenue)) at the ISIC four-digit level as our dependent variables, and regress them on a dichotomous measure of whether a particular sector is listed as being Group A, controlling for features of the industry, such as size and capital labor ratio. We also address potential endogeneity bias by instrumenting the legacy of state ownership in the four-digit sector. See Appendix 7 in the supporting information for full regressions.

[11] Please see www.pcivietnam.org for methodological details and background on the survey.

[12] The full sample includes 22,275 domestic and 4,821 FIEs, but we do not use any firms that registered before 2000.

FIGURE 2 Herfindahl Indices and Profit Margins for Restricted and Nonrestricted Sectors

Source: Authors' estimates compiled using data from the Vietnamese General Statistical Office Enterprise Census (2012), available at www.gso.gov.vn.

information, we compare the PCI data to available information from the General Statistical Office's Enterprise Census and Tax Authority Databases in 2012, showing that PCI data in a given year reflect observable characteristics of the national population and therefore offer a highly accurate depiction of foreign and domestic investors in Vietnam.

In 2012, there were 10,437 active FIEs in Vietnam, which includes 8,687 entirely foreign-owned operations and 1,750 joint ventures (JVs).[13] By this metric, the PCI accounts for 37% of the entire population of foreign investors found in the enterprise census![14] The five largest investors by country origin in the PCI are all East Asian. Together, Taiwan (23.2%), South Korea (20.2%), Japan (18.3%), China (7.2%), and Singapore (4.2%) account for 73% of the active businesses surveyed. Nevertheless, respectable numbers exist for Western investors as well. The PCI-FDI sample contains 370 investors from the European Union, 144 investors from the United States, and 70 from Australia, in addition to a host of others from Western Europe, Russia and Eastern Europe, and Latin America. Seventy-eight percent of the FIEs in Vietnam are 100% foreign owned. This proportion is remarkable because early in the Vietnamese investment history (1987–1991), FDI came primarily in the form of joint ventures with state-owned enterprises, accounting for 75% of registered foreign capital between 1988 and 1996 (Freeman and Nestor 2004). It was not until the 1996 revision of the FIL that 100% foreign-owned investment was first permitted.

Addressing Measurement Error with a List Experiment

A robust empirical literature examining the link between FDI and corruption has produced a wide but often contradictory array of findings that support nearly every angle of the question regarding whether FDI increases, decreases, or has a conditional impact on corruption. Part of this inconsistency can be blamed on well-known biases common to current approaches for studying

[13] See General Statistical Office Enterprise Census (2012).

[14] A map of FDI investment by province is provided in Appendix 1 in the supporting information.

openness and corruption. In particular, perception and anchoring bias are problematic for all studies involving Likert-scaled, perception-based measures of corruption (King et al. 2004).

Cognizant of such biases, researchers have turned to more direct measures of corruption experience (Treisman 2007). Yet experience-based measures have their own set of problems. For example, questions concerning personal experience with corruption are subject to sensitivity bias and social desirability bias because the information revealed could potentially be incriminating (Coutts and Jann 2011). To confront this issue, scholars often shield respondents from sensitive questions by asking them to comment on the experiences of actors they resemble and not themselves. This, however, can lead to attribution bias in which respondents answer about others' experience with corruption and not their own (Ahart and Sackett 2004). Finally, a common problem with both perception- and experience-based corruption questions is aggregation bias, whereby several measures of corruption, which may be completely unrelated to one another (i.e., bribery for marriage licenses when studying investment decisions), are blended together to create a national-level indicator (Tanzi 1998).

Measurement issues affect conceptual and theoretical links as well. While concerns about endogeneity and reverse causality when studying the FDI-corruption link are well documented (Pinto and Zhu 2008), less attention is given to how measurement error in the dependent variable exacerbates problems for identifying causation (Bound and Krueger 1991; Duncan and Hill 1985). For example, we know that variables such as political institutions, socioeconomic factors, and social capital influence a respondent's perception of corruption (Olken 2009; Treisman 2007). Treisman (2007), for instance, finds that perceived corruption is thought to be lower in countries with democratic institutions, media freedom, and high economic development, whereas it is perceived to be worse in poor countries with more intrusive regulations and less democratic protection. These factors explain 90% of the variation of cross-national indices in perceived corruption. Nevertheless, actual corruption, measured by the proportion of respondents self-reporting bribe payments (in an unshielded question) is not associated with any of these political and economic factors (Treisman 2007). Unfortunately, the factors that drive the measurement error in cross-national corruption indices will also influence investment into a particular locality.

We attempt to correct for measurement error in perceptions of corruption by measuring corruption experience directly with respect to both foreign and domestic firms in one sociocultural setting but across different entry environments. To do this, PCI survey instruments exploit an approach known as the unmatched count technique (UCT). Informally known as a "list question" (Ahart and Sackett 2004; Coutts and Jann 2011), the technique has been used widely by researchers across many disciplines to explore different kinds of sensitive topics. List questions are extremely easy to administer, as the respondent is not obligated to admit to engaging in a sensitive activity in any way. As a result, the respondent can reveal critical information without fear. Coutts and Jann (2011) have shown in a series of experimental trials that UCT outperforms all other techniques at eliciting sensitive information and maintaining the comfort level of respondents. The trick to the UCT approach is that the sample of respondents is randomly divided into two groups that are equal on all observable characteristics. One group of respondents is provided with a list of relatively infrequent, but not impossible, nonsensitive activities. The second group, however, receives an additional sensitive item in the list. Respondents are only asked to tell the interviewer how many of the listed items they have engaged in, and they are instructed *not* to identify which items they specifically engaged in. Respondent culpability is concealed because neither the interviewer nor the researcher can interpret whether a treated respondent's answer included a sensitive item.

Below is the UCT question included in the 2010–2012 PCI surveys regarding bribery during business registration and licensing. An important feature of the question is that it is highly targeted and context specific. All of the activities listed are well known to businesses operating in Vietnam and would not be perceived as impossible or artificial, which might damage their confidence in the question. The survey question was administered in both Vietnamese and English.

> **UCT Question 1:** Please take a look at the following list of common activities that firms engage in to expedite the steps needed to receive their investment license/registration certificate. How many of the activities did you engage in when fulfilling any of the business registration activities listed previously?
>
> 1. Followed procedures for business license on website
> 2. Hired a local consulting/law firm to obtain the license for the firm for you[15]

[15]This item was added, as firms can avoid direct culpability for bribes by hiring a facilitator (i.e., Glaxo in China). By including this as a nonsensitive item, we seek to only capture direct experience and conservatively estimate a lower bound on bribe frequency. Because

3. *Paid informal charge to expedite procedures* **(Only available on Form B of the survey)**[16]
4. Looked for a domestic partner who was already registered

Whether a firm received Form A or B was determined by random sampling, so the two groups of respondents are balanced on all important observable characteristics.[17] One concern is that respondents may feel trapped by the set of nonsensitive items. If the activities are too frequent, a respondent in the treatment may feel forced to answer the maximum number of activities (including the sensitive item), thereby revealing his or her complicity directly. Alternatively, nonsensitive items that are too rare would have the opposite effect, allowing the respondent to believe that the sensitive item was the only reasonable option. In either case, the UCT would have failed and respondents would still be obligated to conceal their behavior. Our data did not appear to demonstrate such a tendency, as very few respondents in the control group answered the maximum number or zero nonsensitive questions.[18] In addition, pilot testing demonstrated a low correlation between nonsensitive items, providing us further confidence that respondents were able to answer honestly.

It is important to keep in mind that our survey question relies on the ability of the respondents to recall the activities they engaged in during the last time they completed registration procedures. For the majority of operations, this was not a challenge—53% of FIEs and 63% of domestic firms registered within five years of receiving the survey, leading to very little recall bias. Nevertheless, a small subset of operations completed registration procedures as long as 12 years before the survey. Although we could have chosen more proximate events for our survey experiment, the year a firm entered is critically important for our results, as we aim to take advantage of the changes in investment restrictions over time, paying special attention to the restrictions that were in place at the time a firm chose to enter the Vietnamese market. To mitigate this problem, we chose our activity items carefully, so that each represented an obvious action and was easy to remember. Nevertheless, such questions in firm-level surveys pose two dangers. First, data are likely to be noisier at early years of registration, which tends to reduce significance of results. Second, changes in firm management over time may mean that the respondent is different from the owner or manager who actually completed the procedures.[19] Indeed, follow-up interviews with respondents revealed that some of the item nonresponse to the question comes from new managers unable to answer the question. Once again, this problem most likely will lead to noise and insignificant findings rather than biased coefficients. In fact, our substantive conclusions remain (and actually are strengthened) when we restrict the analysis to firms registered within five years and even two years of the survey.

Once a survey is completed, a simple difference-in-means test between the treatment and control groups reveals a population proportion equal to the prevalence of the sensitive behavior or belief. These results are shown in Figure 3. Diamonds and squares identify the average number of activities for treatment and control groups, respectively. The range bars around the mean scores are 95% confidence intervals. The first thing to notice is that the range bars do not overlap in any of the survey years, indicating the differences in means are statistically significant and therefore that the treatment was effective. To calculate the percentage, we must now only subtract the treatment average from the control average (1.502 and 1.307, respectively, in the case of business registration for all investors). The difference between these means is 0.195, indicating that about 19.5% of businesses pay bribes at registration.[20]

Additional circumstantial evidence for our theory can be found in Table 1. Here, we provide difference-in-means tests of the number of activities engaged in

FIEs are more likely to hire facilitators, they have a slightly higher share of total activities in both control and treatment averages, but there is no bias in bribery estimates, which are the differences in means between control and treatment within a group.

[16]Note that "informal charges" (*chi phi khong chinh thuc*) is the common Vietnamese and English term to describe this type of bribery.

[17]Appendix 5 in the supporting information provides evidence for balance across all important covariates.

[18]See Appendix 8 in the supporting information for histograms of the share of responses to each value in the respective questions.

[19]The PCI requires general managers or owners to complete the survey, although there is no way to formally guarantee that the task was not delegated to a subordinate. The name and position of the respondent are maintained in the data set, giving us confidence that delegation is not a major threat to our analysis.

[20]The drop in average activities between the surveys completed in 2010 and the others was the result of a very minor change in the questionnaire. In 2010, a blank space was provided for respondents to record the number of activities in which they engaged. Very few respondents (0.34%) wrote zero activities in the space following the question. In 2011, however, all values between zero and three (or four for the treatment group) were provided, and respondents could check the appropriate value. A small share (14%) checked zero. Although this change should not affect calculation of bribes, Calculated is used twice as the difference between treatment and control within a given year, it does influence the total number of activities. To make sure our results are not an artifact of this innocuous change in survey design, we run our analysis with survey year fixed effects.

FIGURE 3 Propensity to Bribe during Registration

during registration for domestic and foreign firms in restricted and unrestricted sectors. The first panel looks at sectors restricted to FIEs, and the second panel studies restrictions on both FIEs and domestic firms. Once again, calculating the difference between treatment and control groups provides the share of firms engaging in bribery during entry procedures. Consistent with our hypothesis, there is very little difference between foreign and domestic firms in unrestricted sectors, which bribe at about the same level (18% versus 21%). Foreign firms operating in restricted sectors, however, have a substantially greater bribe frequency than their foreign peers in unrestricted sectors and their domestic competitors, which have the lowest bribery levels of the four groups. The second panel shows that the same pattern exists but is augmented for sectors restricted to both foreign and domestic firms. Once again, there is no difference between FIEs and domestic firms in unrestricted sectors, but an astounding 48% of FIEs entering restricted sectors pay bribes.

Firm-Level Empirical Analysis

In this section, we adapt a two-stage nonlinear least squares (NLS) estimation model developed by Imai (2011), which extends the difference-in-means approach used above to multivariate estimation.[21] This process allows for more complex evaluation and theory testing, which makes use of the rich descriptive information available in the survey. The Imai process involves fitting a model to describe the control group, then using the estimated coefficients to predict new values for the treated group, and finally fitting the imputed values over the observed in the treated group through an expectation

[21] Imai (2011) also develops a maximum likelihood estimator, which is more efficient, but we prefer the NLS estimation because it is able to recover the difference-in-means estimate when no controls are added. Also see Blair and Imai (2012).

TABLE 1 Difference in Means of Number of Activities Completed during Registration

Restrictions on Foreign Investment															
			Control (w/o Sensitive Item)				Treatment (w/Sensitive Item)					Bribe Frequency (Treatment-Control)			
Type	Restrict FDI	N	Mean	SE	95% CI		N	Mean	SE	95% CI		Mean	SE	T-Stat	P-Value
Domestic	No	7177	1.27	0.01	1.25	1.29	7584	1.48	0.01	1.45	1.50	20.8%	1.7%	12.2	0.000
Domestic	Yes	1543	1.37	0.02	1.32	1.42	1728	1.51	0.03	1.46	1.56	13.9%	3.7%	3.8	0.000
FIE	No	1244	1.42	0.03	1.36	1.47	1570	1.60	0.03	1.54	1.65	17.9%	3.6%	4.5	0.040
FIE	Yes	243	1.41	0.06	1.28	1.53	274	1.68	0.07	1.54	1.82	27.5%	9.6%	2.9	0.005
Restrictions on Both Foreign and Domestic Investment															
			Control (w/o Sensitive Item)				Treatment (w/Sensitive Item)					Bribe Frequency (Treatment-Control)			
Type	Restrict All	N	Mean	SE	95% CI		N	Mean	SE	95% CI		Mean	SE	T-Stat	P-Value
Domestic	No	6169	1.28	0.01	1.26	1.30	6808	1.48	0.01	1.46	1.51	19.9%	1.6%	12.7	0.000
Domestic	Yes	218	1.44	0.05	1.34	1.55	264	1.50	0.06	1.38	1.63	5.9%	8.4%	0.7	0.482
FIE	No	1048	1.42	0.03	1.37	1.47	1420	1.60	0.03	1.55	1.65	17.9%	3.8%	4.8	0.000
FIE	Yes	46	1.24	0.12	1.00	1.48	68	1.72	0.13	1.46	1.98	48.1%	18.9%	2.5	0.012

T-Stat and P-Value are one-tailed tests of whether difference in means between treatment and control (e.g. bribe frequency) is significantly different from zero.

algorithm to produce estimators for each variable included in the following model:

$$Y_i = f(X_i\gamma) + T_i(X_i\delta) + \varepsilon_i, \text{ where :}$$

$.Y_i$: response variable (total number of activities),

$.T_i$: treatment variable (received survey with sensitive item),

$.X_i$: matrix of covariates,

$.f(X_i\gamma)$: model for non−sensitive items (negative binomal regression),

$.g(X_i\delta)$: model for sensitive items (non−linear least squares) .

In the first stage of the adapted procedure, we fit the $f(X_i\gamma)$ model to the control group via negative binomial estimation (to account for count nature of the data and the overdispersion caused by zero answers) and obtain $\hat{\gamma}$, which is the relationship between participating in the nonsensitive behavior and each independent variable. In the second stage, we fit the $g(X, \delta)$ model to treatment group via NLS, after subtracting $f(X_i\hat{\gamma})$from Y_t, and obtain $\hat{\delta}$, the relationship between participating in the sensitive behavior and each independent variable. Because the dependent variable in the second stage is an estimate, standard errors are calculated using bootstrapping with 1,000 replications. When there are no covariates (independent variables) introduced in the model, the estimator reduces to the difference-in-means estimator. This can be seen in Model 1 of Table 2, which replicates the difference-in-means estimator from above. Note that the constant is .194, indicating 19.4% of respondents engage in bribery (nearly the exact estimate as Figure 2). Also note that the number of observations (9,449) is about half of the true sample of firms, as the second stage is performed only on the treatment group.[22] Model 2 introduces the survey wave fixed effects. Once again, the results are very similar to the differences in average bribery observed across each survey wave.

Model Specification

Our first theoretical expectation is that prevalence of registration bribery is likely to be higher when foreign firms seek to enter sectors that are designated as Group A projects. Thus, we expect that *g*, the predicted proportion of firms paying bribes, is determined by the following equation, where *i* is an index of firms and *t* indexes the year they completed registration activities. *Foreign Enterprise* is simply a dummy variable for whether a firm is a foreign-invested enterprise (FIE) instead of a domestic operation, *Restricted* is a dichotomous variable gauging whether a sector was listed as a Group A sector at the time the firm entered the market, and *C* is a matrix of both time-variant and time-invariant control variables:

$$g_{it} = \hat{\delta}_0 + \hat{\delta}_1 FIE_{it} + \hat{\delta}_2 RESTRICTED_{it} + \hat{\delta}_3 FIE_{it} * RESTRICTED_{it} + C_{it} + \varepsilon_{it} \quad (1)$$

To ensure that our results are not caused by recall bias resulting from firms that registered many years earlier or from a particular era of regulatory development, we restrict the sample to firms that registered after 2000. This has two additional benefits. First, it addresses the fact that registration procedures changed dramatically for private firms with the 2000 Enterprise Law, which reduced the number of licenses and put a cap on waiting periods to receive registration approval (Perkins and Vu 2010). Second, it avoids the confounding effects of legal changes that altered registration for FIEs after the USBTA (Weeke, Parker, and Malesky 2009).

Because we are using a two-stage nonlinear estimation strategy and our key causal variable is not exogenously assigned, it is crucial that we demonstrate that our results hold in the most parsimonious model, and then are robust to changes in specification (Achen 2002).

This is the strategy we adopt in Table 2, presenting the simple relationship and then trying our best to break it. We begin our analysis in Models 3 and 4 of Table 2 by assessing the interaction of *Foreign Enterprise* and *Restricted*, using only restrictions that apply to foreign firms. The coefficients on the two component terms and interaction effect are very similar in both models, but Model 4 is more precisely measured due to the presence of survey wave fixed effects, which help soak up variation caused by the addition of the zero option (discussed in footnote 20 above). Marginal effects for firm types can be read directly off Table 2. The constant provides the average proportion of domestic firms in nonrestricted sectors paying bribes (22.5%). The coefficient on *Foreign Enterprise* represents the marginal effect of being a foreign firm on bribery in nonrestricted sectors (11.8 percentage points lower probability of bribery). The coefficient on *Restricted* indicates the marginal effect of restrictions on bribery among private, domestic firms (7.6 percentage points lower probability of bribery). And the interaction term provides the marginal effect for foreign firms operating in restricted sectors (21.2 percentage points).

[22]Due to space considerations, first-stage estimations of nonsensitive items are not reported in the article, but they are available upon request and are documented in our replication materials.

TABLE 2 Correlates of Corruption during Business Entry (Restrictions on Foreign Firms)

Dependent variable:	Diff-in-means (1)	Survey Year FE (2)	Interaction (3)	Interaction w/Survey FE (4)	Size (5)	Time Trend (6)	Other Controls (7)	H2: Sector FE (8)	H3: Restrictions Dom. & For. Firms (9)
Foreign enterprise			−0.043	−0.118**	−0.122*	−0.120*	0.006	0.047	0.028
			(0.069)	(0.048)	(0.063)	(0.066)	(0.075)	(0.071)	(0.070)
Restricted			−0.069	−0.076**	−0.069**	−0.067*	−0.052	−0.171**	−0.075
			(0.048)	(0.032)	(0.033)	(0.035)	(0.041)	(0.078)	(0.063)
Foreign*Restricted			0.187***	0.212***	0.249***	0.250***	0.263***	0.234**	0.568***
			(0.072)	(0.064)	(0.079)	(0.079)	(0.060)	(0.089)	(0.151)
Capital Size at Establishment					0.011	0.011	0.010	0.015	0.009
					(0.012)	(0.012)	(0.012)	(0.013)	(0.013)
Time since registration						0.024	0.019	0.025	0.017
						(0.026)	(0.017)	(0.026)	(0.025)
Time squared						−0.002	−0.002*	−0.002	−0.002
						(0.002)	(0.001)	(0.002)	(0.002)
CEO is former SOE Manager							0.134***	0.135***	0.131***
							(0.034)	(0.035)	(0.035)
Plan to expand business							−0.034**	−0.033***	−0.033***
							(0.015)	(0.012)	(0.011)
Constant	0.194***	0.211***	0.209***	0.225***	0.196***	0 .149***	0.196***	0.184*	0.190**
	(0.030)	(0.021)	(0.035)	(0.017)	(0.042)	(0.106)	(0 .070)	(0.107)	(0.105)
Survey Year 2011		−0.063*		−0.044	−0.054	−0.052	−0.030	−0.043	−0.024
		(0.038)		(0.033)	(0.038)	(0.043)	(0.030)	(0.050)	(0.046)
Survey Year 2012		−0.027		−0.013	−0.017	−0.012	0.027	0.012	0.030
		(0.033)		(0.033)	(0.035)	(0.040)	(0.030)	(0.043)	(0.045)
Observations	9,449	9,449	8,865	8,865	7,457	7,457	7,335	7,335	7,349
Provincial Clusters	63	63	63	63	63	63	63	63	63
RMSE	0.984	0.965	0.981	0.962	0.966	0.965	0.958	0.954	0.958
Log likelihood	−13257	−13070	−12405	−12235	−10316	−10313	−10088	−10016	−10108

(Continued)

TABLE 2 (Continued)

Dependent variable:	Diff-in-means (1)	Survey Year FE (2)	Interaction (3)	Interaction w/Survey FE (4)	Size (5)	Time Trend (6)	Other Controls (7)	H2: Sector FE (8)	H3: Restrictions Dom. & For. Firms (9)
LR Test	NA	373.8***	1703***	2042.9***	5881.2***	5887.2***	6338.4***	6492.1***	26522.7***
BIC	26522.7	26167.3	24846.9	24525.2	20694.8	20706.7	20273.1	20128.3	20313.1

Note: Difference between the activities reported by treatment group and predicted number of nonsensitive activities of control group. These results are derived from a two-stage model. In the first stage, the number of nonsensitive activities is regressed on the covariates for the control group using a negative binomial specification. The predicted number of nonsensitive activities is then subtracted from the total number of registration activities for the treatment group. The difference becomes the dependent variable in the second stage, which is analyzed using a Non-Linear Least Squares (NL) specification in this model. Note that the number of observations (N) is the number of respondents in the treatment group. As Models 1 and 2 show the process correctly delivers the difference-in-means estimator for the whole sample and by year, indicating that the two-stage procedures yields unbiased estimates. Model 7 is the fully-specified estimation. Model 8 introduces sector fixed effects to analyze overtime variation in restrictions (H2). Model 9 replaces restrictions on foreigners with restrictions on all foreign and domestic firms to test H3. Because the dependent variable is an estimate, standard errors are calculated are through bootstrapping procedure with 1000 repetitions . Errors are clustered at the province level, which is the main interface for business registration. ($^{***}p < 0.01$, $^{**}p < 0.05$, $^{*}p < 0.1$) (FE: Fixed Effects; RMSE: Root Mean Squared Error; LR Test: Likelihood Ratio Test ; BIC: Bayesian Information Criterion). LR tests compare each new model to Model 1, where the null hypothesis is that the two models are not significantly different in the goodness of fit to the data.

In Model 5, we control for *Capital Size*, as Harstad and Svensson (2011) argue that large and important firms are less likely to bribe because they can rely on lobbying to circumvent difficult regulations. Since FIEs are generally bigger than their domestic counterparts in the same sector, it is critical to control for initial size to avoid omitted variable bias. To do this, we use an 8-point categorical variable representing the amount of registered capital for domestic firms or the operating license size for foreign firms at the time of entry (1: <$25,0000 to 8: >$25 million). Model 6 adds a quadratic time trend, measuring years since registration, to ensure that the relationship is not a function of trending in both corruption and restrictions over time. To address further omitted variable bias, we add control variables for firm characteristics in Model 7. About 6% of the domestic firms in the sample are former state-owned enterprises that have been privatized according to Vietnamese law. In many cases, these former state-owned firms have maintained the same directors and top managers and therefore have a far different relationship with bureaucrats, especially with local registration officers, than greenfield private investment. We might expect that these firms are less likely to bribe because they can rely on close relationships with officials instead. An alternative story, common in Vietnam, is that the close relationship between managers and officials may contribute to even more corrupt exchanges. To address these possibilities, we add a dummy variable if the current CEO of the private operation is a former director or high-level manager of an SOE. Finally, bribery may be a function of general optimism on the part of an entrepreneur, rather than the rents associated with a particular sector. Because we want to isolate the generalizable aspects of corruption, we also control for firm-level optimism by including a variable called *Expand*, which measures whether a business plans to expand production, investment, labor force, or product lines over the next two years.

Results

The results offer strong evidence for our hypothesis that FIEs are more likely to bribe in restricted sectors. In the fully specified Model 7, when competing in nonrestricted sectors, FIEs are not significantly more likely than domestic firms to pay bribes during business entry. The coefficient on *Restricted* is negative and also insignificant, indicating that domestic firms in restricted sectors have the same bribe propensity as domestic firms in nonrestricted sectors. This result is not surprising, given that most of the restricted sectors in this analysis are completely open to domestic investment. Finally, the coefficient on the interaction is substantively large and highly significant (0.263). When all variables are held constant at their mean, foreign firms attempting to enter restricted sectors have a 41.3% predicted probability of engaging in bribery, 26.9 percentage points higher than their domestic competitors in restricted sectors and 21.1 percentage points more likely to bribe than foreign firms in nonrestricted sectors.

Returning to our original estimation of a 19.4% bribe rate for all Vietnamese firms (19.6% for domestic and 18.4% for FIEs), we can use the estimates of Model 7 to generate counterfactual scenarios. If Vietnam were to remove all remaining restrictions on entrance for FIEs, the average bribe frequency of all FIEs would fall to 16.6%. Alternatively, were a protectionist campaign to strike, causing Vietnam to erect FIE restrictions on all industries, bribery among FIEs would increase to 28.4%. As the negative coefficient on *Restricted* indicates, however, there will be a countervailing effect from domestic firms, which we return to more deeply below.

The Effect of Removing Restrictions

Model 8 introduces four-digit ISIC fixed effects, so that we are only comparing firms within the most highly disaggregated sectors. Controlling for the structural features that might differentiate firms within a sector, the measure of restrictions will pick up the average effect of removing restrictions over time (keeping in mind that restrictions were only removed and never reintroduced). We find significant support for Hypothesis 2—removing restrictions does have a significant effect on the propensity of FIEs to pay bribes. Specifically, removing restrictions for foreign firms reduces bribery by about 24 percentage points in a given sector. The sectors that did not see change in their restricted status are also revealing. In sectors that remained restricted over the entire time period, bribe propensity averages 40.1%. By contrast, FIEs entering sectors that were always open have only a 10.6% probability of paying bribes over the period.

Restrictions and Bribery of Domestic Firms

Model 9 in Table 2 is designed to test Hypothesis 3, which argued that domestic firms should be attracted to the same monopoly rents as FIEs and therefore similarly likely to engage in corruption. To do this, we limit the restriction variable to only the seven sectors that restrict entry to both foreign and domestic firms. First of all, the

predicted probability of bribery for FIEs in restricted sectors is now a staggering 79.7%, which reflects the fact that the potential rents in the sector are higher due to limited domestic competition as well. The coefficient on the *Foreign Enterprise* component is positive and insignificant, which is understandable, as it now includes some FIEs that entered the sectors that are restricted only to foreign firms.

Critically, for domestic firms, we do not find that that they are any more likely to pay bribes when entering a restricted sector than otherwise. This appears to disconfirm the hypothesis that restrictions stimulate rents among domestic firms. In our theoretical discussion above, however, we raised a number of suggestions for why testing Hypothesis 3 was complicated in the Vietnamese context and why we might expect a nonfinding. First, there may be too few sectors that are restricted to domestic firms, and only a limited pool of private firms has the size and technical capacity to enter those restricted sectors to make adequate comparisons. Another concern is that domestic firms possess alternative assets that could substitute for bribes, such as personal relations with the decision makers. A final and more political explanation is that domestic firms entering restricted sectors were selectively chosen to do so, either because they are seen as industry champions or because they are considered loyal enough by the regime to operate in a sensitive industry. Indeed, we do find that former managers of SOEs are significantly less likely to bribe when entering restricted sectors than firms' managers without such heritage.[23] Such relationships are exclusive to select domestic firms, further increasing the liability of foreignness and helping to explain why FIEs feel obligated to bribe with such high frequency in these special sectors.

Of course, political connections are not randomly assigned, so dwelling too much on this finding is speculative. The bottom line is that this nonfinding does not definitely rule out the possibility of restrictions creating rents for domestic firms generally. Vietnam is simply in a place in its development trajectory where truly private firms remain small and unsophisticated, and the leading heights of the economy are dominated by large SOEs and former SOEs managed by connected entrepreneurs (Pincus et al. 2012).

Sensitivity Analysis

Space constraints prevent a detailed treatment; however, in Appendix 9 in the supporting information, we provide a number of additional robustness tests, including provincial fixed effects, year fixed effects, and multiple imputation to address missing values. Our substantive findings are unchanged. Our results are also consistent using an alternative estimator as suggested by Glynn (2013) and when utilizing SOE share as an instrument for restrictions to address endogeneity bias. We also consider the possibility that the results may be driven entirely by profit margin expectations and that the effects of restrictions on access are a derivative of that relationship. To assess this possibility, we compare the exogenous effects of margins on bribe propensity to those predicted by investment restrictions using a three-stage model. The results are consistent with our theory in that only profits that result from restrictions have a positive effect on bribe propensity. Residual profits are negatively correlated with bribery. We document all robustness tests at length in Appendix 9, noting that none of the tests overturn the key findings above.

[23] See Appendix 10 in the supporting information for more details.

Concluding Thoughts on FDI and Corruption

In this article, we contribute to the literature on foreign capital flows and corruption, both methodologically and theoretically, by employing a less biased empirical strategy to demonstrate how artificial constraints on foreign investment create incentives for entry bribes. We point out that previous findings linking openness to less corruption are difficult to interpret, as the merits often attributed to openness may simply result from the fact that FDI and trade are attracted to the same types of institutions that produce lower levels of corruption. Using the UCT technique, we present empirical findings of this relationship that are less prone to such spurious correlation. In addition, our empirical design employs both foreign and domestic firms to address whether openness has an independent effect on corruption or simply adjusts to local norms and bribe schedules. We find that over the entire period of investigation, 19.5% of operations in Vietnam paid bribes during the registration period.

Our focus on actual firm behavior specific to entry further removes the possibility that results are derived from inaccurate perceptions or idiosyncratic acts of malfeasance. Consequently, this study demonstrates that corruption is a nuanced activity that, like other business activities, is a two-way street where behavior is dictated by the expected gains from the activity for both parties. It is not simply an additional tax on doing business. Most importantly, we demonstrate the nefarious impact of entry restrictions on corruption, providing clear evidence that entry barriers provide strong incentives for investors

to buy entry and for government officials to sell access to these sectors.

Our results come from a single case. Yet, as argued previously, Vietnam resembles many other economies characterized by significant FDI inflows alongside high levels of corruption. At the same time, our within-country firm-level design allows us to eliminate sociocultural factors and institutional differences as potential sources of corruption. What does stand out about Vietnam, and what makes it a particularly good case for our theory, is the large role of the state in its economy, even after liberalization. In this sense, Vietnam is like many other transitioning economies with important SOEs operating and competing against private domestic and foreign companies. In these settings, entry restrictions are one important way regimes cultivate their SOEs, a commitment that offers an additional layer of security for foreign enterprises willing to bribe for protected access. Future work may want to explore this dimension further by comparing the effects of restrictions in economies with smaller state-owned sectors.

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Supporting Information

Additional Supporting Information may be found in the online version of this article at the publisher's website:

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