# Does the OECD Anti-Bribery Convention Affect Bribery?

# An Empirical Analysis Using the Unmatched Count Technique

**Abstract**

Substantial debate exists over the effect of the OECD Anti-Bribery Convention (ABC) on the propensity of firms to bribe officials in host countries. Unfortunately, research in this area has been hampered by reporting bias. Since the Convention raises the probability of punishment for bribery by investors in their home countries, it reduces both the incentives for bribery and the willingness to admit to the activity. This generates uncertainty over which of these incentives drives any correlation between signing the Convention and reductions in reported bribery. We address this problem by employing a specialized survey experiment that shields respondents and reduces reporting bias. We find that after the onset of Phase 3 in 2010, when the risk of punishment under the OECD-ABC increased, firms from signatory countries reduced their actual bribery relative to their non-signatory competitors.

Strategy research has demonstrated that corruption significantly affects the costs and benefits of foreign investment, altering both the choice to enter (Cuervo-Cazurrá 2008) and the specific strategies adopted when entering a host country (Henisz 2000; Rodriguez et al. 2005; Uhlenbruck et al. 2006; Meyer et al. 2009; Montiel et al. 2012). Corruption can also be extremely costly for host economies, leading to inefficiencies and externalities that damage public service delivery (Davis 2004; Olken and Pande 2012) and competitiveness (Wei 2000; Brouthers et al. 2008). At the same time, corruption poses a collective action problem by giving certain businesses strategic advantages over rivals (Bliss and Di Tella 1997; Ades and Di Tella 1999; Hellman et al. 2000). Recognizing these problems, countries have gravitated toward international agreements enshrining the legal principle of extraterritoriality, whereby signatories pass laws criminalizing bribery by their citizens and companies abroad that can be prosecuted in domestic courts. In this paper, we ask whether the most prominent of these agreements, the 1997 OECD Anti-Bribery Convention (OECD-ABC), has been successful at its stated goal of reducing global corruption.

The OECD-ABC was the landmark international convention designed to combat global corruption that has been lauded by legal experts for its influence on domestic anticorruption laws and enforcement patterns, primarily due to its peer review system (Stephan 2012; Tyler 2011; Spahn 2012; Spahn 2013; Hatchard 2013). Despite the accolades, nearly two decades after the passage of the Convention, there is very little direct evidence to answer the important question of whether the OECD-ABC has fulfilled its objective of reducing bribery by firms investing abroad.

Evaluating the effectiveness of the OECD-ABC is critically important on both academic and practical grounds, but is complicated by three well-documented research pitfalls. First, selection into the OECD-ABC was not random. The original signatories were a collection of the

most democratic and wealthiest countries in the world, comprising 63.9% of global exports and 85.1% of overseas direct investment (Transparency International 2013). Second, the standard measures of corruption in international surveys of investors are subject to both social desirability bias and non-response bias that are systematically associated with signing the OECD-ABC. Since signatories to the OECD Convention are, on average, at higher risk of prosecution for bribery in their home countries, the agreement not only reduces the willingness of investors to bribe but also reduces their willingness to answer honestly in surveys regarding engagement in the activity (Couts and Jann 2011). Finally, the generic survey questions that are available in standard datasets are ill-suited to investigate the study of corruption because they conflate different forms of bribery.

We set out to resolve these problems with a careful research design of a single host country—Vietnam—that is specifically devoted to evaluating the success of the OECD-ABC. To address the first challenge, we use a differences-in-differences (diff-in-diff) estimator to analyze the change in corruption behavior between investors from signatories and non-signatories of the Convention. Our sample includes 4,361 foreign investors in Vietnam, surveyed in four waves between 2010 and 2013. Key to our design is an analysis of bribery behavior after the introduction of Phase 3 of the OECD-ABC, which, according to experts, marked an important shift toward greater compliance by forming working groups to perform onsite reviews of signatory countries and monitor their implementation of the Convention (Stevenson 2014; Tyler 2011). By treating the Phase 3 onsite reviews as a critical turning point in the strength of enforcement under the arrangement, we are able observe the difference in the behavior between firms from OECD countries prior to OECD implementation and afterward. Since we focus on change in behavior (i.e., the reduction in the propensity to bribe), rather than the total level of

corruption, we can separate the effect of the OECD-ABC from the home countries' attributes that are correlated with the likelihood of signing.

The diff-in-diff design, however, does not resolve the question of correlated measurement error. To address this problem, we take advantage of a novel strategy for measuring corruption—the Unmatched Count Technique (UCT) or "list question." Using this approach, we can both directly measure corrupt behavior in a number of activities and simultaneously shield respondents from the dangers of admitting to illegal actions. Using the firm's registration year to divide the sample into pre- and post-Phase 3 groups, we find evidence of high levels of corruption during the registration of foreign firms, both before and after the original Convention. Similar results are found for corruption in procurement.

However, we provide strong evidence that the level and growth of corruption is altered by the OECD-ABC. Crucially, there is no statistical difference between propensity for bribery during entry procedures between signatories and non-signatories before the onset of Phase 3; in other words, investors from both types of states bribe at statistically indistinguishable levels before 2010, where roughly around 22% of firms paid informal fees. However, after the onset of Phase 3 in 2010, when the risk of punishment in their respective home countries substantively increased, firms from the OECD-ABC significantly reduced their corrupt behavior relative to their non-signatory peers. After Phase 3, firms from the OECD-ABC countries saw their bribe propensity decline substantially for both payments made during entry (dropping to 11%) and kickback on government procurement contracts (dropping to 40%), while their peers from non-signatory states continued to increase their corruption activity. Even larger reductions were experienced by active enforcers of the Convention.

These results remain even in the presence of numerous robustness checks, including the replication of the analysis: 1) with country fixed effects; 2) limited to only panel firms where the same respondent was surveyed before and after 2010; 3) using different cut-off years for the diff-in-diff, where only 2010 proves significant; 4) using different bandwidths around 2010, where even a one-year window proves significant; and 5) using different baseline years for registration to address potential recall bias.

The paper is organized as follows. We begin by providing the background on the OECD-ABC's origins and development that are necessary for understanding the theory and empirics that follow. Next, we discuss the broader theoretical underpinnings of our project and the long causal chain leading from OECD-ABC implementation and enforcement to reduced bribery by foreign investors. Third, we discuss previous efforts to empirically evaluate the effectiveness of the OECD-ABC and the research problems underlying the prevalence of mixed results. Fourth, we introduce our own research context of Vietnam and the unique firm-level data we bring to bear on the question. Using these data in the fifth section, we demonstrate the problems of the standard empirical set-up, exploiting a unique natural experiment to demonstrate the ineffectiveness of the traditional corruption question. The sixth section presents our preferred empirical approach outlined above, and the seventh section explores the results of the new techniques. Robustness tests are offered in the eighth section.

**Background on the OECD Anti-Bribery Convention**

A quick review of the institutional details and chronology of the Convention is necessary for understanding our approach. Previous work has simply coded firms as subject to the OECD-ABC and was not concerned with how implementation and enforcement of the Convention has

varied over time (Cuervo-Cazurrá 2008; D'Souza 2012; Spencer and Gomez 2011; Jeong and Wiener 2012). Our research design depends critically on the variation in risk faced by overseas investors as home country anti-corruption policies came into force.

The OECD-ABC began as an ad-hoc working group in 1989, culminating in the passage of the Convention in 1997 and officially coming into force in February 1999. Countries have joined and ratified the OECD-ABC at different dates, and new signatories (including Colombia in 2013) have continued to join since its inauguration. The negotiations over the OECD-ABC were partially triggered by the United States' amendment of the 1977 U.S. Foreign Corrupt Practices Act (US-FCPA) in 1988, which required the President to begin negotiations with fellow OECD members on issues related to bribery (George et al. 2000, 495).

Two dominant motivations for the OECD-ABC have been put forward by scholars. First, the Convention expanded the jurisdiction of criminal activity beyond the host country for foreign investment because it was becoming clear that not all governments had the capacity, sophistication, or incentive to rid their investment environments of corruption (Kazmerek and Newman 2011). Second, unilateral implementation by OECD members of such anti-corruption legislation was insufficient, because corruption posed a global collective action problem (Duvanova 2007; Magnusson 2013). Although corruption had negative effects on the general investment environment, raising costs and increasing the uncertainty of doing business in some countries (Mauro 1995; Wei 2000; Habib and Zurawicki 2002; and Cuervo-Cazurrá 2008), any one briber could benefit by winning lucrative procurement contracts, licenses, or land deals (Bliss and Di Tella 1997; Ades and Di Tella 1999; Hellman et al. 2000). Thus, if a country unilaterally began to punish the activities of its investors abroad, as the United States did with

the FCPA in 1977, it placed its investors at a disadvantage in competition with investors from other countries without similar restrictions (Pacini et al. 2002; Schmidt 2009; Tyler 2011).

The key principle of the OECD-ABC is the passage of local laws criminalizing bribery. The OECD does not directly enforce these laws, but a Working Group monitors both the generation of anti-bribery legislation and the enforcement of anti-bribery laws of signatory countries. The OECD-ABC was a striking departure from how many OECD countries treated bribery abroad. Although all signatories had laws restricting domestic bribery in their own countries, the high profile US-FCPA was one of the first acts that actually criminalized the corrupt behavior of home companies doing business abroad. Following in this vein, the OECD-ABC "adopted an extraterritorial approach," requiring governments to pledge to criminalize bribery behavior outside of their home country (George et al. 2000, 486). Consequently, the bribery of an official abroad became a criminal act, and individuals could be directly prosecuted in home-country courts for bribery behavior. The OECD-ABC provides explicit details ranging from how individual actors can be extradited to the level of information-sharing required by parties in order to uncover and prosecute bribery.[1]

In addition, the OECD-ABC is distinguished from previous multilateral efforts to combat corruption by its peer review process, whereby each signatory must allow for a rigorous and intrusive dissection of its efforts by the OECD Working Group in order to comply with the Convention (Tyler 2011). Although all the reports maintain a diplomatic and formal tone, the legal language can certainly be strong and pointed. For example, Australia was savaged by its evaluators in its Phase 3 report, which complained that the country "has only one case that has led to foreign bribery prosecutions, out of 28 foreign bribery referrals received by the Australian Federal Police (AFP)...this is of serious concern" (Hoy 2004).

[1] See George et al. (2000).

The OECD-ABC's peer review process has proceeded in three phases, which countries have undergone at different times depending on their accession dates. During Phase 1 (Evaluation Stage), which began in 1997 and was completed by 1999 for the original signatories, the focus was on whether legal documentation developed by the signatories met the standards set by the Convention. Since the monitoring concentrated on the wording of legal texts, Phase 1 posed very little threat to the activities of overseas multinational firms, and it is unlikely that we would observe significant changes in behavior after its onset.[2] The purpose of the Phase 2 review (Assessment Stage), which began in 2002 with a follow-up evaluation in 2005 for the original signatories, was to study whether the legal texts were being applied correctly and appropriately. Phase 2 also broadened the range of covered activities to include non-criminal procedures, which were part of the original Convention. Once again, these reports generally discussed legal implementation and therefore were unlikely to influence overseas investors' behavior.

The real teeth of the OECD-ABC emerged during Phase 3 (Enforcement Stage). Phase 3 sought to move beyond the textual legal analysis to focus specifically on whether signatory countries were living up to the spirit of the Convention by punishing malfeasance of their citizens and businesses abroad. Importantly for our research design, the Phase 3 peer review was initiated in December, 2009 with a full schedule for all signatories, running from June 2010 to June 2015.[3] Thus, even if a country was not scheduled to be evaluated until late in the schedule, it had full knowledge of when it would be evaluated at the beginning of 2010. This year, therefore, represents the critical shock to business behavior that we aim to evaluate in our data because it represents a sharp discontinuity in the probability and costs of punishment.

[2] OECD Country Monitoring (n.d.).
[3] OECD Schedule (n.d.).

Prior to 2010 it was unclear what the final phase of the Convention would entail; however, since then, the extent of the monitoring has surpassed some of the most optimistic predictions. For instance, the Phase 3 peer reviews now involve systematic on-site visits to both signatory countries and the overseas locations of investors, and a shorter, more focused assessment questionnaire has been added to pinpoint violations. Working Group reports now specifically focus on how particular cases of corruption were dealt with and punished by signatory countries (Tyler 2011). As Stevenson (2014, 1) writes, "The reports are often quite harsh, even scathing, and the political embarrassment associated with a bad review can shame governments and mobilize public opinion." Despite the embarrassment, no single country can block a report because the Working Group has adopted a "consensus minus one" standard. The bite of the Phase 3 peer review has been further augmented by a companion document adopted by the signatories, called the "Recommendation of the Council for Further Combating Bribery of Foreign Public Officials in International Business Transactions," which covers nineteen sections ranging from facilitation payments to procurement to internal taxation rules.

**<Insert Figure 1 here>**

Figure 1 provides bar graphs in the change in the enforcement patterns before and after Phase 3. Annual measures of enforcement can be quite lumpy because they are contingent on the amount of cases, historical backlog, and time constraints of domestic prosecutors. Therefore, we smooth over the annual changes by averaging the amount of enforcement activity in the four years before and after the Phase 3 calendar was announced. In the first panel, we provide the average penalty allocated before and after Phase 3, showing that the costs of malfeasance for bribery abroad have more than doubled to USD 3.5 billion in total fines (OECD 2014, 20). Similarly, the number of new investigations initiated by OECD-member states has also more

than doubled from 80 in the four years prior to Phase 3 to 150 cases in the four years afterward (TRACE 2014, 8).[4] If proponents of the Convention are correct, then this greater extent of enforcement should result in a deterrent effect, leading multinational corporations (MNCs) abroad to curtail their behavior. In the pages below, this insight motivates our empirical tests.

**Testable Hypotheses Regarding Extraterritoriality**

To build a set of hypotheses for our empirical analysis below, it is useful to pull back a bit from the legal details of the OECD-ABC to delineate the long causal logic of the agreement's architects, which we seek to evaluate below. The fundamental principal underlying the OECD-ABC architects' argument for the creation of the Convention was that of extraterritoriality, which was first enshrined in 1945 as the "effects doctrine," whereby countries can exercise jurisdiction over the behaviors of corporations and citizens outside of their physical borders, applying domestic rules to the foreign conduct of those entities (Kazmarek and Newman 2010). In early incarnations, the activities of the firms or citizens had to have an impact on the home country, but recent U.S. rulings have expanded the scope to a mere test of "presence," i.e., whether or not they have some presence within or tie to the home country.

Extraterritoriality has spread to a wide spectrum of issues including terrorism, antitrust, criminal law, the environment, intellectual property, online markets, securities, and trade (Kazmarek and Newman 2010). The US-FCPA was the first time that the concept of extra-territoriality was used to criminalize the foreign bribery of public officials by U.S. citizens and companies, but other countries have since followed suit with their own national laws, and the OECD-ABC was ultimately an attempt to expedite that process.

[4] OECD (2014) provides additional data on the 427 corruption cases to date.

Despite the increasingly wide application of extraterritoriality in international arrangements, there is little scholarship that systematically analyzes its impact at reducing the problematic behavior of the target groups. Most work has been quite negative about the effectiveness of extraterritoriality because of the limited leverage of home country regulations, necessity of cooperation from host country governments, and mobility of multinational firms in the increasingly globalized economy (Strange 1996; Tonelson 2000). Indeed, in the two most direct studies of the FCPA, Hines (1995) finds that the law had a negative impact on U.S. business, while Graham (1984) finds that it had no effect on the market share of U.S. investors in corrupt countries.

**<Figure 2 about Here>**

In the specific case of the OECD-ABC, the logic for success is even more complicated because there are multiple nodes in the causal chain at two different levels of analysis. Figure 2 offers a flow chart of how the international agreement is meant to ultimately constrain the behavior of firms operating abroad. At the state level (Nodes 1–5 in Figure 2), signatory countries must first be incentivized to follow through on their commitments to legislate, implement, and enforce extraterritoriality over bribery enforcement in their countries, even though the only real punishment is "naming and shaming" by the Working Group. Although this seems daunting, students of international relations, especially those from the constructivist school, who privilege the role of international norms, have made the case that the peer review process has increased international compliance (see Drezner 2008, 78; Paccini, Swingen, and Rogers 2002; Sandholtz and Gray 2003).[5]

A more rationalist perspective is offered by Kacsmarek and Newman (2011), who attribute greater national compliance under the OECD-ABC to the threat of expanded U.S.

[5] Tarullo (2003) offers a dissenting view

enforcement under the FCPA, which has interpreted "presence" broadly to investigate all firms who merely conducted a portion of their business in the United States. They find that countries whose firms were subject to US-FCPA investigations were more likely to join the OECD-ABC and comply with it in implementing their own domestic legislation to combat international bribery.

Although fascinating, the question of whether peer review has been effective at motivating state behavior is beyond the scope of our analysis. The primary focus of our paper is on the firm-level consequences of the OECD-ABC; thus, we zero-in on the last two nodes of the causal chain (Nodes 6 and 7b). As noted, the channel connecting Node 6 and 7a has already been established by Cuervo-Cazurrá (2008), which shows a reduced propensity to enter, but still demonstrates substantial flows into corrupt countries because of structural and market determinants. Therefore, we start from the observation that aggregate enforcement did increase after the onset of Phase 3 in 2010, and we ask whether that increased threat of Phase 3 altered the calculation of firms from OECD-ABC countries who, despite the increased risk, still made the decision to enter an emerging market.

This generates the following hypotheses:

**H1: There should be no statistical difference in bribe propensity between OECD-ABC signatories and non-signatories prior to the onset of Phase 3.**

**H2: After the onset of Phase 3 (2010) enforcement, firms from countries that signed the OECD-ABC will reduce the frequency of their bribery compared to non-signatories.**

One complication to evaluating these hypotheses is variance in home country enforcement.[6] A closer look at data underlying Figure 1 reveals that most of the activity is being

[6] Of course, host country cooperation in identifying and allowing evidence gathering matters as well. We bracket this discussion for future work because this factor is held constant in our empirical analysis by our decision to focus

driven by a handful of countries.[7] As the OECD Secretary-General soberly noted after touting early successes: "However, there has been little or no enforcement in over half of the Parties to the Convention" (OECD 2013, 3). Heiman and Dell (2012) criticize this implementation of the Convention, noting that few countries received the highest grade of "Active Enforcement" and that the remaining signatories were spread over the three other categories of enforcement. This wide variation in compliance—though demoralizing for proponents of the Convention—is interesting empirically. Below, rather than simply asking whether signing the Convention matters, we further probe how evidence of domestic enforcement, according to the four-point TI scale and a range of more direct measures, shape the behavior of foreign investors (Dell 2012).

> **H3: After the onset of Phase 3 (2010), firms from countries that actively enforce the OECD-ABC will reduce the frequency of their bribery compared to non-active enforcers.**

**Empirically Evaluating the OECD-ABC**

The empirical evidence regarding the effectiveness of the OECD-ABC at reducing bribery by firms is both limited and mixed. Some work has shown that the OECD-ABC leads foreign actors to curtail their behavior in suspect environments, including reducing foreign direct investment (FDI) in (Cuervo-Cazurrá 2008) and exports into (D'Souza 2012) highly corrupt countries. In addition, Spencer and Gomez (2011) present mixed results that depend on where the survey was collected, finding evidence that the Convention worked in Ghana but not in Eastern Europe. They attribute this divergence to the fact that the survey in Eastern Europe was conducted during the OECD-ABC ratification process and therefore had no teeth. Finally, Jeong and Wiener

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only on a single country—Vietnam. Interestingly, Vietnam was not a cooperative host country during our study period, forwarding zero cases to OECD peer reviewers thus far.

[7] In fact, these are the countries that TI calls active (i.e., the United States, United Kingdom, Germany, and Switzerland) and moderate enforcers (i.e., Italy, Australia, Austria, and Finland), according to the number, size, and frequency of the cases prosecuted.

(2012) find that companies in countries subject to the OECD-ABC paid less in bribes to win contracts during the Oil for Food program.

There are important reasons for the mixed conclusions. Research on the OECD-ABC is hampered by three research dilemmas. First, selection into the OECD-ABC is not random. The original signatories were a collection of the most democratic and wealthy countries in the world, which was no accident. Firms from these wealthy countries were the most likely to be competing for opportunities abroad. However, because of the selection process, it is difficult to separate the effects empirically of signing the OECD-ABC on the corrupt behavior of signatories' multinationals from other features of the signatory countries (e.g., wealth, democracy, lower home-country corruption, distance from emerging markets, etc.) that might also reduce corruption (Fisman and Miguel 2007).[8] Worse yet, all of these features are highly correlated, making it nearly impossible to pinpoint which of the home-country features is actually doing the work.

Second, the standard measures of corruption in international surveys of investors are subject to both social desirability bias and non-response bias. The strength of these biases is not random, but instead strongly associated with signing the OECD-ABC. Since the OECD-ABC raises the risk of a signatory country prosecuting bribery by its investors abroad, it not only reduces the willingness to bribe but also reduces the willingness to provide honest answers in surveys regarding engagement in these activities, which presents an extreme example of social desirability bias (Couts and Jann 2011).

Fearing home-country prosecution, firms from signatory countries are systematically less likely to report bribery and more likely to abstain from answering corruption questions. Although

[8] See Online Appendix A1 for a formal balance test detailing the wide range of confounders that are associated with OECD membership.

poor implementation in some countries indicates that the true probability of home-country prosecution is low, this true probability is still higher than the zero probability faced by investors from non-signatories. As a result, analysts cannot determine whether correlations between OECD-ABC membership and reduced bribery are the result of a real causal relationship or simply a correlation between signatory status and measurement error in the dependent variable.

Finally, generic survey questions about corruption (which we look at below), though commonly available, are ill-suited to investigate the study of corruption. This is the case because they conflate the different forms of bribery discussed above. Specifically, in many of the standard questions, it is unclear whether firm answers refer to facilitation payments or more pernicious forms of corruption.

**Our Research Setting: Investment Liberalization and Bribery in Vietnam**

To obtain more accurate measures of corruption and avoid noise caused by different levels of host country cooperation, we focus on a single FDI recipient: Vietnam. Vietnam has emerged as one of the most successful developing countries in attracting FDI across a number of sectors. Although liberalization in the 1980s and 1990s attracted large numbers of investors, Vietnam's entry into the World Trade Organization (WTO) in 2006 has been the highpoint of attracting FDI. After entering the WTO, FDI inflows totaled a staggering 10% of GDP (World Bank 2010). Although many advanced industrialized countries have joined the Convention, the major investors in Vietnam consist of both firms from signatory and non-signatory countries. Thus, studying Vietnam allows us to examine investment in a developing country that includes a wide range of investors.

Using original survey data, we are able to document how the investors' country of origin shapes bribery behavior for both firm registration and securing procurement contracts. In this

section, we provide a clear application of this novel measurement of corruption by drawing on four waves of the Vietnam Provincial Competitiveness Index (PCI) survey.[9] This survey paints a relatively comprehensive picture of domestic and foreign firms in Vietnam's 63 provinces with high response rates of 30% for domestic firms and 25% for foreign firms.[10] The PCI research team ensures that each year this survey is representative of the population of firms in Vietnam (Vietnam Chamber of Commerce and Industry (VCCI) 2013), and most important for this study, of the 10,437 active foreign firms in Vietnam, 46% of these firms (4,821) are in the sample.

Foreign investment in Vietnam is largely dominated by firms from East Asia. The five largest investors, based on national data and the PCI sample include: Taiwan (18.41%), South Korea (15.56%), Japan (15.38%), China (4.83%), and Singapore (3.96%). The sample also includes 560 investors from the European Union, 176 investors from the United States, and 61 from Australia. Although this concentration of investment from East Asia may seem like a liability for this study, two of the top five countries (Japan and South Korea) are both signatories of the OECD-ABC. The other top Asian investors are not. Overall, 42% of foreign investors in Vietnam are subject to the OECD-ABC, providing comparison groups that are relatively equal in size. Thus, our study provides the added benefit of a large number of investors from the same region along with considerable variation in signatories to the OECD-ABC.

Despite Vietnam's success in attracting FDI and increasing liberalization over the past decade, Vietnam remains a difficult environment for foreign investors because of its complex FDI policies—currently ranking 116 out of 175 countries on TI's Corruption Perceptions Index (CPI). Some analysts have even concluded that corruption in Vietnam has recently increased along with global integration. More specifically, after 2010, as the Vietnamese economy boomed

[9] Methodological details and background on the survey can be found at www.pcivietnam.org.
[10] See White and Luo (2006) for a discussion of response rates in firm-level surveys.

and investors sought new opportunities created by the country's WTO entry, non-signatories increased their bribery dramatically, reaching a predicted probability of 57%. Vu Quang Viet, a leading Vietnamese economic analyst, summarized his view of what happened as a process of "…opening up the economy outwardly and generating much more wealth, thus offering more spoils for abuse and bribery which have reached an unprecedented scale under the current regime" (Viet 2010, 17).

**A Standard Analysis of Corruption**

Before delving into our suggested methodological approach, it is useful to ask how traditional corruption questions perform in the measurement of corruption in Vietnam. To do this, we utilize two questions from the PCI survey, which directly replicated standard corruption measures used in the World Bank's Enterprise Survey and are employed in the World Bank's Control of Corruption index.[11] The first question asks firms to record whether it is common for firms like them to pay bribes. The second question asks firms to record the share of revenue that they pay in bribes each year. [12] We present both questions in the box below.

1. Do you **agree** with this statement? "It is common for firms in my line of business to have to pay some irregular 'additional unofficial payments.'
1. ❑ Yes
0. ❑ No

2. On average, **what percentage of income** do firms in your line of business typically pay per annum in **unofficial payments** to public officials?

| | |
|---|---|
| 1. ❑ 0% | 5. ❑ From 5% to less than 10% |
| 2. ❑ Less than 1% | 6. ❑ From 10% to less than 20% |
| 3. ❑ From 1% to less than 2% | 7. ❑ From 20% to less than 30% |
| 4. ❑ From 2% to less than 5% | 8. ❑ Over 30% |

[11] To see their location in the World Bank's Control of Corruption Index see the label BPS in the Governance Codebook <http://info.worldbank.org/governance/wgi/index.aspx#doc>.
[12] As is standard in Vietnamese surveys, the PCI uses the colloquial "unofficial" or "informal" payments to denote bribes because these terms are less sensitive, used widely in the country, and understood broadly by respondents.

Note that both questions share three common features that are standard in surveys measuring corruption. First, they ask firms to project away from their own culpability in the corrupt activity. This is thought to protect respondents because they are not admitting culpability but only talking about "others." The conceit is that the respondent will actually answer about their own activity. One cost of this approach, however, is that it can lead to over-reporting, as respondents report a "common" activity that they have not directly observed. Second, the questions are general in nature, asking the respondent to reflect and account for all the types of corruption encountered that year. Thus, we do not know what activities generated the bribery, whether it should be treated as a facilitation payment, or whether it could be connected to changes in the dependent variable, which would help in specifying useful policy changes. Instead, only very general changes in the legal environment can be detected.

Third, the questions ask firms to comment on the contemporary level of bribery in their host country. The goal is to reflect the current environment, and progress in corruption can be studied by comparing iterations of the survey over time. This strategy comes at a cost, however, because the surveys do not nail down when these firms actually experienced the corruption they are discussing. Most corruption takes place as businesses engage in specific activities, such as registering, acquiring an investment license, obtaining land, or bidding for government procurement contracts. Although all firms answer the survey at the same time, the length of time they have been in the country varies considerably, meaning the years in which they were exposed to corruption (especially those connected to business entry) will also vary considerably.

The combined effects of these three reasonable choices in designing standard corruption questions is that we cannot tell whether the OECD-ABC has led to a reduction in corruption; we can only tell whether OECD-ABC signatories are less likely to report corruption at the time of

the survey. Although less exciting, observing this correlation is a critical starting point for our analysis. Figure 3 reveals a 3.4% lower propensity of firms from OECD-ABC signatories to indicate "yes" to the first question and about a 0.23 shift down on the eight-point bribery scale, which corresponds to a 0.5 percentage point decrease in the amount of income devoted to bribes, in terms of the second question.[13]

**<Insert Figure 3 about Here>**

Some analyses of bribery might stop here. A closer inspection of the data, however, concerns us greatly in terms of how firms respond to these standard bribery questions. The strength of the relationship between the OECD-ABC and bribery spiked significantly during 2012, nearly doubling in size compared to previous and later years. What could account for the enormous success of the OECD-ABC in this specific year? Second, item non-response to the corruption question averages at about 30% over all four years, indicating the potential for a significant bias in terms of who decided to answer the surveys. Third, the distribution of responses across the second question is not normal, but is instead highly skewed toward very low levels of reporting bribe amounts. This raises concerns, but the implications for inferences about corruption are not obvious. In normal times, it is difficult to evaluate if individuals are providing non-responses or false responses to bribery questions for fear of incrimination.

In the middle of fielding our 2012 PCI survey, however, a natural experiment emerged that allows us to tease out the true motivations for reticent response to the standard survey questions. On August 20, 2012, the chairman of Asia Commercial Bank (ACB) was arrested in a corruption scandal, sending shock waves through the business community (Robinson and Bland 2012). We use this shock to provide a stress test (technically, a regression discontinuity design

[13] These results are robust to multivariate analysis, controlling for both firm- and country-level confounders. See Online Appendix A7 for details.

(RDD)), where we can evaluate people's willingness to answer bribery questions in the wake of this scandal.

The details of the scandal are well documented in international media (Bloomberg News 2012). Indeed, the media coverage itself may have contributed to non-response bias, as foreign investors were reminded that bribery scandals might become known to their home-country governments. Critically for our research, the arrest of the head of ACB, a firm with a fantastic reputation, numerous foreign clients, and the backing of multiple foreign equity investors, not only shook people's confidence in the company but also led to an immediate 10% decline in the Ho Chi Minh stock market. This major sell-off in the stock market allows us to identify the exact timing of when markets (and managers) became aware of the seriousness of the scandal.[14] This date, August 20, 2012, was during the midpoint of the distribution the 2012 PCI-FDI, with almost 50% of responses before the scandal and 50% of responses after the scandal. Timing of the PCI mail-out is randomized, making the respondents receiving the instrument before and after the scandal balanced on other attributes that could shape bribery behavior.[15]

Did this bribery scandal lead to a major change in how managers answered these direct questions on corruption? To test this proposition, we regressed the bribe size question's (#2 above) item non-response (*nr*)[16] on the multiplicative interaction of (1) whether the firm was a signatory of the OECD-ABC (*OECD*) and (2) whether the survey was distributed after the ACB arrest (*AfterACB*). To address omitted variable bias, we control for firm and country attributes.[17]

$$nr_i = \beta_0 + \beta_1 OECD_i + \beta_2 AfterACB_i + \beta_3 OECD * AfterACB_i + FX_i + CX_i + e$$

[14] To identify the exact date, VCCI 2012 uses a statistical method called "change-point analysis." See the 2012 PCI Report (Chapter 4, p. 61) and our Online Appendix A4 for a picture of the drop.
[15] Batches of surveys are mailed out randomly and research assistants randomly call managers as a reminder to fill out the survey. See VCCI 2012, p. 62 for more details.
[16] Item non-response means that managers filled out the survey but did not answer the individual corruption question.
[17] See Online Appendix A8 for full multiple regression results with non-response as the dependent variable.

The left panel of Figure 4 presents the results by graphing the predicted probability of non-response over the date in which the survey was answered (measured by the days before and after the ACB scandal broke). The graph clearly shows that before the scandal, the predicted item non-response was already relatively high (about 21%), but there was no statistical difference between investors from OECD-ABC and non–OECD-ABC signatories. After the crisis, however, the two groups sharply diverged with the average non-response among OECD-ABC signatories spiking to 39%, while the non–OECD-ABC respondents remain level. This result illustrates the dilemma in interpreting less reporting of bribery by firms from OECD-ABC signatories as evidence of less corruption. If bribing firms were the most reluctant to answer a direct bribery question honestly, because they were worried about criminal penalties, the decision of OECD-ABC respondents not to answer would lead to an apparently lower bribery share for that group. In other words, non-response bias is the likely answer to why OECD-ABC firms appear to have lower levels of bribery than their non–OECD-ABC competitors on standard questions.

**<Insert Figure 4 about Here>**

**A New Research Design for Evaluating OECD-ABC Effectiveness**

Our discovery above—that social desirability and non-response biases among OECD-ABC signatories is directly influencing findings in favor of research designs trying to measure the Convention's effectiveness—is not new. The use of perceptions of corruption rather than actual incidence of corruption has been widely criticized (Treisman 2007; Olken 2009). There is evidence that firms are reluctant to share information on their direct payments to politicians for fear of legal or political reprisals (Knack 2006; Seligson 2006; Kraay and Murrel 2013). To

mitigate these concerns, scholars have been increasingly turning to alternative ways to measure corruption.

*The List Approach to Corruption Analysis*

Our approach directly asks respondents about their experience, while shielding them from incriminating themselves or being subject to reprisal, thereby reducing downward bias in corruption associated with the OECD-ABC. We designed the PCI survey to include a question that utilizes the UCT, which is also known as a "list question" (Ahart and Sackett 2004). Evidence suggests that list questions are easy for respondents to understand and outperform other techniques in their ability to elicit sensitive answers from respondents (Coutts and Jann 2011). In our context, a respondent can "admit" to bribery without fear that this information will be used against the manager or firm. To get a sense of how well this is accomplished, in the right hand panel of Figure 4, we replicated our experimental analysis on the UCT question about bribing at registration, which was also used in the survey. Two conclusions stand out in the graph. First, item non-response with the UCT is half the size (11%) of the standard question. Second, there is no difference between OECD-ABC and non–OECD-ABC firms before and after the ACB revelations.

The benefits of the UCT are achieved by separating respondents, in our case firms, into two groups that through randomization are equal in terms of all observable characteristics. One group, that we call our "control group" receives a list of non-sensitive items and is asked to indicate how many of these items the respondent has engaged in. In our survey, we ask firms about their experience with registration and procurement.[18] Respondents are instructed to indicate the total number of activities that they engaged in, but not to indicate their participation

[18] Question C6 in the PCI-FDI survey, shown in the box below.

in any particular activity. In other words, respondents answer 0, 1, 2, or 3 rather than checking off boxes next to the specific activities in which they participated.

The other half of our sample, our "treatment group," receives the same list, but with one additional sensitive activity. In our UCT question below, the sensitive item is activity three. Respondents are given the same instructions: "Provide us a number, but do not indicate any of the individual activities that the firm or manager engaged in." Respondents then simply answer 0, 1, 2, 3, or 4.

Notice that the treatment group has one more item than the control group, which is the crux of the experiment. If all of the respondents in the treatment group engaged in bribes, we would expect that the mean response of the treatment group would be one point higher than that of the control group. Conversely, if no firms paid bribes, the means for the control and treatment groups should be the same.

**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 your firm.
3. *Paid informal charge to expedite procedures.*
   *(Only Available on Form B of the Survey; emphasis only added here)*
4. Looked for a domestic partner who was already registered.

Special note should be paid to the second non-sensitive item. This item was intentionally added, because it is well documented that firms can avoid direct culpability for bribes by hiring a an intermediary (Bray 2005; Hasker and Okten 2008; Drugov et al. 2014), which may be a law or consulting firm, that takes care of all the business registration expenses and only includes the potential bribe in a non-itemized bill to the foreign investor. Although this type of indirect bribe

payment contravenes Article 1 of the OECD-ABC, which specifically prohibits such indirect payments, the goal of the payer is to achieve plausible deniability that they knew a payment was being made (Bray 2005). Since the respondent's firm has self-selected into ignorance, we cannot ask them about their bribery activity.

This design choice does not bias our estimates of direct bribery because our dependent variable is the difference between the control and treatment groups, not the absolute number of activities. Nevertheless, it does limit the scope of our conclusions. By adding intermediaries as a non-sensitive option (after all, it is not embarrassing to hire a law firm), we deliberately increase the absolute number of activities that will be selected in both the control and treatment group. In short, we sacrifice our ability to measure indirect bribe payments because both randomly selected groups have an equal propensity to use this approach. Nevertheless, the treatment group still contains the sensitive item, which is direct experience with bribery. Consequently, by including the hiring of an intermediary as a non-sensitive item, we seek to only capture *direct experience* and thereby conservatively estimate a lower bound of bribe frequency.[19]

Studying registration in the question above has two limitations. First, most firms only register once, which prohibits a true panel analysis of firms, where we can study changes in an individual firm's behavior over time. Second, the OECD-ABC lacks clarity about facilitation payments, one of the most common forms of bribery observed in developing countries. Facilitation payments or "grease money" are payments to expedite a process of gaining access to a good or service to which a firm is entitled, such as a registration certificates, sector-specific licenses, business premises, or other forms of documentation needed to legally operate in the host country, and these types of payments are often not explicitly covered in domestic anti-

[19] A test of whether non-sensitive items increased after Phase 3 for firms from OECD firms is included in Online Appendix A13. We find that the increase is not significant or sizable enough to explain the bribery estimations.

bribery laws (Koch 2005). The OECD-ABC does more than turn a blind eye to these practices. In fact, they specifically permit "small facilitation payments" made to "induce public officials to perform their functions, such as issuing licenses or permits" (Argandoña 2005, 255).

In our study, if firms are compelled to bribe bureaucrats to speed up the process of a legitimate firm registration, it is unclear if this is really a firm gaining an "improper advantage," which is the OECD's delineation for illegal bribery. Although the OECD has been vocal on the need to make facilitation payments illegal (Strauss 2013) and although Vietnam considers them to be illegal as well (which technically makes them illegal under the FCPA and most other signatories' anti-corruption legislation (Nichols 2013)), the OECD-ABC largely allows countries to make their own decisions on whether to criminalize facilitation payments, thereby allowing punishment for perpetrators in home-country courts. According to Schemmel (2002), only ten signatories currently make facilitation payments illegal.[20]

To remove any potential ambiguity, we also created a question for bribery for during procurement contracts, which is clearly against the spirit of the OECD-ABC and has been the subject of numerous reports and initiatives.[21] In the official comments of the agreement, the OECD clarified that bribery during procurement was outlawed, "whether or not the firm was the most qualified bidder."[22] To address these concerns, we also designed a second UCT measuring bribery in government procurement, which cannot be considered a facilitation payment and which can occur multiple times over the investment period in Vietnam.

[20] It is critical to note that the definitional issues regarding facilitation payments pose very little threat to our research design below. If critics are right that many businesses that are subject to the OECD-ABC do not see paying bribes during business entry as bribery, we would expect that firms from such countries would continue to make such payments after the onset of Phase 3 because they face no threat from increased enforcement. In other words, the differing interpretations concerning these payments bias against a finding that the OECD-ABC is effective, leading to a likely zero change over time in bribe payments.
[21] See OECD (2007).
[22] OECD (2011, 14).

**UCT Question 2:** If your firm competed for business with a government agency last year, please look at the following list of common activities firms engage in to make their goods or services more attractive to government clients. Please do not answer about any one of these activities specifically; we are only interested in the TOTAL NUMBER you may have utilized to win government business. How many of the below activities did you engage in when fulfilling business registration or licensing activities?

1. Dropped off pamphlets or fliers at government offices advertising your goods or services.
2. Opened your business or a branch of your business near government offices in order to be nearer to the decision-makers.
3. *Paid a "commission" to a government official to ensure that your business won the contract, he would receive a small percentage. (Only on Form A; emphasis only added here)*
4. Attended government functions or meetings in order to meet officials and make them aware of your goods or services

Both questions were included in all four PCI-FDI surveys between 2010 and 2013 that were mailed out to firms in both English and Vietnamese.[23] There is excellent balance across the control and treatment groups, mitigating concerns that differences between the groups is attributable to differences in the sub-samples.[24] Another concern is that if these activities are too frequent (i.e., everyone is answering at the maximum) or too rare (i.e., most responses are zero), respondent answers on the sensitive question are not effectively shielded. Luckily our survey indicates that most firms answer one or two items, and few are near the floor or ceiling.

**UCT Experiment Results**

To first analyze the level of bribery during registration, we present a simple difference-in-means between the number of activities completed in the treatment and control groups in Table 1. As the first two rows of the table show, treatment firms engaged in 1.595 activities, while the

[23] There was a slight change in wording and an additional value in the 2011 and 2012 versions of the procurement question. As a result, rescaling to a four-point scale was necessary.
[24] See Online Appendix A3 for details on the balance between the control and treatment groups.

control firms engaged in 1.403 activities. These means are significantly different, indicating the success of the experiment. More specifically, subtracting the control from treatment averages, we find that on average, 20.2% of foreign firms engaged in bribery.

**<Insert Table 1 about Here>**

Although uncovering bribery by foreign firms is interesting, our key test is how OECD-ABC signatories fare relative to non-signatories. In the next three panels, we disaggregate the analysis between OECD-ABC signatory and non-signatory countries as well as whether the foreign business entered and registered its operations in Vietnam prior to the beginning of Phase 3 (January 2010), using question A1 on the PCI survey.[25] Firms that registered before Phase 3, regardless of the year they responded to the survey, are coded as 0, whereas firms that registered after Phase 3 are coded as 1. Focusing on Phase 3 has practical and empirical benefits. Practically, only 549 firms (229 from OECD-ABC signatories) were registered before 1997, limiting precision about the pre–OECD-ABC environment. Empirically, however, even if more firms entered before 1997, using it as the cut-off would still be risky due to recall and survival bias. Theoretically, the legal literature makes clear that Phase 3 posed a unique structural break in home country implementation.

Consistent with Hypothesis 1, the differences between the two groups are non-significant in aggregate before the onset of Phase 3. However, after Phase 3, a huge gap opens up between firms from signatory and non-signatory countries, which is in line with Hypothesis 2. Although firms from OECD-ABC signatory countries continue to bribe at about the same frequency as before Phase 3 (around 22%), firms from non-signatories more than doubled their bribe frequency (from 16.7% to nearly 44%).

[25] "A1. In what year did your firm first apply to receive a license to invest in Vietnam? ____YEAR." (Phase 3=0 if entry year <=2009; Phase 3=1 if entry year>2009).

The simple difference-in-means is suggestive of our hypotheses; however, we are leaning heavily on the representativeness of the comparisons between the two groups. Are we sure that firms from non-signatory countries are investing in the same sectors or types of operations? In short, it is possible that these results suffer from omitted variable bias, which can be mitigated through multivariate regression.[26] To control for potential confounders within the UCT framework, we utilize a two-stage estimation model developed by Blaire and Imai (2012) called LIST. This method uses a set of covariates to model non-sensitive responses in the control group and then uses this model to estimate responses for the treatment group. The process involves fitting a model to describe the control group, then using the estimated coefficients to predict new values for the treated group, as described below.

$Y_i = f(X_i\gamma) + T_i(X_i\delta) + \varepsilon_i, where:$
$\cdot Y_i$ : response variable (total number of activities),
$\cdot T_i$ : treatment variable (received survey with sensitive item),
$\cdot X_i$ : matrix of covariates,
$\cdot f(X_i\gamma)$ : model for non-sensitive items (negative binomal regression),
$\cdot g(X_i\delta)$ : model for sensitive items (non-linear least squares).

We fit the $f(X_i\gamma)$ model to the control group in the first stage. From this we obtain the relationship between the response to the non-sensitive questions and each independent variable ($\hat{\gamma}$). Then we fit the $g(X_i\delta)$ model in the second stage using non-linear least squares (NLS) in models without fixed effects and linear estimation in models using sector fixed effects. Then,

[26] OECD-ABC signatories are not randomly assigned. The countries that have signed are significantly richer, more democratic, and more likely to be in Europe or North America. Moreover, OECD-ABC businesses are slightly smaller in their initial capital sizes and more likely to be in manufacturing industries, rather than services or construction. We add control variables to address the main differences in initial starting status between firms from OECD-ABC signatories and those that are not. In addition, Online Appendix 2 provides a balance table which shows balance in potentially trending variables over time to make sure our results are not an artifact of the changing behavior of OECD-ABC firms, such as entering new sectors or engaging in different entry modes.

after subtracting $f(X_i\hat{\gamma})$ from $Y_i$, we have a measure for the relationship between bribery and each independent variable ($\hat{\delta}$).[27]

*Model Specification*

Using the UCT helps limit the dangers of non-response and social desirability biases. In addition to measurement error, however, a key issue in the naïve analysis above was the potential omitted variable bias that might be associated with OECD-ABC signatory status. Since so many factors correlate strongly with membership, causal inference is nearly impossible in a cross-sectional model. To address this, we employ a diff-in-diff estimator, which assesses the change in the behavior of firms from OECD signatories before and after the onset of the Phase 3 implementation stage. Since registration only occurs once for most firms in our sample, we cannot assess firm-level panels and therefore employ the recommended diff-in-diff design for repeated cross-sections of respondents (Imbens and Wooldridge 2007, 1; Angrist and Pishke 2009, 233).

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. C is a matrix of time-variant and invariant firm and country controls. In the fully specified Model 6, we include a set of survey-year effects ($\lambda$) and two-digit sector fixed effects ($\alpha$) to address the concern that there might be changes in industrial groupings associated with OECD-ABC membership.

$$g_{it} = \delta_0 + \delta_1 OECD + \delta_2 Phase3 + \delta_3 OECD * Phase3 + C_{it} + \lambda + \alpha + e_{it}$$

[27] Standard errors are clustered by country and are calculated using bootstrapping with 1,000 replications.

The key feature of the diff-in-diff model is that we can separate the structural features of OECD signature status from the change caused by Phase 3. This can be seen directly in the formula. The coefficient $\delta_1$ provides the effect of OECD-ABC membership prior to the onset of Phase 3 in 2010, and $\delta_2$ provides the change in corruption since 2010 in the non-signatory group. $\delta_3$ is the key parameter of interest, as it provides the additional effect of OECD-ABC membership on bribery after Phase 3 came into force (the diff-in-diff).

Since we are using a two-stage, non-linear estimation strategy and our key causal variable is not exogenously assigned, it is crucial that we demonstrate that our results both hold in the most parsimonious model and are robust to changes in specification. This is the strategy we adopt in Table 2 using the LIST methodology outlined above, where we present the simple relationship and then try our best to disprove it.[28] Note that our sample size is halved because it is a two-stage model, where we first estimate the number of non-sensitive items in the control group, and then use those estimates to calculate bribery in the treatment group in the second stage. Thus, our *n* only reflects the observations in the treatment group.[29] In Model 1, we present a model with no controls, showing that our results correctly recover the difference-in-means estimate presented in Table 2. We find that 20.2% of firms pay bribes in our sample.

We begin our analysis in Model 2 of Table 2 by assessing the interaction of *OECD* and *Phase 3*. To make sure the annual events or particular features of the survey process are not biasing results, we introduce survey-year fixed effects in Model 3. Since bribe propensity can differ dramatically across sectors and because the change in the selection of firms into sectors may be associated with OECD-ABC membership, we introduce two-digit International Standard Industrial Codes (ISIC) sector fixed effects in Model 4. Model 5 adds a battery of controls for

[28] Online Appendix A6 provides descriptive statistics for all variables used in our regression analysis.
[29] To preserve space, we only present the bribery results, although first stages will be made available with our replication materials.

potential firm-level confounders (e.g., labor size, equity size, 100% foreign owned versus joint ventures, and whether the firm is located in an industrial zone). Model 6 adds in commonly used country-level confounders from cross-national corruption literature (e.g., GDP per capita, distance from Vietnam, home-country population size, home-country corruption, and level of democracy).

In the next panel of Table 2, we test the sensitivity of our findings to reasonable changes in specification from our preferred model. Model 7 introduces more firm-level confounders, which proved significant in our balance test of over-time changes which were associated with OECD-ABC status.[30] Unfortunately, such rigor significantly reduces the number of observations and our statistical power. Model 8 introduces entry-year fixed effects to address any systematic economic shocks in a particular year that might be biasing our results. Note that the Phase 3 variable is absorbed by those dummies. Model 9 introduces a full set of home country dummies, which capture all the variance associated with home country status. This model essentially limits comparisons to foreign invested enterprises (FIEs) from the same country and two-digit sector that entered Vietnam before and after the Phase 3 onset. Note that the OECD coefficient is perfectly correlated with country dummies and therefore must be dropped from the analysis. Finally, Model 10 introduces both entry-year and country fixed effects. Regardless of the specification choice, the results are robustly significant and similarly sized.

Focusing on Model 6, which we believe offers the best combination of statistical power and adjustments for confounders, we find strong support for the notion that the Phase 3 implementation has important effects on reducing bribery in OECD-ABC signatories. Looking at the first coefficient in the table ($\delta_2$), we see that bribe frequency increased by 31 percentage points since 2010 among non-signatories. The second coefficient ($\delta_1$) shows that, all else equal,

[30] See Online Appendix 2 for a balance test of trending in a range of confounders.

firms from OECD-ABC signatories were significantly more corrupt (by about 29 percentage points) than non-signatories prior to the onset of Phase 3. In H1, we predicted that there would be no difference. However, this effect should be treated with caution because it is not robustly significant across model specifications. Moreover, severe multicollinearity with the other country controls means it is not clear whether this is due to the Convention or unobserved features of the signatories. The coefficient on the interaction ($\delta_3$) is the critical parameter in our analysis, providing the diff-in-diff since 2010, and it shows a 39 percentage point reduction in the growth of bribery for OECD-ABC signatories relative to non-signatories, leading to a marginal reduction overall in bribery by firms from signatories

Thus, it is clear that H2 is upheld. During a period of high growth in the Vietnamese economy, along with lucrative opportunities for malfeasance, the implementation of Phase 3 appears to have significantly reduced the frequency of bribery during business registration.

**Robustness Tests**

At first blush, the findings appear compelling, but the timing of Phase 3, the type of corruption measured, and the implementation of the PCI survey pose a number of threats to inference. In this section we tackle these threats one by one: 1) the parallel trends assumption; 2) bandwidth size; 3) repeated cross-sections versus panel estimation; and 4) robustness to bribery in procurement.

*The Parallel Trends Assumption*

The diff-in-diff estimator identifies the impact of the treatment under the parallel trends assumption that the unobserved difference between the treatment and control groups is time-

constant before the intervention. In non-statistical jargon, our findings could be biased if corruption among signatory firms was already in decline prior to Phase 3 because of lagged responses to earlier OECD-ABC phases, regulatory responses to the sub-prime financial crisis, or Vietnam's entry into more restrictive international economic agreements, such as the U.S. Bilateral Trade Agreement in 2000 or the WTO in 2007.

To address these concerns, we run a series of placebo tests that re-run our preferred specification (Table 2, Model 6) but vary the cut-off year for the before and after analysis. If prior declines in OECD-ABC corruption are really responsible for our finding, the interaction term should be significant for those other years as well. The top panel of Figure 5 plots the results of 16 regressions for each year (y) between 1997 and 2012, where "after" is defined by entry years greater than the y. For each year, we depict the coefficient on the OECD*Year interaction term surrounded by a 95% confidence interval.

**<Figure 5 about Here>**

Notice that the key interaction term for every year between 1997 and 2008 is not robustly significant across specifications, and more importantly, has the wrong sign in most models. We do not observe a significantly negative coefficient until 2009, the actual Phase 3 cut-off year. That is, the predominant trend prior to Phase 3 was that changes in corruption among OECD-ABC signatory firms was roughly equivalent to their non-signatory peers.[31] In sum: 1) there is no evidence that OECD-ABC countries were generally less corrupt prior to Phase 3, and 2) violations of the parallel trends assumption cannot be responsible for the change in behavior we observe. Thus, there is no evidence that alternative factors, occurring prior to 2009, are responsible for the effects we observe in Table 2.

[31] This trend can also be observed in Online Appendix 10.b, where we calculate the average bribe propensity every five years going back to 1989. Notice that firms from signatories and non-signatories bribe at very similar levels until they hit the red line denoting the Phase 3 onset in 2010.

*Varying Bandwidth*

A second concern with our analysis is that our relatively open window on both sides of Phase 3 is allowing for the capture of behavior that takes place significantly after 2009. For instance, if firms from OECD-ABC signatory countries coincidentally enter less corruption prone sectors or use less corruption prone entry procedures in 2012 and 2013, then by averaging together all bribery after 2009, we might be conflating these structural changes in the Vietnamese and global economy with responses to the Convention.[32]

On the other side of the coin, our decision to include the responses of all firms that registered after 2000 in the analysis may introduce recall bias; specifically, this recall bias could occur because we are comparing firms that registered long ago and that may have developed negative memories of the registration period with those that registered more recently and have not had time to let their experiences in Vietnam potentially cloud their memories. To make sure our results survive this form of bias, we re-run the analysis allowing windows around the 2009 cut-off to vary from the narrow one year since registration (only firms in 2008 and 2010) to the less narrow six years around 2009. [33] These results can be seen in the bottom panel of Figure 5.[34] Importantly, the choice of bandwidth has very little impact on the estimated reduction in corruption. Although the model's efficiency decreases with very limited windows because of the smaller number of respondents, the overall diff-in-diff coefficient is consistently around 40 percentage points. In fact, although imprecisely estimated, the one-year bandwidth actually indicates the sharpest decline among OECD-ABC signatories—roughly 60 percentage points.

[32] Online Appendix 2 shows that there is little evidence for such structural change within our sample of firms on observable indicators, especially sector (See Figure A2.1), but bias on unobservables is also possible.
[33] The last observed registration year is 2014, not 2015 in that analysis.
[34] A separate robustness test in Online Appendix 12 also experiments with including the earliest entry year allowed to check the impact of recall bias on results. Again, results are all significant and similarly signed.

*Panel Analysis Using Re-Registration*

Entry into Vietnam occurs only once, meaning that the first nine models of Table 2 rely on repeated cross-sections of firms, dropping those that answered multiple times. Since the underlying population of new entrants may be different each year, the changes in observed bribery may be due to the fact that later entrants simply behave differently. In Models 11 and 12, however, we return to a small subset of 400 respondents, who answered in 2010, and were then invited to continue as part of a panel of firms interviewed in subsequent years. About 120 (55 in the control group, 65 in the treatment group) of these firms chose to re-register their businesses in order to expand the size of their investment license, change their business premises, or alter their assortment of products.

This re-registration allows us to analyze them in a panel diff-in-diff design. Thus, for this analysis, we treat the first year of registration as time (t) and the year of re-registration as time (t+1). This means that these models capture the change in behavior of the same firms over time when taking part in a similar process. Although the analysis is under-powered and estimates are shy of standard thresholds of statistical significance, the substantive size of the effects is in line with previous models. Specifically, firms from non-signatory countries dramatically increased their bribery during re-registration, while firms from signatories reduced their bribe frequency by about 58 percentage points (in Model 13).

*Bribery during Procurement*

In Table 3, we present an analysis of bribery during procurement. Three changes between this analysis and Table 2 are important to note. First, we only study firms that competed for government procurement contracts during the years covered by the survey. Second, we further limit our analysis to the panel of firms that answered the survey in both the first and subsequent years of the PCI, allowing us to study how the behavior of individual firms changed. Third, registration year is no longer an appropriate rule for defining Phase 3. Alternatively, in this analysis, we no longer code Phase 3 by a firm's entry date. Instead, we code responses to the first iteration of the PCI-FDI survey in 2010 as prior to Phase 3 (Phase 3=0) because the respondents were answering questions about competition for government contracts in 2009, and the responses by those same firms in later iterations of the PCI survey as after Phase 3 (Phase 3=1).

**<Table 3 about Here>**

Results from this analysis are more tentative because these choices substantially reduce our sample size and statistical power. However, the results from the procurement analysis are very similar to the registration analysis, though they are not robustly significant. Specifically, before the Phase 3 onset, firms from the OECD-ABC countries were not statistically distinguishable from their peer firms in non-signatory countries in terms of their propensity to bribe to win government contracts. In fact, they tended to actually bribe more than their peers. After the onset of the OECD-ABC, however, the very same firms from signatory countries reduced their bribe frequency by 60 percentage points, while firms from non-signatory countries actually increased their bribery behavior. Although these results are inefficiently estimated (likely due to limited power), the size and direction of the coefficient remain remarkably robust

through multiple specifications, including the introduction of survey-year and sector fixed effects as well as full sets of firm- and country-level controls.

Again, although bribery behavior can be driven by many factors, our results are consistent when looking at the differences between OECD-ABC signatories and non-signatories. Overall, there is little difference between these groups until Phase 3, and after Phase 3, we observe vastly lower levels of corruption among firms from signatories compared to those from non-signatory countries.

**Testing Hypothesis 3: Enforcement**

As noted in our theory, one contentious issue is the domestic enforcement of these conventions. To assess the effect of enforcement in Table 4, we adapt the Heiman and Gill (2012) measure, [35] a three-point coding of domestic enforcement, coding countries as 1 (non-enforcers), 2 (partial enforcers), and 3 (full-enforcers). Models 1 and 2 of Table 5 show that for each incremental increase of domestic enforcement, bribery declines by about 17 percentage points. Models 3 through 8 move away from the composite scale to study more direct measures of enforcement, such as the number of cases prosecuted, the number of major cases prosecuted, and the number of punishments meted out to companies in each signatory country. These models also show greater reductions from high enforcement countries. This provides strong evidence for H3 that companies are responding to the greater risk of punishment and higher costs of sanctions in their home countries.

**<Table 4 about Here>**

[35] Note the original measure included a four-point scale, but due to limited observations, we combined the two intermediate categories.

## Conclusion

In this paper, we contribute to the large and growing literature on the determinants of bribery in business transactions, using Vietnam as an ideal empirical case study. More specifically, we use Vietnam to test how the OECD-ABC and its enforcement shape bribery. Using a major corruption scandal in Vietnam during the rollout of our survey as a natural experiment, we show that mangers are extremely sensitive to answering questions about corruption. We then introduce unique survey data that directly measure corruption without forcing managers to incriminate themselves for illegal activities. Overall, using this methodology, we find that roughly 20% of foreign investors in Vietnam engaged in bribery.

We harness these data to answer a set of important substantive questions on how the OECD-ABC affected firms' levels of bribery in Vietnam based on whether their home country signed the Convention. Our main finding is that the success of the OECD-ABC is mixed. We find that merely signing onto the Convention had no impact on bribery. Only once the countries experienced serious monitoring and punishment, which raised the costs and risks of bribery, in Phase 3 of the Convention do we see a divergence in bribery behavior by signatories and non-signatories. More specifically, in Phase 3, we find substantial evidence that the Convention has helped curb bribery behavior by managers, and we find this same general trend whether we look at informal payments during business registration or bribery engaged in during procurement. Firms from OECD-ABC signatories, and especially the countries with the strongest enforcement, engage in less corruption relative to firms from non-signatory countries, even after controlling for non-random selection into the OECD-ABC.

An important puzzle remains from our empirical analysis. We hypothesized that OECD-ABC would lower corruption among signatories, but we had no expectation that bribery would

change among firms from non-signatories. In fact, across different measures of corruption and model specifications, we consistently observe substantial increases in bribery among firms from non-signatories. What accounts for this pattern?

In future work, we propose to explore this question by separating and testing three potential theories for why corruption increases in non-signatory firms in parallel with reduction in non-signatories. Importantly, each theory requires a strategic action by a different actor, so they may not be mutually exclusive.

1.) Strategic outsourcing: Firms from OECD-ABC signatories may reduce their risk of home country prosecution by strategically outsourcing bribery to non-signatory firms, which encounter fewer costs and risks of bribery. This pattern is consistent with our findings and also consistent with other work demonstrating reduced business activity by signatory countries in highly corrupt environments.

2.) Opportunistic bribery: Knowing that signatory firms are constrained, firms from non-signatories may be increasing their bribery behavior to win lucrative procurement contracts and win valuable licenses in restricted sectors, thereby obtaining a first move advantage.

3.) Savvy bureaucrats: Certainly, host country gatekeepers are aware that firms from OECD-ABC countries face greater constraints. As a result, they also may be changing their behavior in their interactions with business; strategically reducing their bribery requests where the obstacles may be higher and increasing them where a bribe payment is more likely.

In our original research design, we did not anticipate the growth in bribery among non-signatory firms and unfortunately did not put in place the requisite survey questions to test these three mechanisms. Therefore at this stage, we can only with confidence that Phase 3 has reduced the direct bribery behavior of OECD-ABC firms. In future work, we will be able to answer

whether this activity accounts for a reduction in overall global corruption; or whether, like a balloon being squeezed, the OECD-ABC has simply shifted corrupt activities to other areas.

**References**


Ades, Alberto, and Rafael Di Tella. 1999. Rents, Competition, and Corruption. *American Economic Review* 89 (4): 982–993.

Ahart, Allison M., and Paul R. Sackett. 2004. A New Method of Examining Relationships between Individual Difference Measures and Sensitive Behavior Criteria: Evaluating the Unmatched Count Technique. *Organizational Research Methods* 7 (1): 101–114.

Angrist, Joshua and Jorn-Steffen Pishke. 2009. *Mostly Harmless Econometrics*. Princeton, NJ: Princeton University Press.

Argandoña, Antonio. 2005. Corruption and Companies: The Use of Facilitation Payments. *Journal of Business Ethics* 60: 251-264.

Blair, Graham, & Imai, Kosuke. 2012. Statistical analysis of list experiments. *Political Analysis,* 20(1): 47-77.

Bliss, Christopher and Rafeal Di Tella. 1997. Does Competition Kill Corruption? *The Journal of Political Economy* 101 (5): 1001–1023.

*Bloomberg News*. 2012. Vietnam Mogul Arrest Sparks Stock Plunge as Tensions Surface. August 22, 2012. < http://www.bloomberg.com/news/2012-08-21/vietnam-tycoon-arrest-sends-stocks-plunging-as-tensions-surface.html>

Bray, John. 2005. The use of intermediaries and other 'alternatives' to bribery. *The New Institutional Economics of Corruption.* Edited by Johann Graf Lambsdorff, Markus Taube, and Matthias Schramm. Routledge: London and New York: 93-111.

Brouthers, Lance Eliot, Yan Gao, and Jason Patrick McNicol. 2008. Corruption and market attractiveness influences on different types of FDI. *Strategy Management Journal* 29 (6): 673-680.

Coutts, Elizabeth and Ben Jann. 2011. Sensitive Questions in Online Surveys: Experimental Results for the Randomized Response Technique (RRT) and the Unmatched Count Technique (UCT). *Sociological Methods & Research* 40 (1):169-193

Cuervo-Cazurrá, Alvaro. 2008. The Effectiveness of Laws against Bribery Abroad. *Journal of International Business Studies* 39(4): 634–651.

D'Souza, Anna. 2012. The OECD Anti-Bribery Convention: Changing the Currents of Trade. *Journal of Development Economics* 97: 73-87.

Davis, Jennifer. 2004. Corruption in Public Service Delivery: Experience from South Asia's Water and Sanitation Sector. *World Development* 32 (1): 53-71.

Drezner, Daniel. *All Politics is Global: Explaining International Regulatory Regimes*. Princeton, NJ: Princeton University Press.

Drugov, Mikhail, John Hamman, and Danila Serra. 2014. Intermediaries in corruption: An experiment. *Experimental Economics* 17 (1): 78-99.

Duvanova, Diana. 2007. Bureaucratic Corruption and Collective Action: Business Associations in the Postcommunist Transition. *Comparative Politics* 39 (4): 441-461.

Fisman, Raymond and Edward Miguel 2007. Corruption, Norms, and Legal Enforcement: Evidence from Diplomatic Parking Tickets. *Journal of Political Economy* 115 (6) 1020-1048.

General Statistical Office (GSO). 2012. Socio-Economic Statistical Data. Available at http://www.gso.gov.vn/

George, Barbara Crutchfield, Kathleen A. Lacey, and Jutta Birmele. 2000. The 1998 OECD Convention: An Impetus for Worldwide Change in Attitudes toward Corruption in Business Practices. *American Business Law Journal* 47: 485-525.

Graham, John L. 1984. The Foreign Corrupt Practices Act: A New Perspective. *Journal of International Business Studies* 15 (3): 107-121.

Habib Mohsin and Leon Zurawicki. 2002. Corruption and Foreign Direct Investment. *Journal of International Business Review* 10 (6): 687-700.

Hasker, Kevin and Cagla Okten. 2008. Intermediaries and corruption. *Journal of Economic Behavior & Organization*, 67(1), 103-115;

Hatchard, John. 2007. Recent Developments in Combating the Bribery of Foreign Public Officials: A Cause for Optimism. *U. Det. Mercy L. Rev*. 85: 1-29.

Heimann, Fritz F. and Gillian Dell 2012. *Exporting Corruption?: Country Enforcement of the OECD Anti-bribery Convention Progress Report 2012*. Berlin, Germany: Transparency International.

Hellman, Joel S., Geraint Jones, and Daniel Kaufman. 2000. Are foreign investors and multinationals engaging in corrupt practices in transition economies? *Transition* 11(3-4): 4-7.

Henisz, Witold. 2000. The Institutional Environment for Multinational Investment. *Journal of Law, Economics and Organization.* 16 (2): 334-364.

Hines, James Roger, 1995. Forbidden Payment: Foreign Bribery and American Business after 1977. *NBER Working Paper W5266.*

Hoskisson Robert E, Lorraine Eden, Chung Ming Lau, and Mike Wright. 2000. Strategy in Emerging Economies. *Academy of Management Journal.* 43: 249-267.

Hoy, Greg. 2014. Australia 'failing' to tackle bribery by multinational companies: OECD. *ABD News* January 6
< http://www.abc.net.au/news/2014-01-06/australia-accused-of-failing-to-tackle-bribery-among-multinatio/5187070>

Imbens, Guido and Jeffrey Wooldridge. 2007. Difference-in-Differences Estimation. Lecture at National Bureau of Economic Research, Summer 2007.
<http://www.nber.org/WNE/lect_10_diffindiffs.pdf>

Jeong, Yujin and Robert J. Weiner. 2012. Who Bribers? Evidence from the United Nations' Oil-For-Food Program. *Strategic Management Journal.* 33: 1363–1383

Kaczmarek, Sarah C. and Abraham L. Newman. 2011. The Long Arm of the Law: Extraterritoriality and the National Implementation of Foreign Bribery Legislation. *International Organization* 65(4): 745-70.

Knack, Steven F. 2006. Measuring corruption in Eastern Europe and Central Asia: a critique of the cross-country indicators. World Bank Policy Research Working Paper, (3968), Washington, D.C.

Koch, Rebecca. 2005. The Foreign Corrupt Practices Act: It's Time to Cut Back the Grease and Add Some Guidance. *Boston College International & Comparative Law Review* 28 (2): 379-403.

Kraay, Aart and Murrel, Peter. 2013. Misunderestimating Corruption. *World Bank Policy Research Working Paper* No. 6488, Washington, DC.

Mauro, Paulo, 1995. Corruption and Growth. *Quarterly Journal of Economics* 110(3): 681-712.

Meyer, Klaus, Saul Estrin, Sumon Kumar Bhaumil and Mike W. Peng. 2009. Institutions, resources, and entry strategy. *Strategic Management Journal* 30 (1): 61-80.

Montiel, Ivan, Bryan W. Husted, and Petra Christmann. 2012. Using private management standard certification to reduce information asymmetries in corrupt environments. *Strategic Management Journal* 33 (9): 1103-1113.

Nichols, Phillip M. 2013. Are Facilitating Payments Legal? *Virginia Journal of International Law* 54: 127-173

(OECD) Organization for Economic Cooperation and Development. 2007. *Bribery in Public Procurement: Methods, Actors, and Counter-Measures.* Paris: OECD.

_____, 2011. *Convention on Combating Bribery of Foreign Public Officials in International Business Transactions and Related Documents.* Paris: OECD.

_____, 2012. *Phase 3 Report on Implementing the OECD Anti-Bribery Convention in Hungary*. Paris: OECD.

_____, 2013. *OECD Working Group on Bribery Annual Report.* Paris: OECD.

_____, 2014. *OECD Foreign Bribery Report: An Analysis of the Crime of Bribery of Foreign Public Officials*. Paris: OECD. < http://dx.doi.org/10.1787/9789264226616-en>

OECD Country Monitoring (n.d.) Phase 1 country monitoring of the OECD Anti-Bribery Convention <http://www.oecd.org/daf/anti-bribery/anti briberyconvention/phase1countrymonitoringoftheoecdantibriberyconvention.htm>

OECD Revised Schedule (n.d.) Schedule for Phase 3 Evaluations <http://www.oecd.org/daf/anti-bribery/anti-briberyconvention/RevisedPhase3Schedule_ENdoc.pdf>

Olken, Benjamin. 2009. Corruption Perceptions vs. Corruption Reality. *Journal of Public Economics* 93 (7-8): 950-964.

Olken, Benjamin and Rohini Pande. 2012. Corruption in Developing Countries. *Annual Review of Economics* 4: 479-505.

Pacini, Carl, Judyth A. Swingen, and Hudson Rogers. 2002. The Role of the OECD and EU Conventions in Combating Bribery of Foreign Public Officials. *Journal of Business Ethics* 37: 385-405.

Robinson, Gwen and Ben Bland. 2012. Arrest of Vietnam Tycoon Unnerves Markets. *Financial Times*, August 21. <http://www.ft.com/cms/s/0/a7e14296-eb60-11e1-9356-00144feab49a.html#axzz32n1K6Uu5>

Rodriguez, Peter, Klaus Uhlenbruck, and Lorraine Eden. 2005. Government Corruption and the Entry Strategy of Multinationals. *Academy of Management Review* 30 (2) 383–396.

Sandholtz, Wayne, and Mark Gray. 2003. International Integration and National Corruption. *International Organization* 57(4): 761–800.

Schemmel, C. 2002. Treatment of Facilitation Payments Under National Legislation Implementing the OECD Convention. Berlin: *Transparency International.*

Schmidt, Timothy W. 2008. Sweetening the Deal: Strengthening Transnational Bribery Laws Through Standard International Corporate Auditing Guidelines. *Minn. L. Rev.*, 93: 1120-1145.

Seligson, Mitchell A. 2006. The Measurement and Impact of Corruption Victimization: Survey Evidence from Latin America. *World Development*, 34(2), 381-404.

Spahn, Elizabeth, 2012. Multi-Jurisdictional Bribery Law Enforcement: The OECD Anti-Bribery Convention. *Virginia Journal of International Law*, 53(1): 1-52

_____, 2013. Implementing Global Anti-Bribery Norms: From the Foreign Corrupt Practices Act to the OECD Anti-Bribery Convention to the UN Convention against Corruption. *Int'l & Comp. L. Rev.* 23: 1-21/

Spencer, Jennifer and Carolina Gomez, 2011. MNEs and Corruption: The Impact of National Institutions and Subsidiary Strategy. *Strategic Management Journal* 32(3): 280–300.

Stephan, Paul B. 2012. Regulatory Competition and Anticorruption Law. *Virginia Journal of International Law* 53(1): 53-74.

Stevenson, Matthew. 2014 Expansion of the Anti-Bribery Convention: A Skeptical View. *The Global Anticorruption Blog*. March 25. <http://globalanticorruptionblog.com/2014/03/25/expansion-of-the-oecd-anti-bribery-convention-a-skeptical-view/>

Strauss, Emily N. 2013. Easing Out the FPCA Facilitation Payment Exception. *Boston University Law Review*, 93(1): 235-260.

Strange, Susan. 1996. *The Retreat of the State: The Diffusion of Power in the World Economy*. Cambridge: Cambridge University Press.

Tarullo, Daniel. K. 2003. Limits of Institutional Design: Implementing the OECD Anti-Bribery. Convention, *The Virginia Journal of International Law.*, 44, 665.

Tonelson, Alan. 2000. *The Race to the Bottom: Why A Worldwide Worker Surplus and Uncontrolled Free Trade Are Sinking American Living Standards.* Boulder, CO.: Westview Press.

TRACE International Report. 2014. *Global Enforcement Report* 2013. Annapolis, MD. <http://www.traceinternational.org/about-trace/publications/>

Tarullo, Daniel K. 2003, Limits of Institutional Design: Implementing the OECD Anti-Bribery Convention. *The. Va. J. Int'l L.* 44: 665-710

Transparency International 2013. *Corruption Perceptions Index* http://cpi.transparency.org/cpi2013/

Treisman, Daniel. 2007. What We Have Learned about The Causes of Corruption from Ten Years of Cross-National Empirical Research? *Annual Review of Political Science*. 10: 211–44.

Tyler, Andrew. 2011. Enforcing Enforcement: Is the OECD Anti-Bribery Convention's Peer Review Effective. *Geo. Wash. Int'l L. Rev*. 43: 137-172.

Uhlenbruck Klaus, Peter Rodriguez, J Doh, and Lorraine Eden L. 2006. The impact of corruption on entry strategy: evidence from telecommunication projects in emerging economies. *Organization Science* 17(3): 402–414.

Vietnam Chamber of Commerce and Industry (VCCI). 2012. *The Vietnam Provincial Competitiveness Index: Measuring Economic Governance for Private Sector Development. 2012 Final Report.* Paper #18. Vietnam Competitiveness Initiative and the United States Agency for International Development: Ha Noi, Vietnam, Chapter 4. <www.pcivietnam.org.vn>

_____. 2013. *The Vietnam Provincial Competitiveness Index: Measuring Economic Governance for Private Sector Development. 2013 Final Report.* Paper #19. United States Agency for International Development: Ha Noi, Vietnam. <www.pcivietnam.org.vn>

Viet, Vu Quang. 2010. Abuse of Power in a One-Party Controlled State with Market Driven Economy: A Case Study of Vietnam. Paper presented at Conference on Authoritarianism in East Asia at the City University of Hong Kong, June 30.

Wei, Shang-Jin. 2000. How Taxing is Corruption on International Investors? *Economics and Statistics* 82 (1): 1-11.

White, Glenn D., and Amy Luo. 2006. Business Survey Response Rates—Can They be Improved. *American Statistical Association Section on Research Methods* 3666-3668.

World Bank. 2010. *World Development Indicators.* Available at http://data.worldbank.org/(accessed on Feb. 4, 2011).

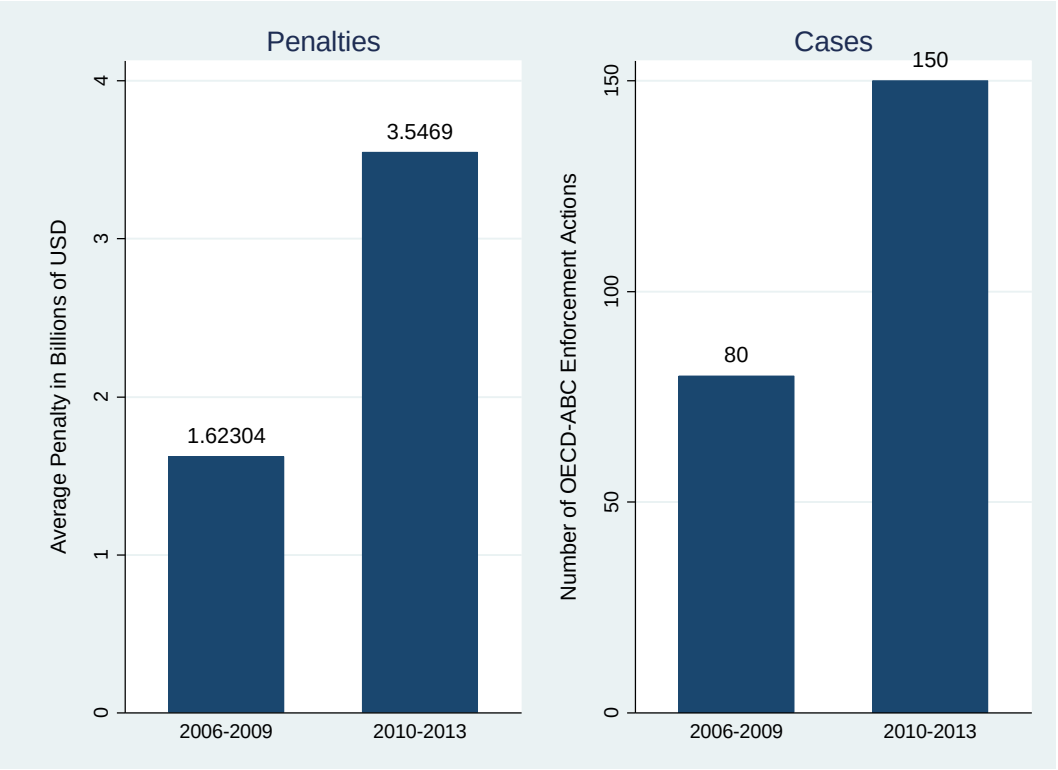


**Figure 1: Foreign Bribery Punishments and New Investigations in Signatory Countries in Four Years before and after Phase 3.** In the first panel, we present average penalties in anti-corruption cases from the OECD Foreign Bribery Report (2014, p. 20, Figure 7). In the second panel, we present the average number of new investigations from the Trace International Report (2014, p. 8, Figure 2).

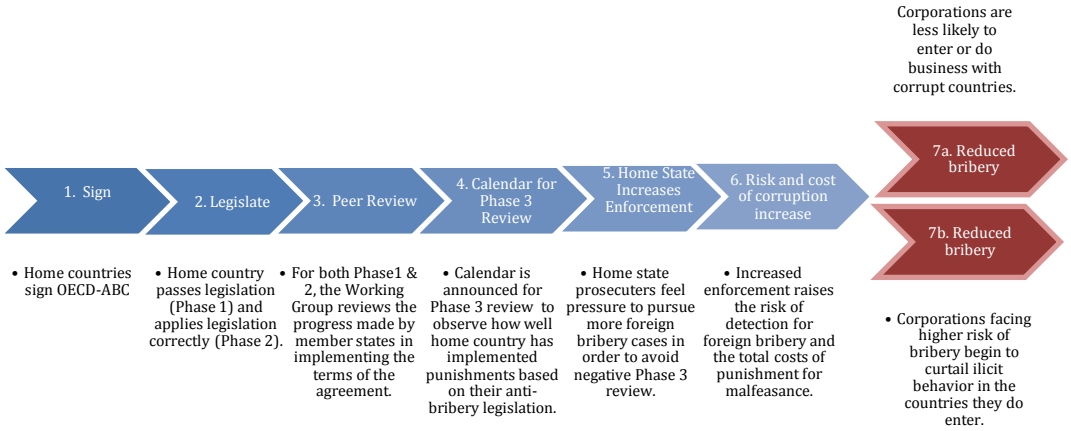


**Figure 2: The Causal Chain Linking the OECD-ABC to Reduced Bribery by Firms.**

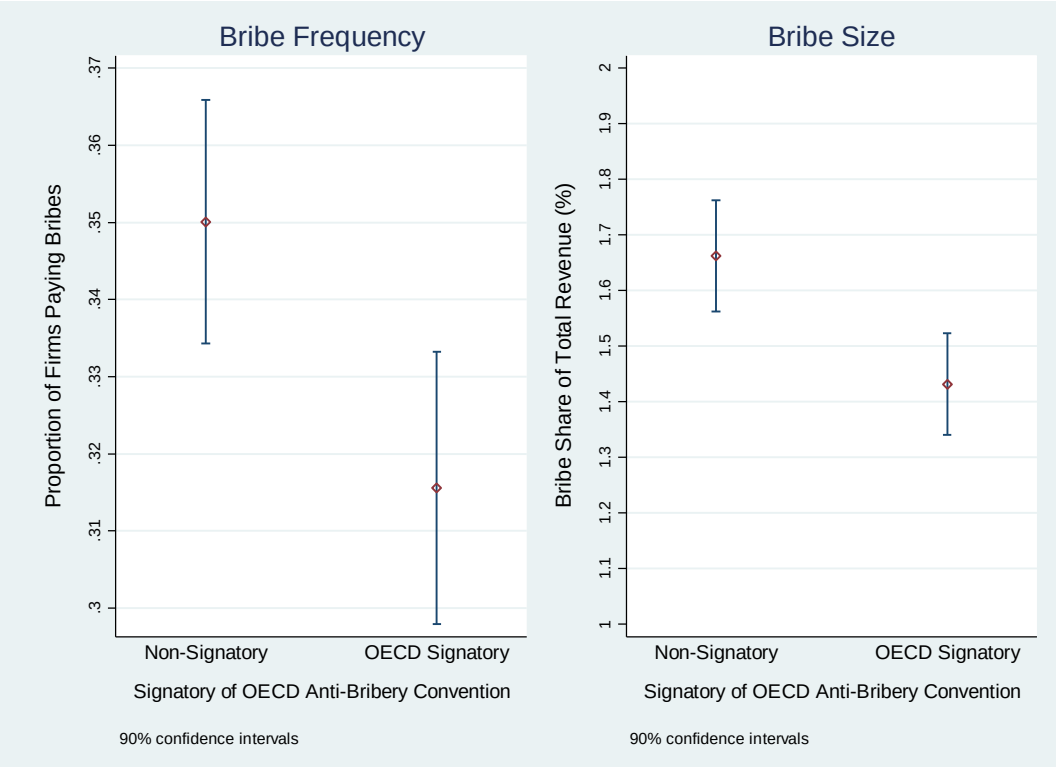


**Figure 3: Differences between OECD-ABC Signatories and Non-Signatories Using Standard Corruption Questions.** Data obtained from four years of the annual PCI-FDI survey (2010–2013) using questions e6 and e7, which replicate questions j7a and j7b from the World Bank's Enterprise Survey. These graphs show unadjusted differences in means, but the results are robust to multiple regression using firm-level, sector-level, and country-level controls (see Online Appendix A7 for confirmation).

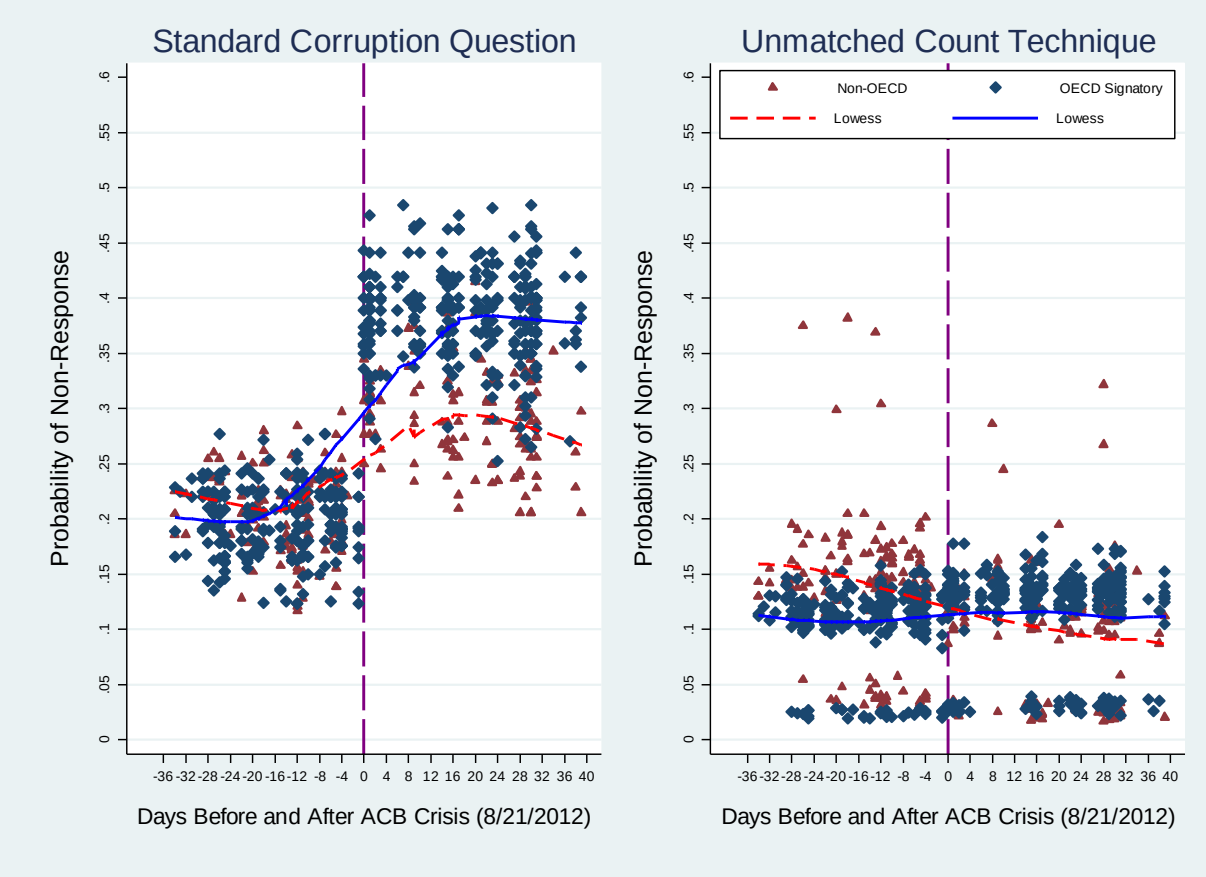


**Figure 4: Stress Test: The Impact of the OECD-ABC on Reticent Response before and after the Arrest of Nguyen Duc Kien, Chairman of ACB Commercial Bank.** The X-Axis reports the predicted probability of item non-response based on the multiple regression (see Online Appendix 8). The Y-Axis records the days before and after the ACB crisis that the respondent received the PCI-FDI survey. The first panel shows changes in reticent response to standard corruption questions. The second panel shows changes in reticent response to the Unmatched Count Technique (UCT).

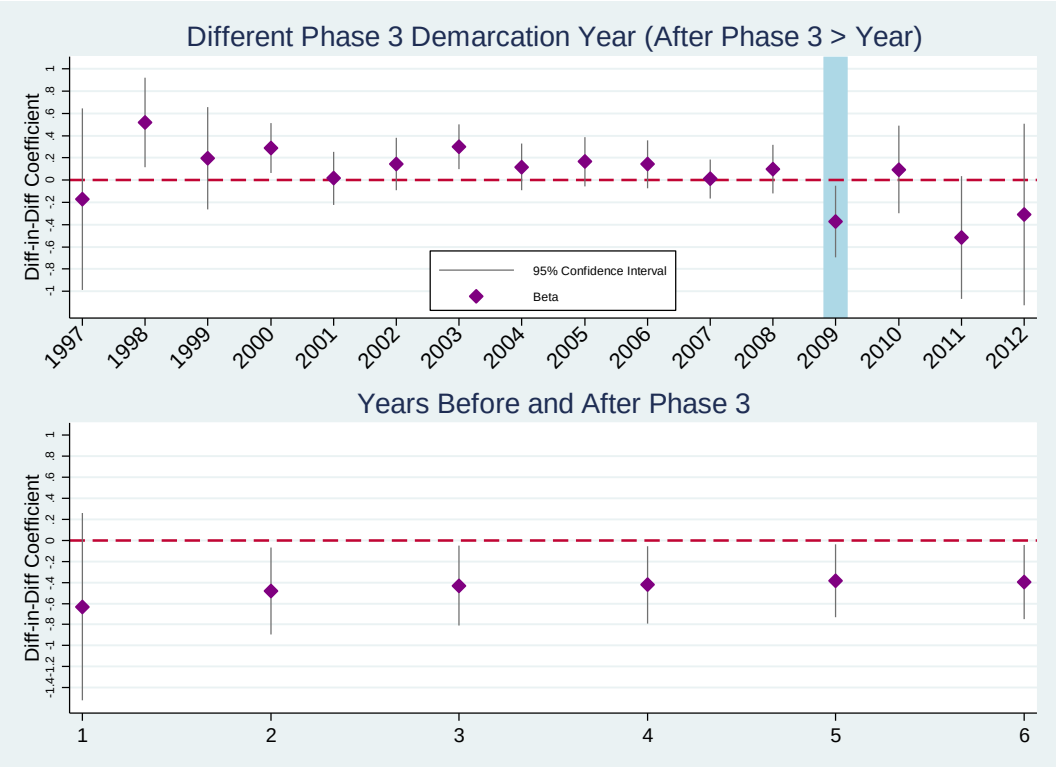


**Figure 5: Robustness Tests.** The top panel demonstrates a test of the parallel trends assumption by re-running the same analysis as Table 2 (Model 6), but replacing the year defined as the onset of Phase 3 with a range of different years. The light blue shade shows the cut-off year actually used in the main analysis. The bottom panel tests different bandwidths around the 2009 cut-off, ranging from 1 to 6 years (see Online Appendix 10 & 11 for full regression results).

**Table 1: Calculation of Firms Paying Bribes using the Unmatched Count Technique**

| *1. All Firms, All Years* | | | | | | |
|---|---|---|---|---|---|---|
| | **Treatment** | **Mean** | **SE** | **Low** | **High** | **Bribe** |
| | No | 1.418 | 0.02 | 1.38 | 1.46 | *20.2%* |
| | Yes | 1.620 | 0.02 | 1.58 | 1.66 | |
| *2. All Years by OECD Anti-Bribery Convention Signatory Status* | | | | | | |
| **OECD** | **Treatment** | **Mean** | **SE** | **Low** | **High** | **Bribe** |
| No | No | 1.384 | 0.03 | 1.33 | 1.44 | *20.8%* |
| No | Yes | 1.592 | 0.03 | 1.54 | 1.65 | |
| Yes | No | 1.449 | 0.03 | 1.39 | 1.51 | *23.4%* |
| Yes | Yes | 1.683 | 0.03 | 1.62 | 1.75 | |
| *3. Before Phase 3 by OECD Anti-Bribery Convention Signatory Status* | | | | | | |
| **OECD** | **Treatment** | **Mean** | **SE** | **Low** | **High** | **Bribe** |
| No | No | 1.393 | 0.03 | 1.33 | 1.45 | *18.4%* |
| No | Yes | 1.576 | 0.03 | 1.52 | 1.63 | |
| Yes | No | 1.427 | 0.03 | 1.36 | 1.49 | *23.9%* |
| Yes | Yes | 1.667 | 0.04 | 1.59 | 1.74 | |
| *4. After Phase 3 by OECD Anti-Bribery Convention Signatory Status* | | | | | | |
| **OECD** | **Treatment** | **Mean** | **SE** | **Low** | **High** | **Bribe** |
| No | No | 1.270 | 0.10 | 1.07 | 1.48 | *44.9%* |
| No | Yes | 1.719 | 0.11 | 1.51 | 1.93 | |
| Yes | No | 1.559 | 0.07 | 1.41 | 1.70 | *11.5%* |
| Yes | Yes | 1.673 | 0.10 | 1.48 | 1.87 | |

# Table 2: Correlates of Corruption during Business Entry (LIST Method)

| *Dependent variable: difference between the activities reported by treatment group and predicted number of nonsensitive activities of control group.* | | All Firms Registered after 2000 | | | | | Specification Checks | | | | Only Special Panel of Re-Registers | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Diff-in-Means** | **No Controls** | **Survey Year FE** | **Sector FE** | **Firm Controls** | **Country Controls** | **All Confounds** | **Entry Year FE** | **Country FE** | **Country & Entry Year FE** | **No Controls** | **Survey Year FE** |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) |
| Firm **Entered** after Home Country Completed Phase 3 | | 0.269*** | 0.311*** | 0.296*** | 0.326*** | 0.313* | 0.491*** | | 0.291 | | 0.452 | 0.606 |
| | | (0.091) | (0.070) | (0.070) | (0.103) | (0.162) | (0.160) | | (0.180) | | (0.404) | (0.398) |
| Signed OECD Bribe Convention =1 | | 0.062 | 0.071*** | 0.091** | 0.152*** | 0.293** | 0.303 | 0.294* | | | 0.250 | 0.284 |
| | | (0.039) | (0.027) | (0.037) | (0.050) | (0.140) | (0.233) | (0.151) | | | (0.303) | (0.290) |
| OECD*Phase3 | | -0.396*** | -0.399*** | -0.405*** | -0.428*** | -0.387** | -0.389** | -0.471** | -0.494** | -0.797*** | -0.489 | -0.575 |
| | | (0.114) | (0.107) | (0.082) | (0.128) | (0.174) | (0.184) | (0.193) | (0.204) | (0.237) | (0.568) | (0.551) |
| 100% Foreign Owned =1 | | | | | -0.223** | -0.199** | -0.024 | -0.259*** | -0.268*** | -0.295*** | | |
| | | | | | (0.084) | (0.078) | (0.108) | (0.076) | (0.082) | (0.077) | | |
| Employment Size at Establishment (1 to 8) | | | | | -0.020 | -0.011 | -0.028 | 0.003 | -0.006 | 0.001 | | |
| | | | | | (0.018) | (0.020) | (0.031) | (0.021) | (0.024) | (0.022) | | |
| Capital Size at Establishment (1 to 8) | | | | | 0.019 | 0.030 | 0.026 | 0.039* | 0.032 | 0.041* | | |
| | | | | | (0.020) | (0.022) | (0.024) | (0.021) | (0.022) | (0.020) | | |
| Industrial Zone==1 | | | | | -0.076 | -0.046 | 0.056 | -0.044 | -0.064 | -0.061 | | |
| | | | | | (0.056) | (0.049) | (0.089) | (0.044) | (0.046) | (0.042) | | |
| Total Expenditures in Start-Up Year (ln) | | | | | | | 0.030*** | | | | | |
| | | | | | | | (0.010) | | | | | |
| Exports to Home Country = 1 | | | | | | | -0.025 | | | | | |
| | | | | | | | (0.054) | | | | | |
| Exports to Third Country = 1 | | | | | | | -0.142 | | | | | |
| | | | | | | | (0.115) | | | | | |
| Land Use Rights =1 | | | | | | | 0.004 | | | | | |
| | | | | | | | (0.084) | | | | | |
| GDP Per Capita (ln) | | | | | | 0.188** | -0.076 | 0.159** | 0.308 | -0.498 | | |
| | | | | | | (0.074) | (0.098) | (0.071) | (0.324) | (0.397) | | |
| Corruption Perceptions Index (TI) | | | | | | -0.121*** | 0.045 | -0.120*** | 0.142* | -0.002 | | |
| | | | | | | (0.037) | (0.050) | (0.035) | (0.084) | (0.109) | | |
| Population (ln) | | | | | | -0.027 | -0.071* | -0.037 | -0.675 | -3.904*** | | |
| | | | | | | (0.035) | (0.037) | (0.036) | (1.004) | (1.294) | | |
| Democracy=1 | | | | | | -0.571*** | -0.580*** | -0.528*** | -1.347*** | -1.444*** | | |
| | | | | | | (0.137) | (0.185) | (0.135) | (0.266) | (0.294) | | |
| Distance from Vietnam (km, ln) | | | | | | 0.121 | 0.285*** | 0.127 | | | | |
| | | | | | | (0.084) | (0.094) | (0.086) | | | | |
| Constant | 0.202*** | 0.180*** | 0.075 | 0.097* | 0.150 | -1.256* | -0.802 | -0.944 | 9.862 | 76.207*** | 0.587 | 0.420 |
| | (0.043) | (0.048) | (0.050) | (0.053) | (0.144) | (0.710) | (1.261) | (0.776) | (16.892) | (23.929) | (0.493) | (0.445) |
| Survey Year FE | No | No | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Industry FE | No | No | No | Yes | Yes | Yes | Yes | Yes | Yes | Yes | No | Yes |
| Entry Year FE | No | No | No | No | No | No | No | Yes | No | Yes | No | No |
| Country FE | No | No | No | No | No | No | No | No | Yes | Yes | No | No |
| Observations | 2,142 | 2,064 | 2,064 | 2,055 | 1,357 | 1,100 | 504 | 1,100 | 1,100 | 1,100 | 65 | 63 |
| Provincial Clusters | 50 | 49 | 49 | 49 | 44 | 44 | 33 | 44 | 44 | 44 | . | . |
| R-Squared | 0.000 | 0.004 | 0.007 | 0.026 | 0.047 | 0.070 | 0.158 | 0.106 | 0.773 | 0.945 | 0.167 | 0.317 |
| Root Mean Squared Error | 0.978 | 0.969 | 0.949 | 0.946 | 0.932 | 0.945 | 0.944 | 0.943 | 0.946 | 0.940 | 0.924 | 0.872 |
| Log-Likelihood | -2991 | -2862 | -2818 | -2786 | -1811 | -1477 | -660.3 | -1467 | -1459 | -1450 | -83.37 | -72.86 |

Note: 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 models without fixed effects and OLS in models with fixed effects. Note that the number of observations (N) is the number of respondents in the treatment group. As Model 1 shows, the process correctly delivers the difference-in-means estimator for the whole sample, indicating that the two-stage procedure yields unbiased estimates. Panel 1 studies all sectors, Panel 2 offers specification adjustments, and Panel 3 studies only panel firms that registered and re-registered. Because the dependent variable is an estimate, standard errors are calculated through bootstrapping procedure with 1000 repetitions . Errors are clustered at the provincial sampling unit level in Panels 1 & 2. ( *** p<0.01, ** p<0.05, * p<0.1)

# Table 3: Correlates of Corruption during Procurement (LIST Method)

| *Dependent variable: difference between the activities reported by treatment group and predicted number of nonsensitive activities of control group.* | Panel Firms | | | | | | | All Firms | |
|---|---|---|---|---|---|---|---|---|---|
| | **Diff-in-Means Panel** | **No Controls** | **Survey Year FE** | **Sector FE** | **Firm Controls** | **Country Controls** | **Country FE** | **Diff-in-Means** | **Survey Year & Sector FE** |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) |
| Firm **Surveyed** after Home Country Complated Phase 3 | | 0.274 | 0.324 | 0.326 | 0.125 | 0.010 | 0.157 | | -0.196 |
| | | (0.281) | (0.330) | (0.233) | (0.349) | (0.587) | (0.482) | | (0.218) |
| Signed OECD Bribe Convention =1 | | 0.410 | 0.410 | 0.313 | 0.273 | 0.324 | | | 0.401 |
| | | (0.314) | (0.316) | (0.457) | (0.441) | (1.310) | | | (0.337) |
| OECD*Phase3 | | -0.602 | -0.637* | -0.611 | -0.670 | -1.271** | -1.086* | | -0.435 |
| | | (0.354) | (0.329) | (0.430) | (0.458) | (0.566) | (0.528) | | (0.352) |
| 100% Foreign Owned =1 | | | | | -0.109* | -0.134 | -0.090 | | |
| | | | | | (0.057) | (0.110) | (0.113) | | |
| Employment Size at Establishment (1 to 8) | | | | | -0.097** | -0.088 | -0.006 | | |
| | | | | | (0.046) | (0.067) | (0.066) | | |
| Capital Size at Establishment (1 to 8) | | | | | 0.379 | 0.290 | 0.458 | | |
| | | | | | (0.240) | (0.336) | (0.686) | | |
| Industrial Zone==1 | | | | | 0.040 | 0.001 | 0.050 | | |
| | | | | | (0.162) | (0.211) | (0.192) | | |
| GDP Per Capita (ln) | | | | | | 0.122 | -0.714 | | |
| | | | | | | (0.451) | (2.227) | | |
| Corruption Perceptions Index (TI) | | | | | | -0.062 | -0.488 | | |
| | | | | | | (0.292) | (0.396) | | |
| Population (ln) | | | | | | 0.169 | 3.880 | | |
| | | | | | | (0.156) | (14.826) | | |
| Democracy==1 | | | | | | 0.089 | | | |
| | | | | | | (0.990) | | | |
| Distance from Vietnam (km, ln) | | | | | | 0.133 | | | |
| | | | | | | (0.332) | | | |
| Constant | 0.341*** | 0.257 | 0.257 | 0.230 | 0.949* | -3.478 | -63.874 | 0.499*** | 0.316 |
| | (0.080) | (0.236) | (0.237) | (0.212) | (0.500) | (2.497) | (257.009) | (0.049) | (0.211) |
| Survey Year FE | No | No | Yes | Yes | Yes | Yes | Yes | No | Yes |
| Industry FE | No | No | No | Yes | Yes | Yes | Yes | No | Yes |
| Country FE | No | No | No | No | No | No | Yes | No | No |
| Observations | 206 | 206 | 206 | 206 | 146 | 102 | 102 | 1,099 | 1,097 |
| Provincial Clusters | 22 | 24 | 24 | 24 | 22 | 19 | 19 | 39 | 35 |
| R-Squared | -0.000 | 0.009 | 0.026 | 0.138 | 0.195 | 0.333 | 0.520 | 0.000 | 0.118 |
| Root Mean Squared Error | 1.155 | 1.159 | 1.109 | 1.115 | 1.163 | 1.204 | 0.902 | 1.161 | 1.074 |
| Log-Likelihood | -321.6 | -320.8 | -310.6 | -297.9 | -210.5 | -140.7 | -105.4 | -1723 | -1619 |

Note: 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 models without fixed effects and OLS in models with fixed effects. Note that the number of observations (N) is the number of respondents in the treatment group. As Model 1 shows, the process correctly delivers the difference-in-means estimator for the whole sample, indicating that the two-stage procedure yields unbiased estimates. Panel 1 studies only panel firms, Panel 2 studies repeated cross-sections. Because the dependent variable is an estimate, standard errors are calculated through bootstrapping procedure with 1000 repetitions . Errors are clustered at the home country level. ( *** p<0.01, ** p<0.05, * p<0.1)

# Table 4: Conditional Influence of Home Country Enforcement (Different Measures)

| | Bribery during Entry | | | | | | | | Bribery during Procurement | |
|---|---|---|---|---|---|---|---|---|---|---|
| *Dependent variable: difference between the activities reported by treatment group and predicted number of nonsensitive activities of control group.* | ***Transparency International*** **Enforcement** | | **New Anti-Bribery Cases Prosecuted in Year** | | **New Major Anti-Bribery Cases Prosecuted in Year** | | **New Sanctions Against Companies in Year** | | ***Transparency International*** **Enforcement** | |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) |
| Firm **Entered** after Home Country Completed Phase 3 | 0.307*** | 0.304* | 0.093 | 0.113 | 0.134** | -0.039 | 0.135** | -0.013 | | |
| | (0.068) | (0.154) | (0.057) | (0.093) | (0.067) | (0.115) | (0.066) | (0.109) | | |
| Measure of Enforcement (See Colum) | 0.042*** | 0.175** | 0.003 | 0.003 | 0.018 | -0.073 | 0.014 | -0.022 | | |
| | (0.015) | (0.070) | (0.002) | (0.003) | (0.047) | (0.065) | (0.028) | (0.035) | | |
| Phase 3 Entry * Measure of Enforcement | -0.188*** | -0.171** | -0.005* | -0.010*** | -0.055 | -0.041 | -0.038 | -0.353** | | |
| | (0.038) | (0.074) | (0.003) | (0.004) | (0.042) | (0.072) | (0.024) | (0.151) | | |
| Firm **Surveyed** after Home Country Completed Phase 3 | | | | | | | | | 0.079 | -0.302 |
| | | | | | | | | | (0.291) | (0.476) |
| Measure of Enforcement (See Colum) | | | | | | | | | 0.109 | -0.347 |
| | | | | | | | | | (0.155) | (0.414) |
| Phase 3 Survey * Measure of Enforcement | | | | | | | | | -0.199 | -0.241 |
| | | | | | | | | | (0.142) | (0.214) |
| 100% Foreign Owned =1 | | -0.194** | | -0.214** | | -0.334*** | | -0.395*** | | 0.061 |
| | | (0.080) | | (0.095) | | (0.085) | | (0.088) | | (0.361) |
| Employment Size at Establishment (1 to 8) | | -0.011 | | -0.006 | | -0.025 | | -0.040* | | -0.127 |
| | | (0.020) | | (0.022) | | (0.019) | | (0.023) | | (0.106) |
| Capital Size at Establishment (1 to 8) | | 0.030 | | 0.032 | | 0.063** | | 0.051 | | -0.089 |
| | | (0.022) | | (0.025) | | (0.031) | | (0.034) | | (0.094) |
| Industrial Zone==1 | | -0.050 | | -0.012 | | 0.010 | | 0.012 | | -0.156 |
| | | (0.050) | | (0.074) | | (0.100) | | (0.098) | | (0.277) |
| GDP Per Capita (ln) | | 0.202*** | | 0.263*** | | 0.103 | | 0.133 | | -0.028 |
| | | (0.066) | | (0.070) | | (0.073) | | (0.086) | | (0.353) |
| Corruption Perceptions Index (TI) | | -0.131*** | | -0.177*** | | -0.043 | | -0.060 | | -0.104 |
| | | (0.032) | | (0.040) | | (0.040) | | (0.040) | | (0.272) |
| Population (ln) | | -0.022 | | -0.080* | | -0.046 | | -0.066 | | 0.203 |
| | | (0.037) | | (0.040) | | (0.046) | | (0.048) | | (0.241) |
| Democracy==1 | | -0.606*** | | -0.446*** | | -0.123 | | -0.319** | | 1.257 |
| | | (0.148) | | (0.137) | | (0.111) | | (0.126) | | (1.053) |
| Distance from Vietnam (km, ln) | | 0.068 | | 0.138 | | 0.210** | | 0.282*** | | 0.306 |
| | | (0.096) | | (0.102) | | (0.097) | | (0.103) | | (0.360) |
| Constant | 0.068 | -1.041 | 0.123** | -0.727 | 0.225*** | -1.071 | 0.171*** | -1.251 | 0.374 | -4.007 |
| | (0.045) | (0.738) | (0.050) | (0.723) | (0.052) | (0.771) | (0.053) | (0.911) | (0.283) | (3.165) |
| Survey Year FE | No | Yes | No | Yes | No | Yes | No | Yes | No | Yes |
| Industry FE | No | Yes | No | Yes | No | Yes | No | Yes | No | Yes |
| Observations | 2,064 | 1,100 | 1,741 | 896 | 1,664 | 668 | 1,346 | 625 | 171 | 85 |
| Provincial Clusters | 49 | 44 | 48 | 44 | 51 | 43 | 47 | 42 | 22 | 17 |
| R-Squared | 0.008 | 0.072 | 0.007 | 0.087 | 0.009 | 0.089 | 0.007 | 0.111 | 0.022 | 0.326 |
| Root Mean Squared Error | 0.949 | 0.945 | 0.953 | 0.952 | 0.935 | 0.946 | 0.933 | 0.939 | 1.099 | 1.164 |
| Log-Likelihood | -2817 | -1477 | -2383 | -1206 | -2246 | -889.2 | -1814 | -825.7 | -255.7 | -118.0 |

Note: 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 models without fixed effects and OLS in models with fixed effects. Note that the number of observations (N) is the number of respondents in the treatment group. Panel 1 studies registration and Panel 2 studies procurement. Because the dependent variable is an estimate, standard errors are calculated through bootstrapping procedure with 1000 repetitions . Errors are clustered at the home country level. ( *** p<0.01, ** p<0.05, * p<0.1)