

Non-State Actors and Compliance with International Agreements An Empirical Analysis of the OECD Anti-Bribery Convention

Nathan M. Jensen
Associate Professor
George Washington School of Business
Washington D.C.
2201 G Street NW
Funger Hall 401
Phone: 202-994-0820
Fax: 202-994-7422

Edmund J. Malesky
Associate Professor
Duke University
Department of Political Science
140 Science Dr., Rm 208 Gross Hall,
Box 90204
Durham, NC 27708
(919) 660-4300
ejm5@duke.edu

Abstract

Debate exists over whether international agreements can generate compliance among non-state actors operating outside of their home country jurisdictions. Of particular interest has been whether the OECD Anti-Bribery Convention (ABC) might reduce the propensity of multinational corporations (MNCs) to bribe officials in host countries. Unfortunately, research is 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 non-compliance increased for firms subject to the OECD-ABC, those MNCs reduced their actual bribery relative to their non-signatory competitors. Further analysis reveals that both reputation and threat of enforcement play a role in shaping this behavior.

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International relations scholarship has made great progress on compliance with international agreements. While persuasive, most of this work has focused on the compliance decisions of states, largely excluding the behavior of non-state actors such as individuals, firms, or non-government organizations (Simmons 2010). Relatedly, most evidence centers on *de jure* implementation of formal rules with less attention paid to the *de facto* behavior of the signatories (Nance and Cottrel 2014, 280; Baradaran et al. 2013). Both of these issues have become more critical as a number of salient transnational issues involve the behavior of non-state actors operating outside their home countries' jurisdictions (Mosley 2003, Kaczmarek and Newman 2011). To address these issues, a new literature on Global Experimentalist Governance (GXG) has sought to explore how more flexible, multi-level institutional models might be able to incentivize actual compliance by non-state actors (Nance and Cottrel 2014, De Burca et al. 2014). In particular, this literature has emphasized the role of peer review in facilitating adaptability, generating information for non-state actors, and providing a mechanism for accountability through the negative reputational effects of non-compliance (Sabel and Zeitlin 2008).

In this paper, we provide the first empirical test of the efficacy of peer review arrangements in international agreements by studying how a landmark international convention on bribery, the OECD Anti-Bribery Convention (OECD-ABC), affects the compliance decisions of firms operating outside of their home states. Designed to combat global corruption, the OECD-ABC has been lauded by legal experts for its influence on domestic anticorruption laws and enforcement patterns (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. The ultimate goal of altering firm and individual behavior, the enshrinement of the principle of extra-territoriality, and the focus on peer review as the main accountability mechanism, make the Convention particular relevant for assessing international compliance.

Evaluating the effectiveness of the OECD-ABC is important on both academic and practical grounds, but is complicated by two 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 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 honestly answer survey questions regarding their engagement in the activity (Couts and Jann 2011).

We set out to resolve these problems with a careful research design of a single host country—Vietnam—that is specifically devoted to testing whether the OECD-ABC reduced the instances of bribery payments by firms operating abroad. To address the first challenge, we use a differences-in-differences (diff-in-diff) estimator to analyze the change in graft activities 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 2010 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 application of the agreement to the behavior of firms, as well as the risk of enforcement and reputational costs, we are able to observe the difference in the behavior between firms from OECD countries that entered Vietnam prior to Convention 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 time invariant features of home countries' attributes (i.e. culture, democracy, wealth) that are correlated with the likelihood of signing. It remains plausible, however, that attributes of countries are also changing over time, thus leading some states to be more likely to monitor and enforce the convention. We address some of these changes below, but cannot account for all unobservable time variant factors.

The diff-in-diff design does not resolve the question of correlated measurement error. To address this problem, we take advantage of a survey experiment called 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 and procurement activities of foreign firms, both before and after the introduction of Phase 3 of the Convention.

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 20% of firms paid “informal fees” during registration and 43% paid kick-backs on government procurement contracts. However, after the onset of Phase 3 in 2010, when the risks of being caught bribing substantively increased, firms from countries party to the OECD-ABC significantly reduced their corrupt behavior relative to their non-signatory peers.

While we are primarily interested in compliance by MNCs from signatories, one unexpected but fascinating result is that we observe a significant increase in corruption after Phase 3 among firms from non-signatories. In our diff-in-diff design, these firms are used to approximate the counterfactual and therefore the estimating assumption is that corruption would have also increased for firms from signatory countries as well in the absence of the OECD-ABC. Indeed, increasing corruption among foreign investors after Vietnam’s 2007 entry into the WTO is the prevailing view among Vietnam watchers. 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).¹

By sharp contrast to the trend among non-signatories, after Phase 3, firms from OECD-ABC signatories saw their bribe propensity *decline* substantially for both payments made during entry (dropping to 11.5%) and kickback on government procurement contracts (dropping to 31%). Further analysis reveals that declines in corruption are driven by the small set of firms from actively enforcing countries who faced greater punishment. For firms from signatory states with weak enforcement records, reputational concerns constrained bribe behavior to pre-existing

¹ In the conclusion we speculate on three other potential explanations for increased corruption among MNCs from non-signatories that are beyond the scope of this article.

levels. Bribe propensity didn't increase, as it did with non-signatories, but it didn't decrease, either.

The Problem of Compliance in International Relations

Since the “Managerial School” first documented high levels of compliance with existing arrangements (Chayes and Chayes 1993), international relations scholarship has made great progress on the long-standing puzzle of why countries comply with international treaties and agreements (Simmons 2010). Two competing literatures have led the way forward (Baradaran et al. 2013). Rationalist scholars have focused on self-enforcement by structuring institutions to reward reputation and reciprocity (Keohane 1984, Carrubba 2005, Koremenos et al. 2001, Goldstein et al. 2007), demonstrating credible commitment through costly signaling (Fearon 1997, Martin 2000, Long et al. 2007), building in ex-post sanctioning costs through arbitration and dispute settlement (Elkins et al. 2006, Wellhausen 2015), and mobilizing domestic constituencies for compliance through transparency and monitoring (Dai 2007, Slaughter 1995).

Constructivist scholars, by contrast, have focused more on changing attitudes than constraining behavior, by highlighting the role of international agreements in altering societal norms through approbation (Goodman and Jinks 2004), acculturation (Finnemore 1996), persuasion (Johnston 2001, Checkel 2001), and recursive cycling between legal generation and norm making (Halliday and Caruthers 2009). Critically for our work, both literatures point to the role of a state's reputation as a driver for compliance, although they disagree on whether the mechanism is greater opportunities for reciprocity or the broader goal of joining a community of like-minded states.

Despite great progress, two interrelated challenges haunt both literatures. First, most of the above work focuses on the behavior of states, largely excluding the role of non-state actors who are often the ultimate targets of the agreements, but whose actions may take place outside of the borders of the signatory country (Simmons 2010, Mosley 2003), leading some legal scholars and political scientists to question whether international law matters at all in situations where the cooperation of non-state actors is necessary for reaching an agreement's goals (Baradaran et al. 2013). Arguably, these situations now characterize a large portion of the dominant concerns in international relations. For instance, multinational corporations must be part of the solution in dilemmas as diverse as climate change (Keohane and Victor 2011), pollution (Allan and Stankey 2009), money laundering (Findley et al. 2014), transfer pricing and profit shifting (Zucman 2014), human rights (Ratner 2001), labor rights (Mosley 2010) and corruption, the focus of our analysis.

Second, there is a critical difference between *de jure* compliance and actual behavioral change on the part of the group targeted by the agreement (Downs et al. 1996). Nance and Cottrel (2014, 280) highlight how states can exploit ambiguities in agreement language or the capacity of enforcers. Baradaran et al. (2013) subdivide the concept of compliance into: 1) Formal, which includes the laws passed, the resources expended on enforcing those laws, and how often the laws are enforced; and 2) Informal, which studies whether the formal laws actually alter behavior among the target group. It is possible for a state to do well on formal compliance but make little progress in inducing behavioral change (Vreeland 2008).

Both of these problems are compounded when the non-state actors, who are the target of the agreement, are operating outside the jurisdiction of the state which signed the international convention. Shell companies, for instance, often operate in tax havens outside the reach of the

states that joined the inter-governmental Financial Action Task Force on Money Laundering (Nance and Cottrell 2014, Findley et al. 2014). Labor rights violations by MNCs can occur in their production facilities in states with weak labor regulation, despite their home country affiliations (Mosley 2010). The challenge of generating compliance seems quite daunting under these conditions.

Responding to these difficulties, a new literature has begun to explore how to design international agreements that can effectively address the challenges of non-state actors in international compliance (Korememos 2013; Hale, Held, and Young 2013). One particularly dynamic realm is characterized as Global Experimental Governance (GXG), defined by its proponents as an “institutionalized process of participatory and multilevel collective problem solving, in which the problems (and the means of addressing them) are framed in an open-ended way, and subjected to periodic revision by various forms of peer review in the light of locally generated knowledge,” (De Burca et al, 2014).

De Burca et al. (2014) argue five features are necessary to constitute a GXG system: 1) a broad understanding of a common problem among stakeholders; 2) articulation of a framework with open goals; 3) implementation of goals left to lower-level actors so it can be tailored to local needs; 4) continuous reporting and monitoring that is subject to peer review; and 5) routine re-evaluation and revisions. In addition, GXG works best when a ‘penalty default’ exists whereby non-cooperation could be sanctioned by resorting to a less attractive regime that none of the parties favor (Sabel and Zeitlin 2008, 305-309). Authors stress that the penalty default could include the traditional rule-making system or lack thereof (Karkainen 2006)

In the next suggestion, we show that the OECD-ABC meets the five criteria for GXG and therefore offers a critical test of the efficacy of this new form of international arrangements in

reducing transnational problems. This test is the first of its kind. De Burca et al. (2014) aimed for the less empirically demanding hypothesis that GXG fostered a normatively desirable form of governance. Before testing, however, it is important to drill more deeply into the key theoretical logics of two features of the forms of international agreements to understand their application to the problem of global corruption and MNCs: extraterritoriality and peer review.

Extraterritoriality

In some cases of GXG, non-state actors can be participants alongside traditional Westphalian states. Most of the time this is impractical, yet the behavior of non-state actors is still the ultimate target of the arrangement. In these situations, the link between a state's commitments and the firm's behavior is the legal principle of extraterritoriality. This principle was first enshrined in 1945 as the "effects doctrine," whereby countries can exercise jurisdiction over the behavior of corporations and citizens outside of their physical borders, applying domestic rules to the foreign conduct of those entities (Kaczmarek 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 (e.g. a branch office or headquarters for tax purposes).

Extraterritoriality has spread to a wide spectrum of issues including terrorism, antitrust, criminal law, the environment, intellectual property, online markets, securities, and trade (Kaczmarek and Newman 2010). The 1977 US-Foreign Corrupt Practices Act (US-FCPA) was the first legislation to use the concept of extraterritoriality 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.

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. Thus far, most work has been quite negative about the effectiveness of extraterritoriality because of the limited leverage of home country regulations, the necessity of cooperation from host country governments, and the mobility of multinational firms in the increasingly globalized economy (Strange 1996; Tonelson 2000).

Peer Review

Peer review, essentially an examination of one's performance on meeting the objectives of the agreement by fellow states and other non-state actors, plays multiple roles in the GXG framework. First, it is thought to facilitate a flexible process of learning and adaptive problem solving by drawing on the diverse experiences of members (Pagani 2009). Second, it offers a method for holding actors accountable by naming and shaming (De Burca et al. 2014) and therefore raises the sovereignty costs of the agreement (Hafner-Burton et al. 2015). Third, peer review facilitates transparency by allowing domestic actors, including citizens and businesses, to learn about how their country is performing and use this information in advocacy (Sabel and Zeitin 2008).

Importantly, both the second and third roles of peer review return to the theoretical concept of reputation in incentivizing compliance when actors are playing an iterative game. Being labeled as shirker in a peer review could make it more difficult for state leaders to achieve agreement in other areas (Krasner 1982, Keohane 1984). Where earlier scholarship limited the

information transmission to other states, the newer literature has argued that it extends to non-state actors, such as private investors (Tomz 2007, Chapman et al. forthcoming) or domestic interest groups, who can use the information generated by peer reports to assess future cooperation with the state or lobby for change. Pro-compliance voters could use this new information to push their home state to change its behavior (Dai 2007). Chaudoin and Urpelainen (2015) show, through the case of trade arrangements, how the mechanism can also apply to monitoring the behavior of other states, as domestic constituencies use information from peer review to make sure other states live up to their side of the agreement. Thus, some scholars have made the case that the peer review process has increased international compliance (Drezner 2008, 78; Paccini, Swingen, and Rogers 2002; Sandholtz and Gray 2003). Others have been more skeptical that peer review will be taken seriously if not combined with formal sanctioning mechanisms (Tarullo 2003, Fossum 2012)

Less appreciated is that these reputational and reciprocity mechanisms can extend to non-state actors as well. For example, an MNC cited in a peer review as a rule breaker in international environmental or financial transactions will face difficulties in seeking approval for a new investment license or partnering with other firms, especially when trying to do business in other signatory states. Indeed, firms that share an MNC's home state may also have their reputations damaged by a compatriot rule-breaker, and therefore would be more likely to take actions to limit the malfeasance of their peer. Furthermore, information generated through peer review can trigger mobilization on the part of domestic constituencies in the host state for multinational investors, threatening the long-term performance of their projects. In the specific case of the OECD-ABC, enough activity by a host country might generate anti-corruption investigations and proceedings, through the principle of extraterritoriality, in the home state.

Importantly, the firm-level effects of peer review may operate even if the home state of the firms is shirking its own responsibilities to the agreement. That is, a Japanese firm may face the consequences of its poor reputation in international transactions, even if never stood a chance of punishment in Japan. In short, the transparency generated by peer review is the most likely candidate for actually triggering behavioral change on the part of non-state actors in the international system.

A particular example of this process is offered by Kaczmarek and Newman (2011), who attribute greater national compliance under the OECD-ABC to the threat of expanded U.S. 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. The OECD-ABC is an excellent treaty to test the logic of GXG, particularly the element of peer review, which is a critical component of the agreement’s design. States and individual firms are incentivized to police one another’s compliance with the agreement, as a state unilaterally pursuing punishment would only disadvantage its own firms in global competition. Therefore, the peer review processes provide a critical window to observe peers and mobilize constituencies to attack malfeasance.

Background on the OECD Anti-Bribery Convention

A review of the institutional details and chronology of the Convention is necessary for understanding how the OECD-ABC meets the GXG criteria and makes it an appropriate case for our larger theoretical and empirical work. Previous work has simply coded firms as subject to the

OECD-ABC, making it difficult to differentiate the selection into the treaty and behavior and how the variation in enforcement of the convention over time affected bribery (Cuervo-Cazurrá 2008; D'Souza 2012; Spencer and Gomez 2011; Jeong and Wiener 2012). Our theory and empirical 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). This design issue is significant, as pressure from the US facilitated a more expansive Convention, beyond a “shallow” agreement that had high levels of *de jure* compliance but limited influence on actual firm behavior (Downs, Rock, and Barsoom 1996).

The OECD-ABC thus meets the first two criteria of the GXG framework. Authors of the OECD-ABC had shared knowledge of a common problem among stakeholders, and were able to articulate a framework understanding with an open-ended goal: the reduction of global corruption. 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 (Kaczmarek and

Newman 2011). Thus, extraterritoriality was essential in ensuring states had the capacity to shape the compliance decisions of firms.

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). Thus, the “penalty default” of not agreeing to the OECD-ABC, therefore, was increasing costs of corruption for all, due to this collective action problem.

In line with GXG’s third criterion of lower-level implementation of the agreement’s broad goals, a key principle of the OECD-ABC is the passage of domestic 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 previously 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 system, 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 at home, and individuals could be directly prosecuted in domestic courts for overseas 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.²

Importantly, the OECD-ABC meets the fourth GXG criterion of a comprehensive peer review process, wherein 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). Since all countries are subject to a three-stage review and lessons learned from previous stages are incorporated into two new reviews, the OECD-ABC also meets the fifth GXG criterion of continual evaluation and revision.

Although all peer review 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). The 28 cases were described in extensive detail in the report.

According to its authors, the main role of the OECD-ABC is the naming and shaming of free riders, as it does not have the power to directly enforce the convention. Rubenfield (2015) captures the words of Drago Kos, the chair of the OECD Working Group on Bribery:

We must not forget that our members are still sovereign states, so we cannot literally force them to do anything. We have a procedure in place, which is mainly putting a lot of emphasis on the country’s image in the international community, and if countries decide they’re not much interested in their image, they may not decide to do much in this area.

² See George et al. (2000).

The 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.³ 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.

Peer review did not focus on the actual behavior of firms from the member states until the onset of Phase 3, which 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 by their citizens and businesses abroad. Even if the punishment probabilities were not high for some states, Phase 3 significantly raised the reputational costs for firms, who might find their activities documented in painstaking detail in a report.⁴ Phase 3 also clarified the

³ OECD Country Monitoring (n.d.).

⁴ To avoid unfairly implicating an individual or firm before trial, the reports do not use names, but competing firms in the industry or compatriots would have no trouble identifying the alleged perpetrator. An example from the Turkish Phase 3 Report (OECD 2014b) is illustrative: "Case #3 – Construction Case: In August 2012, allegations surfaced in the media that a Turkish construction company gave a high ranking public official in a State not Party to the Convention a gift worth USD 1.3 million to win a public procurement contract," (OECD 2014b, 11).

OECD's views about facilitation payments and recommended that signatories takes steps to limit their usage (OECD 2014a, Article VI).

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 2015.⁵ Thus, even if a country was not scheduled to be reviewed until late in the evaluation period, it had full knowledge of when it would be scrutinized at the beginning of 2010. From a methodological perspective, therefore, countries and firms had the incentive to alter their behavior as soon as the new calendar was announced. 2010, 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. While states and firms could elect to delay action until closer to their inspection date, it is harder to treat the later evaluations as exogenous shocks, and therefore harder to isolate the impact of the onset of the Phase 3 Peer Review.

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 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 by specific firms 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"

⁵ OECD Revised Schedule (n.d.).

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.

For countries party to the OECD-ABC, the more extensive peer reviews should alter the behavior of their firms operating abroad. Therefore, we hypothesize that:

H1: After the onset of Phase 3 (2010) peer reviews, firms from countries that signed the OECD-ABC will reduce the frequency of their bribery compared to non-signatories.

Even if H1 proves correct, it does not differentiate between two different mechanisms generating firm compliance. First, as we argued above, firms might change their behavior even if their home country’s enforcement remains weak. The reputational effects of having a case show up in a peer review report can be extensive and damage an MNC’s business prospects in other signatory countries, costing them opportunities for partnership, expansion and sales, especially if they require special licenses or government procurement.

Second, the risk of increased enforcement as states are held accountable for implementation of domestic legal codes might also influence their firms abroad. There is empirical evidence for this mechanism. Figure 1 provides bar graphs in the change in the enforcement patterns before and after Phase 3.

<<Insert Figure 1 about here>>

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 2014a, 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).⁶ If proponents of the Convention are correct, this greater extent of enforcement should result in a deterrent effect, leading MNCs to curtail their behavior abroad.

The two mechanisms might also be part of a causal chain. Damaged reputation might induce greater enforcement. Citation in peer reviews might activate anticorruption domestic constituencies, including consumers, civil society advocates, and indirectly injured compatriot firms, who might lobby policymakers to be more aggressive in pursuing domestic punishment.

Variance in home country enforcement gives us an important opportunity to sort out which mechanism is more operable.⁷ A closer look at data underlying Figure 1 reveals that most of the activity is being driven by a handful of countries.⁸ 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). Heimann and Dell (2014) 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

⁶ OECD (2014) provides additional data on the 427 corruption cases to date.

⁷ 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 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.

⁸ 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.

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-category Transparency International classification, shapes the behavior of foreign investors (Heimann and Dell 2014). If the legal enforcement mechanisms or the reputation-induced enforcement mechanisms are operable, we would expect:

H2 (Enforcement): 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.

If only the reputational mechanism is operable, we would expect firms to reduce their bribe behavior in accordance with H1, but we should not see any relationship between state level enforcement and changes in firm behavior. In other words, the reduction is entirely due to a firm-level reputational phenomenon.

Empirically Evaluating the OECD-ABC

The existing 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.

There are important reasons for the mixed conclusions. Research on the OECD-ABC is hampered by two 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).⁹ 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 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.

⁹ See Online Appendix A1 for a formal balance test detailing the wide range of confounders that are associated with OECD membership.

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). Many advanced industrialized countries have joined the Convention, but 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.

We draw on four waves of the Vietnam Provincial Competitiveness Index (PCI) survey.¹⁰ 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.¹¹ 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

¹⁰ Methodological details and background on the survey can be found at www.pcivietnam.org.

¹¹ See White and Luo (2006) for a discussion of response rates in firm-level surveys.

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, although both are considered weak enforcers. 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. Equally noteworthy is that the number of high level OECD-ABC enforcers are limited. Firms from the US, UK, Switzerland, Germany, Norway, and Denmark make up only 6.3% of the sample.

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 116th 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 and investors sought new opportunities created by the country's WTO entry, analysts have claimed that foreign investors increased their bribery dramatically (Viet 2010, 17).

A New Research Design for Evaluating OECD-ABC Effectiveness

There is a major inferential problem in assessing the effectiveness of the OECD-ABC using standard measures of bribery. 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 and social desirability bias could be the answer to why OECD-

ABC firms appear to have lower levels of bribery than their non-OECD-ABC competitors on standard questions. For this reason, 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 Murrell 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 Unmatched Count Technique (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 Figure 2, we show the item non-response rate for standard questions and UCT question in the 2012 PCI survey. Item non-response with the UCT is less than half the size (17%) of a standard corruption question taken from the World Bank investment climate survey (35%).¹²

¹² 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.’ 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. 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>>.

<<Insert Figure 2 about here>>

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.¹³ Respondents are instructed to indicate the total number of activities that they engaged in, but not to indicate their participation 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.

¹³ Question C6 in the PCI-FDI survey, shown in the box below.

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 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. Even so, 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.¹⁴

Some readers may be concerned that registration bribes constitute a facilitation payment to obtain a necessary service, which is permitted by some countries' domestic corruption laws (Koch 2005, Argandoña 2005, 255). Indeed, the OECD has been vocal in recommending that signatories should make these illegal (Strauss 2013 OECD 2014a, Article V1). We are confident that informal charges constitute illegal bribes for two reasons. First, in many cases, they do constitute a firm gaining an "improper advantage," the OECD's delineation for illegal bribery, because they can grant firms preferred access to valuable licenses in restricted industries (Malesky et al. 2014). Second, and even more fundamentally, Vietnam considers them to be illegal, which technically makes them illegal under the OECD-ACB framework (Nichols 2013).¹⁵

To remove any potential ambiguity about facilitation payments, we also created a UCT for bribery during procurement contracts, which is clearly against the spirit of the OECD-ABC and has been the subject of numerous reports and initiatives.¹⁶ 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."¹⁷ Even more helpful, procurement can occur multiple times over the investment period in Vietnam.

¹⁴ A test of whether non-sensitive items increased after Phase 3 for firms from OECD firms is included in Online Appendix A7. We find that the increase is not significant or sizable enough to explain the bribery estimations.

¹⁵ 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.

¹⁶ See OECD (2007).

¹⁷ 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.¹⁸ 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.¹⁹ 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.²⁰

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

¹⁸ 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.

¹⁹ See Online Appendix A4 for details on the balance between the control and treatment groups.

²⁰ See Online Appendix A7 for evidence against floor and ceiling effects

the first two rows of the table show, treatment firms engaged in 1.67 activities, while the control firms engaged in 1.46 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, 20.3% 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.²¹ 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.

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. Firms from OECD-ABC signatory countries reduce their bribery to over half the previous amount (from 23.7% to 11.5%), while

²¹ “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). We drop firms that registered before 2000 to reduce recall bias, but test different cut-off years in Appendix 8.3. Results are not at all dependent on the selection of the year 2000.

firms from non-signatories more than doubled their bribe frequency (from 18.6% to nearly 40.7%). While the reduction among OECD-ABC signatories is anticipated by our theory, which focused on the parties to an agreement, the increase among non-signatories was not. A formal analysis of the increase is beyond the scope of this article that focuses on an empirical test of compliance with the OECD-ABC, however, we return to this surprising result in the conclusion below, sketching out a research agenda for understanding it.

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.²² To control for potential confounders within the UCT framework, we utilize an adaptation of 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.

Model Specification

In the first equation, we start with the control group that received only non-sensitive items, regressing the total number of activities (y_{it}) completed by a firm on a set of covariates (described below). In the simplest models, we use negative binomial regression because the

²² 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.

dependent variable is measured as a count ranging from 0 to 3.²³ This allows us to calculate a predicted number of non-sensitive activities for each firm (i) at the time of entry (t), giving us (\hat{y}_{it}), which we can apply to the treatment group. In the second stage, we calculate the surplus activities in the treatment group ($g_{it} = (y_{it} - \hat{y}_{it})$) and regress it on the same set of covariates but only for the treatment group. The coefficient in the second stage, provides the marginal effect (δ) of the covariate on bribe propensity. Standard errors in the second stage are clustered by province, the primary sampling unit, and are calculated using bootstrapping with 1,000 replications.

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 Pischke 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 entered Vietnam and engaged in registration activities. C is a matrix of time-variant firm and country controls. In the fully specified Model 6, we include a set of survey-year effects (λ) and two-digit sector fixed

²³ In more complex models with fixed effects, we use OLS in the first stage.

effects (α) to address the concern that there might be changes in industrial groupings associated with OECD-ABC membership.

1. $y_{it} = \gamma_0 + \gamma_1 OECD_{it} + \gamma_2 Phase3_{it} + \gamma_3 OECD * Phase3_{it} + C_{it} + \lambda + \alpha + e_{it}$ if treatment=0 (negative binomial regression)
2. $g_{it} = (y_{it} - \hat{y}_{it}) = \delta_0 + \delta_1 OECD_{it} + \delta_2 Phase3_{it} + \delta_3 OECD_{it} * Phase3_{it} + C_{it} + \lambda + \alpha + e_{it}$ if treatment=1 (non-linear least squares)

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, which takes the value of 1 if entry year is greater than 2009 and 0 if it is less than or equal to 2009 (Phase 3=1 if entry year>2009; Phase 3=0 if entry year<=2009). Thus, the year 2010 is the first year of Phase 3. This can be seen directly in the formula. The coefficient δ_1 provides the effect of OECD-ABC membership prior to the onset of Phase 3 at the beginning of 2010, and δ_2 provides the change in corruption since 2010 in the non-signatory group. δ_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.²⁴ 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.²⁵ In Model 1, we present

²⁴ Online Appendix A6 provides descriptive statistics for all variables used in our regression analysis.

²⁵ To preserve space, we only present the bribery results, although first stages will be made available with our replication materials.

a model with no controls, showing that our results correctly recover the difference-in-means estimate presented in Table 2. We find that 20.3% of firms pay bribes in our sample.²⁶

<<Insert Table 2 about here>>

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 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, home-country population size, and level of democracy from the Polity IV dataset).

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.²⁷ Model 8 introduces two-way fixed effects: 1) entry-year dummies to address any systematic economic shocks in a particular year that might be biasing our results; 2) 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

²⁶ As R-Squared can be misleading in multistage non-linear models, we assess model fit using likelihood ratio tests and the Bayesian Information Criterion (BIC). Lower BIC scores are preferable, so we can once again see how additional parameters improve the fit of the model to the underlying data.

²⁷ See Online Appendix 2 for a balance test of trending in a range of confounders.

that the Phase 3 and OECD coefficients are perfectly correlated with country dummies and therefore must be dropped from the analysis. Regardless of the specification choice, the results are similarly sized and statistically significant (with the exception of Model 7)

Focusing on the full-specified Model 6, 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 (δ_2), we see that bribe frequency increased by 16.8 percentage points since 2010 among non-signatories. In a potential outcomes framework, this figure represents the counterfactual - the expected corruption that would have occurred for signatories had Phase 3 never occurred. The second coefficient (δ_1) shows that, after controlling for democracy, wealth, and population, firms from OECD-ABC signatories were significantly more corrupt (by about 25.8 percentage points) than non-signatories prior to the onset of Phase 3. However, this effect should be treated with caution because it is not robustly significant across model specifications and severe multicollinearity with the other country controls in Model 6 complicates direct interpretation.²⁸ The coefficient on the interaction (δ_3) is the critical parameter in our analysis, providing the diff-in-diff since 2010, and it shows a 27 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. Holding covariates constant at the mean, we find that expected bribe frequency after Phase 3 would be about 40.2% among non-signatories and 11.7% among signatories.

Thus, it is clear that H1 is upheld. During a period of high growth in the Vietnamese economy, along with lucrative opportunities for malfeasance, the implementation of Phase 3

²⁸ The VIF of the OECD variable is 7.81, which implies that 83% of its variation is explained by the other controls. In essence, the OECD coefficient now captures the small set of OECD-ABC that are not democratic or wealthy. To put formal names to that coefficient, it appears to be driven by firms from Poland, South Africa and Turkey. By contrast, the VIF of the diff-in-diff interaction term is only 3.07.

appears to have significantly reduced the frequency of bribery by firms from countries party to the OECD-ABC 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 our Online Appendix 8 we tackle these threats one by one: 1) the parallel trends assumption; 2) bandwidth size; and 3) allowing for initial entry years earlier than 2000. Our results remain robust to all of these tests.

Bribery during Procurement

In Table 3, we present an analysis of bribery during procurement using the same specification but limiting analysis to only firms that competed for government procurement contracts during the years covered by the survey. 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 slightly more than their peers. After Phase 3, however, firms from signatory countries reduced their bribe frequency by 29 percentage points (Model 6), while firms from non-signatory countries actually increased their bribery behavior.

<<Insert Table 3 about here>>

Although the results are not robustly significant according to standard p-value thresholds (likely due to limited power), the direction of the coefficient remains similar 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; after Phase 3, we observe lower levels of corruption among firms from signatories compared to those from non-signatory countries. Large standard errors, however, mean we are unable to definitely reject the null hypothesis of no difference.

Testing Hypothesis 2: Enforcement

To assess the whether the above effects are driven by reputational or enforcement concerns, we perform two analyses in Table 4. First, we drop all firms from countries that Heimann and Dell (2014) deem to be active enforcers. We chose 2014 as the year to denote enforcement, because the measure includes the longest historical experience of the firms from those countries. In retrospect, it allows for the best gauge of the pressure faced by investors. It is important to note, however, that the assessment has changed methodologically over time. Thus, South Korea and Japan, the two largest signatory investors in our sample were coded as moderate enforcers in 2012 (3 on the TI scale), but were considered to be non-enforcers (0 on the TI scale) in 2013 and 2014.

<Table 4 about Here>

We observe similar results for both registration and procurement. In Models 1 and 6, we still observe a significant reduction in corruption for signatories after the onset of Phase 3. Once we include a full set of firm and country-level controls in Models 2 and 7, however, the effect remains negative and sizable but is no longer statistically significant.

Pushing a bit deeper, we next limit our analysis to only the largest Asian investors in the sample, dropping all European and American investors. In the treatment group, this leaves us

with MNCs from Japan and South Korea in the signatory group, and Taiwan, Singapore, China, Thailand, Indonesia, and Malaysia in the non-signatory group. Importantly, Japan and South Korea are considered to be poor enforcers with almost zero investigations or sanctions of bribery by overseas investors in the Phase 3 period, so this test essentially isolates the reputational cost element of Phase 3. Here, we find robust evidence for reductions in bribery during registration among signatory firms. The results turn insignificant for procurement corruption, but this is likely due to insufficient statistical power due to small numbers of procurement firms in the treatment group in this analysis.

Taken together, the lessons of the two analyses are mixed. Dropping high enforcers appears to indicate that compliance is primarily driven by the threat of legal punishment by a governmental authority. But if that is the case, why do we still see significant results when we limit signatories to only South Korean and Japanese firms with essentially zero probability of facing this type of punishment? To answer this question, we interact Phase 3 with the enforcement level of the home country for all the investors in our sample in Models 5 and 10.

To ensure sufficient representation of treatment and control groups in each enforcement group (known as common support) and the linearity assumption of the moderator (Hainmueller et al 2016), we recode the Heimann and Dell (2014) measure to create a three-point scale, including: 1 (non-signatories); 2. (non-enforcers), and 3 (any enforcement at all). Figure 3 plots the marginal effects of Phase 3 enforcement at each level of the scale for both registration and procurement.

<Figure 3 about Here>

For non-signatories, we observe a 25 percentage point increase in the propensity to bribe. This result is strongly significant for both procurement and registration. Consistent with the analysis above, it is quite clear that the non-signatories increased bribe behavior after Phase 3.

Turning to signatories who face low enforcement, we find zero effect of the Convention. They appear to be constrained from increasing their corruption like their peers from non-signatory countries, but are unlikely to actually reduce their behavior. Nevertheless for both registration and procurement, the difference between the marginal effects for non-signatories and non-enforcers is statistically significant. This result helps explain why the OECD-ABC appears effective when limiting the analysis to Asian investors. The benefits of the OECD-ABC are driven by limiting increased corruption among signatories, as their peers in non-signatory states (the most appropriate counterfactual) increase their bribery behavior. As no enforcement is taking place in this group, the constrained behavior can only be attributed to reputational concerns.

By sharp contrast, in countries with at least some reasonable enforcement, we observe reductions in propensity to bribe. The marginal effects are sizable (about a 50 percentage point reduction) and significantly different from zero for both registration and procurement. Thus, it appears that the OECD-ABC appears to be reducing bribery among the small set of firms that are actually experiencing increased risk of enforcement.

In sum, the reputational and enforcement mechanisms apply to different types of states. In an environment of increased corruption in the counterfactual set of countries, the OECD-ABC constrains the bribery of firms to pre-existing levels even when there is no threat of enforcement. This result constitutes the reputational mechanism. Only investigations and sanctions by home states, however, can actually cause firms subject to the OECD-ABC to reduce their propensity to

bribe. This enforcement mechanism is sizable, but is limited to the small set of countries that have been willing to take actions against their firms engaged in corrupt activities abroad.

Conclusion

The topic of compliance with international agreements is one of the most studied areas of international relations. Despite the proliferation of theoretical and empirical studies on the topic, little consensus has emerged on how international agreements shape the behavior of non-state actors operating outside their home countries. The recent contribution of Global Experimental Governance (GXG) has offered one way forward by arguing that flexible institutional approaches, including peer review, can contribute to greater compliance, even among non-state actors, by increasing transparency and the reputational costs of non-compliance.

In this paper, we contribute to this research agenda by testing how the OECD-ABC's peer review process and enforcement shape the bribery behavior of firms from signatory states. We introduce unique survey data that directly measure corruption without forcing managers to incriminate themselves for illegal activities. 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. Using a diff-in-diff design, we compare the change in bribe propensity of firms after the onset of Phase 3, the enforcement period of the document. Critically, in the counterfactual group of non-signatories, corruption increased dramatically after 2009. The share of firms from non-OECD-ABC countries bribing during registration and procurement nearly doubled.

Generally speaking, the OECD-ABC appears to be successful at limiting corruption. The growth in bribery is significantly lower, and occasionally even negative, among firms from signatory nations. In our fully specified models, we observe a 27.3 percentage point reduction in bribe propensity during registration after Phase 3 of the convention instituted a peer review process that could potentially implicate firms abroad. However, this success is achieved through two different mechanisms. When a home country signs onto the agreement, but engages in no enforcement activities, such as investigating corruption cases or sanctioning convicted bribers, its firms abroad do not appear to change their bribery behavior. While the set of firms in the non-signatory group (the counterfactual) increase their bribe propensity, firms from non-enforcers maintain the same level of bribery that they had before Phase 3. Thus, when we limit our analysis to very similar Asian countries (signatories from Japan and Korea; non-signatories from Taiwan and Singapore), we find a significant effect of the agreement. We argue that this constrained behavior can only be attributed to reputational effects, as these firms fear retaliation by other signatory states and firms, even if they have no fear of punishment at home.

Only among countries that instituted serious monitoring and punishment, which raised the costs and risks of bribery after Phase 3 of the Convention, do we see a reduction in bribery behavior by signatories and non-signatories. Firms from states that had even minimal enforcement of OECD-ABC saw 50% reductions in bribe propensity compared to the previous period.

An important puzzle remains from our empirical analysis. We hypothesized that the OECD-ABC would lower corruption among signatories, but we had no expectation that bribery would change among firms from non-signatories, the counterfactual comparison group in our analysis. In fact, across different measures of corruption and model specifications, we

consistently observe substantial increases in bribery among firms from non-signatories. In this paper, the diff-in-diff assumption is that corruption was increasing generally for MNCs in Vietnam after WTO entry as rents in the economy increased, and were it not for the OECD-ABC, signatory MNCs would have also engaged in increased bribery.

What happens if we relax this assumption, however, and assume that other actors are responding strategically to the implementation of the OECD-ABC? Interesting possibilities emerge. 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 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.

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 state with confidence that Phase 3 has

reduced the direct bribery behavior of firms subject to the OECD-ABC. 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.

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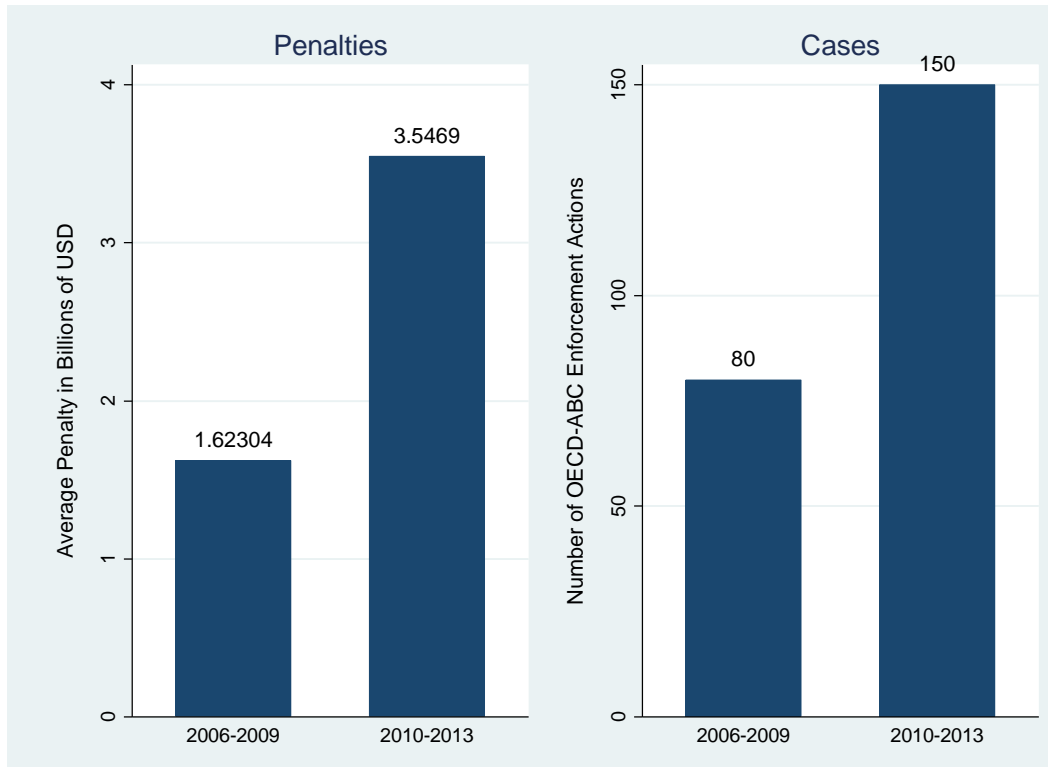


Figure 1: Foreign Bribery Punishments and New Investigations in Signatory Countries in Four Years before and after Phase 3. In the first panel, we present average penalties in anti-corruption cases from the OECD Foreign Bribery Report (2014, p. 20, Figure 7). In the second panel, we present the average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

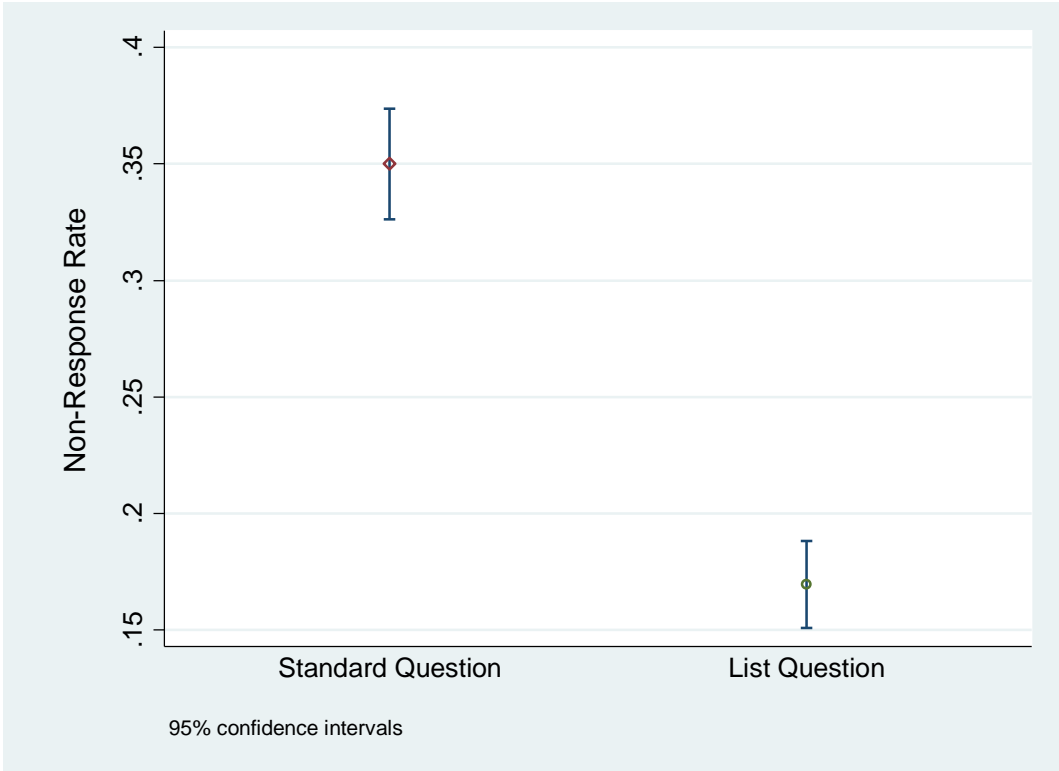


Figure 2: Item Non-Response Rates in Standard and List Questions in 2012 PCI-FDI Survey.

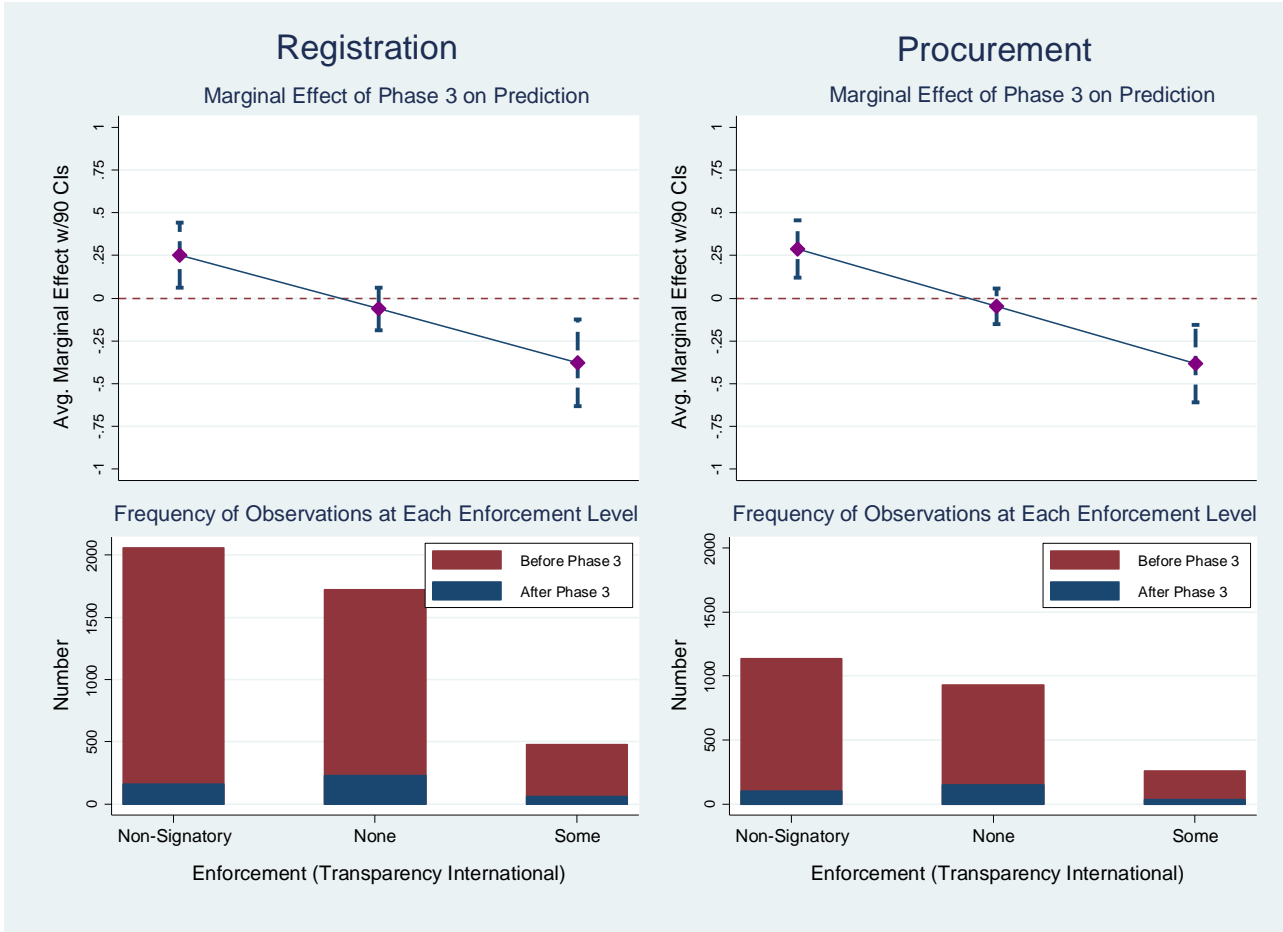


Figure 3: Conditional Effect of Enforcement on Reductions in Bribe Propensity. Based on Models 5 and 10 in Table 4. Number of observations in histograms include both first and second stages.

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

1. All Firms, All Years						
	<u>Treatment</u>	<u>Mean</u>	<u>SE</u>	<u>Low</u>	<u>High</u>	<u>Bribe</u>
	No	1.421	0.02	1.38	1.46	20.3%
	Yes	1.624	0.02	1.58	1.67	
2. All Years by OECD Anti-Bribery Convention Signatory Status						
<u>OECD</u>	<u>Treatment</u>	<u>Mean</u>	<u>SE</u>	<u>Low</u>	<u>High</u>	<u>Bribe</u>
No	No	1.369	0.03	1.31	1.43	20.6%
No	Yes	1.575	0.03	1.51	1.64	
Yes	No	1.454	0.03	1.40	1.51	23.1%
Yes	Yes	1.686	0.03	1.63	1.75	
3. Before Phase 3 by OECD Anti-Bribery Convention Signatory Status						
<u>OECD</u>	<u>Treatment</u>	<u>Mean</u>	<u>SE</u>	<u>Low</u>	<u>High</u>	<u>Bribe</u>
No	No	1.370	0.03	1.31	1.43	18.6%
No	Yes	1.556	0.03	1.49	1.62	
Yes	No	1.437	0.03	1.38	1.50	23.7%
Yes	Yes	1.674	0.03	1.61	1.74	
4. After Phase 3 OECD Anti-Bribery Convention Signatory Status						
<u>OECD</u>	<u>Treatment</u>	<u>Mean</u>	<u>SE</u>	<u>Low</u>	<u>High</u>	<u>Bribe</u>
No	No	1.339	0.11	1.11	1.56	40.7%
No	Yes	1.746	0.12	1.51	1.99	
Yes	No	1.548	0.07	1.41	1.69	11.5%
Yes	Yes	1.664	0.09	1.48	1.85	

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

<i>Dependent variable: difference between the activities reported by treatment group and predicted number of nonsensitive activities of control group.</i>	All Firms Registered after 2000						Specification Checks	
	Diff-in-Means	No Controls	Survey Year FE	Sector FE	Firm Controls	Country Controls	All Confounds	Country & Entry Year FE
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Firm Entered after Home Country Completed Phase 3		0.224*	0.260**	0.248**	0.195*	0.168	0.117	
		(0.123)	(0.132)	(0.099)	(0.117)	(0.129)	(0.127)	
Signed OECD Bribe Convention =1		0.055	0.070**	0.088**	0.156***	0.258*	0.205	
		(0.039)	(0.035)	(0.035)	(0.053)	(0.149)	(0.141)	
OECD*Phase3		-0.346**	-0.343**	-0.352***	-0.309**	-0.273*	-0.230	-0.410*
		(0.168)	(0.165)	(0.129)	(0.139)	(0.146)	(0.154)	(0.218)
100% Foreign Owned =1					-0.236***	-0.218**	-0.185**	-0.235**
					(0.085)	(0.098)	(0.084)	(0.092)
Employment Size at Establishment (1 to 8)					-0.019	-0.019	-0.023	-0.013
					(0.016)	(0.019)	(0.020)	(0.019)
Capital Size at Establishment (1 to 8)					0.020	0.015	0.005	0.032*
					(0.018)	(0.020)	(0.020)	(0.017)
Industrial Zone==1					-0.071	-0.077	-0.069	-0.075
					(0.051)	(0.060)	(0.055)	(0.058)
Exports to Home Country = 1							0.049	
							(0.085)	
Exports to Third Country = 1							-0.044	
							(0.067)	
Land Use Rights =1							0.042	
							(0.068)	
GDP Per Capita (ln)						0.036	0.025	
						(0.038)	(0.040)	
Population (ln)						-0.007	-0.005	
						(0.017)	(0.016)	
Democracy (Polity IV)						-0.020**	-0.017*	
						(0.009)	(0.009)	
Constant	0.203***	0.184***	0.077	-0.040	0.042	0.004	0.061	-0.934***
	(0.040)	(0.045)	(0.049)	(0.145)	(0.165)	(0.476)	(0.505)	(0.316)
Survey Year FE	No	No	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	No	No	No	Yes	Yes	Yes	Yes	Yes
Entry Year FE	No	No	No	No	No	No	No	Yes
Country FE	No	No	No	No	No	No	No	Yes
Observations	2,116	2,041	2,041	2,032	1,347	1,312	1,270	1,347
Provincial Clusters	50	49	49	49	44	44	43	44
RMSE	0.978	0.968	0.949	0.946	0.931	0.927	0.923	0.931
Log-Likelihood	-2955	-2828	-2785	-2752	-1795	-1741	-1676	-1767
LR Chi2 Test	NA	253.9***	339.2***	405.4***	2318.9***	2422***	4388.8***	4399.6***
BIC	5917	5686	5623.5	5770.6	3871.5	3588	1635.8	1687.9

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. 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) (FE: Fixed Effects; ; LR Test: Likelihood Ratio Test ; BIC: Bayesian Information Criterion). LR tests compare each new model to Model 1, where the null hypothesis is that the two models are not significantly different in the goodness of fit to the data.

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

<i>Dependent variable: difference between the activities reported by treatment group and predicted number of nonsensitive activities of control group.</i>	All Firms						
	Diff-in-Means Panel	No Controls	Survey Year FE	Sector FE	Firm Controls	Country Controls	Country & Survey FE
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Firm Entered after Home Country Completed Phase 3		0.440*** (0.147)	0.272* (0.144)	0.318** (0.153)	0.258 (0.173)	0.211 (0.242)	
Signed OECD Bribe Convention =1		0.110* (0.060)	0.042 (0.056)	0.015 (0.057)	0.045 (0.072)	0.120 (0.189)	
OECD*Phase3		-0.593*** (0.191)	-0.423** (0.183)	-0.474** (0.193)	-0.337 (0.226)	-0.294 (0.275)	-0.586 (0.388)
100% Foreign Owned =1					-0.270*** (0.097)	-0.265** (0.116)	-0.348** (0.142)
Employment Size at Establishment (1 to 8)					0.005 (0.023)	0.040 (0.027)	0.027 (0.036)
Capital Size at Establishment (1 to 8)					-0.027 (0.017)	-0.027 (0.022)	-0.001 (0.030)
Industrial Zone==1					-0.249*** (0.069)	-0.290*** (0.091)	-0.406*** (0.103)
GDP Per Capita (ln)						0.015 (0.066)	-0.054 (0.712)
Population (ln)						-0.015 (0.034)	-5.467* (3.046)
Democracy (Polity IV)						-0.008 (0.011)	-0.232*** (0.087)
Constant	-0.430*** (0.026)	-0.496*** (0.041)	-0.406*** (0.113)	0.047 (0.183)	0.015 (0.205)	0.020 (1.031)	100.068* (56.965)
Survey Year FE	No	No	Yes	Yes	Yes	Yes	Yes
Industry FE	No	No	No	Yes	Yes	Yes	Yes
Country FE	No	No	No	No	No	No	Yes
Observations	1,263	1,231	1,231	1,226	825	645	502
RMSE	0.985	0.976	0.930	0.925	0.947	0.978	0.994
Log-Likelihood	-1773	-1714	-1654	-1626	-1106	-878.9	-667.6
LR Chi2 Test	NA	117.4***	237.5***	294.7***	1334.1***	1782.4***	2203.8***
BIC	3553.2	3457.2	3358.4	3500.3	2473.9	2035.6	1672.0

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. 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. Because the dependent variable is an estimate, standard errors are calculated through bootstrapping procedure with 1000 repetitions. Errors are not clustered due to limited numbers of second-level units with procurement (*** p<0.01, ** p<0.05, * p<0.1). (FE: Fixed Effects; ; LR Test: Likelihood Ratio Test; BIC: Bayesian Information Criterion). LR tests compare each new model to Model 1, where the null hypothesis is that the two models are not significantly different in the goodness of fit to the data.

Table 4: Heterogeneous Impact of Home Country Enforcement

<i>Dependent variable: difference between the activities reported by treatment group and predicted number of nonsensitive activities of control group.</i>	Bribery during Entry					Bribery during Procurement				
	Dropping High Enforcers		Only Asian Firms		Interaction	Dropping High Enforcers		Only Asian Firms		Interaction
	Simple (1)	Full (2)	Simple (3)	Full (4)	Full (5)	Simple (6)	Full (7)	Simple (8)	Full (9)	Full -10
Firm Entered after Home Country Completed Phase 3	0.276** (0.129)	0.185 (0.226)	0.245** (0.108)	0.436** (0.196)	0.253** (0.113)	0.324* (0.165)	0.064 (0.269)	0.543** (0.255)	0.433 (0.344)	0.290*** (0.099)
Signed OECD Bribe Convention =1	0.069 (0.046)	0.416*** (0.141)	-0.004 (0.061)	0.687*** (0.191)		-0.013 (0.069)	-0.043 (0.257)	-0.140 (0.098)	0.436 (0.328)	
OECD*Phase 3	-0.281* (0.162)	-0.263 (0.253)	-0.273** (0.109)	-0.530** (0.202)		-0.415** (0.203)	-0.143 (0.310)	-0.482* (0.289)	-0.321 (0.385)	
Enforcement Level (0, 1, 2)					0.216*** (0.073)					0.013 (0.077)
Enforcement*Phase 3					-0.315*** (0.111)					-0.337*** (0.101)
100% Foreign Owned =1		-0.142* (0.084)		-0.363*** (0.117)	-0.207** (0.098)		-0.181 (0.142)		-0.361** (0.182)	-0.266** (0.112)
Employment Size at Establishment (1 to 8)		0.005 (0.023)		-0.005 (0.026)	-0.016 (0.018)		0.015 (0.038)		0.002 (0.041)	-0.015 (0.024)
Capital Size at Establishment (1 to 8)		0.025 (0.024)		0.037 (0.032)	0.016 (0.019)		-0.039 (0.030)		0.007 (0.034)	-0.021 (0.022)
Industrial Zone==1		-0.028 (0.049)		-0.026 (0.053)	-0.078 (0.061)		-0.351*** (0.112)		-0.386*** (0.127)	-0.286*** (0.040)
GDP Per Capita (ln)		0.008 (0.045)		-0.028 (0.059)	0.025 (0.034)		0.079 (0.082)		-0.073 (0.117)	0.069 (0.065)
Population (ln)		-0.011 (0.030)		-0.067* (0.034)	-0.007 (0.011)		-0.013 (0.045)		-0.081 (0.061)	0.001 (0.010)
Democracy (Polity IV)		-0.030*** (0.007)		-0.047*** (0.012)	-0.018*** (0.006)		-0.007 (0.017)		-0.023 (0.022)	-0.009 (0.008)
Constant	0.066 (0.053)	-0.052 (0.731)	0.053 (0.084)	1.393 (0.967)	0.066 (0.411)	-0.611*** (0.112)	-1.399 (1.295)	-0.625*** (0.156)	1.419 (1.945)	-1.076 (0.786)
Survey Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1,905	965	1,185	797	1,312	895	454	562	378	631
Clusters	48	44	40	36	48
Root Mean Squared Error	0.944	0.951	0.964	0.939	0.927	0.944	0.998	0.985	1.012	0.969
Log-Likelihood	-2576	-1298	-1620	-1059	-1741	-1200	-621.4	-771.1	-518.5	-853.8
LR Chi2 Test	757.3	2649.7	2668.4	3790.5	2428.1	-1766.2	639.5	-908.0	-402.8	-1073.4
BIC	5205.0	3359.3	3290.5	2212.4	3581.8	2448.0	1662.8	1586.4	1120.1	1797.8

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 all registration and Panel 2 studies procurement. For registration, errors are clustered at the provincial sampling unit level. For procurement, errors are not clustered due to limited numbers of second-level units with procurement (*** p<0.01, ** p<0.05, * p<0.1). (FE: Fixed Effects; ; LR Test: Likelihood Ratio Test; BIC: Bayesian Information Criterion). LR tests compare each new model to Model 1, where the null hypothesis is that the two models are not significantly different in the goodness of fit to the data.

Does the OECD Anti-Bribery Convention Affect Bribery?

ONLINE APPENDIX

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Appendix A1: Comparison between OECD-ABC Signatories and Non-Signatories in 2010.

This table presents a balance test at the country-level. It demonstrates that signatories of the OECD-ABC convention were structurally different on a number of important characteristics from non-signatory countries represented in the PCI dataset in the first year of Phase 3 of the Convention. As a result, any analysis which strictly looks at the cross-sectional relationship between OECD-ABC status and outcomes would be potentially biased. Consequently, we use a diff-in-diff design to illustrate the change in firm behavior over time.

Covariate	<u>Signatory of OECD Covention</u>		t	p
	Yes (n=29)	No (n=34)		
<i>Respondents</i>	2559	3506		
Group A Restricted Sector=1	0.22	0.27	0.71	0.48
Labor Size of Firm at Establishment (1 to 8)	3.30	3.44	0.56	0.58
Age of Investment	11.69	9.18	-1.76	0.08
Capital Size of Firm at Establishment (1 to 8)	3.60	4.17	1.59	0.12
100% Foreign Owned =1	0.76	0.71	-0.62	0.54
Democracy =1	0.96	0.46	-4.99	0.00
GDP/Capita (ln, PPP)	10.19	9.06	-5.08	0.00
Distance from VN in KM (ln)	9.08	8.25	-3.68	0.00
Settler Mortality	3.00	4.63	2.31	0.04
Veto Points (Checks, DPI)	4.01	2.77	-3.08	0.00
Freedom House Civil Liberties	1.42	3.56	5.88	0.00
Polcon 3 (Henisz)	0.42	0.24	-4.61	0.00
Transparency International CPI	6.79	4.09	-5.09	0.00
Human Development Index	0.86	0.69	-5.81	0.00
Population (Millions)	43.60	152.60	1.55	0.13
WB Control of Corruption	1.19	-0.15	-5.03	0.00
WB Doing Business	31.96	88.72	5.09	0.00
Energy Consumption (kilowats)	8296.00	3726.59	-3.07	0.00
Export/GDP	42.93	54.33	1.18	0.24
FDI Flows/GDP	2.61	5.04	1.99	0.05
Manufacturing =1	0.35	0.46	1.46	0.15
Construction=1	0.07	0.03	-1.26	0.21
Services=1	0.48	0.40	-1.06	0.29
Agriculture=1	0.06	0.02	-1.21	0.23
Mining=1	0.00	0.02	1.22	0.23
Firm plans to expand investment	2.45	2.47	0.09	0.93
Located in Industrial Zone=1	0.25	0.38	1.73	0.09
Possesses Land Title=1	2.08	2.08	0.05	0.96

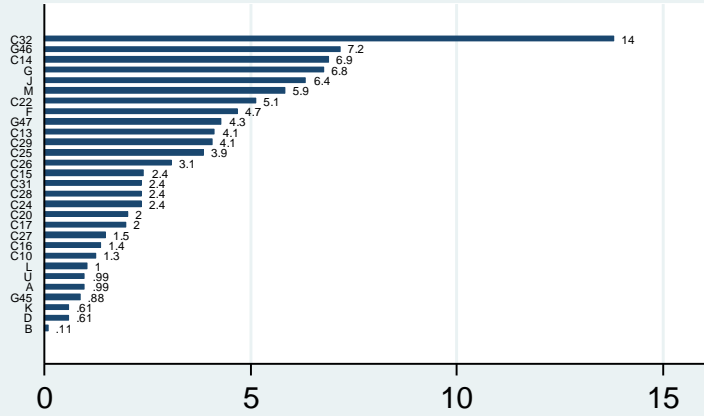
Appendix A2: Dynamic Balance Test

This table extends on the balance test above. Here, we study firm-level characteristics among OECD-ABC signatories and non-signatories. The analysis uses the full PCI dataset in the following equation ($y_{it} = \beta_0 + \beta_1 OECD + \beta_2 Phase3 + \beta_3 OECD * Phase3 + \lambda + e_{it}$). Each row represents the regression of the variable in the first column (y) on the interaction of OECD and Phase 3 including survey year fixed effects. i is an index of firms and t indexes the year they completed registration activities. We also include a set of survey year effects (λ). The third column lists β_3 , which is the diff-in-diff coefficient. The three coefficients that are significant in this column represent potential confounders for our analysis, as these are areas where patterns in the behavior of firms from OECD-ABC signatories diverge from their non-signatory peers. To address any bias caused by these alternative trends we control for these factors in Table 2 (Model 8). Note there are no differences in the sectors firms chose to enter or size of firms upon entry, measured by either labor or equity size. The trends in sectors at the two-digit ISIC level is depicted in Figure A2.1 below.

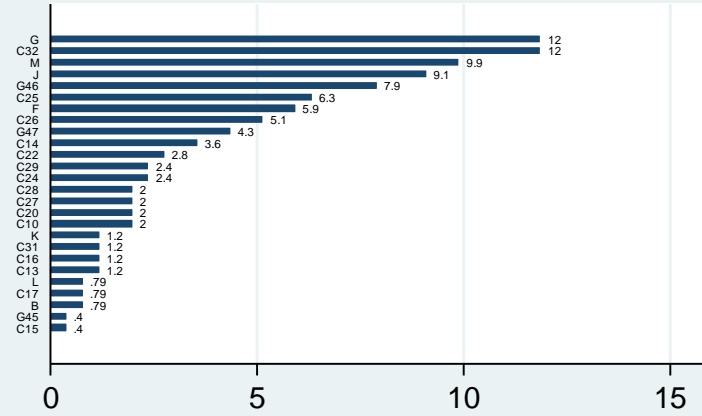
Potential Confounders	Firm Entered Vietnam before Phase 3		Firm is from OECD Signatory Country		Interaction between Phase3 and OECD		Constant		n	R-squared
	Coefficient	95% CI	Coefficient	95% CI	Coefficient	95% CI	Coefficient	95% CI		
Employment Size at Establishment	-1.327***	(-1.615 - -1.040)	-0.044	(-0.445 - 0.356)	0.203	(-0.173 - 0.578)	3.585***	(3.267 - 3.903)	5,198	0.043
Equity Size at Establishment	-0.715***	(-0.940 - -0.490)	-0.152	(-0.377 - 0.072)	0.046	(-0.230 - 0.322)	5.109***	(4.898 - 5.319)	4,244	0.039
Entry Type: 100% Foreign Owned Venture =1	-0.007	(-0.076 - 0.061)	0.074	(-0.058 - 0.206)	0.002	(-0.074 - 0.077)	0.795***	(0.636 - 0.953)	5,818	0.012
Located in Industrial Zone =1	-0.246***	(-0.365 - -0.126)	0.005	(-0.121 - 0.131)	0.117*	(-0.002 - 0.236)	0.478***	(0.391 - 0.564)	5,548	0.011
Land Use Rights (1-3)	-0.255***	(-0.325 - -0.186)	-0.090***	(-0.156 - -0.024)	0.108**	(0.018 - 0.198)	0.478***	(0.394 - 0.562)	5,472	0.041
Main Sector=C32 (Other Manufacturing)	-0.052*	(-0.111 - 0.006)	0.011	(-0.027 - 0.048)	0.050	(-0.019 - 0.118)	0.142***	(0.112 - 0.173)	5,778	0.014
Main Sector=G (Wholesale and Retail Trade)	0.068***	(0.031 - 0.105)	0.019	(-0.018 - 0.056)	-0.028	(-0.081 - 0.024)	0.036**	(0.008 - 0.064)	5,778	0.010
Main Sector=G46 (Wholesale Trade, No Vehicles)	0.047	(-0.023 - 0.117)	0.006	(-0.006 - 0.017)	-0.040	(-0.115 - 0.036)	0.016***	(0.006 - 0.027)	5,778	0.017
Main Sector=C14 (Manufacturing Garments)	-0.029***	(-0.047 - -0.010)	0.015	(-0.024 - 0.054)	-0.001	(-0.025 - 0.023)	0.089***	(0.061 - 0.118)	5,778	0.021
Main Sector=J (Information)	0.015	(-0.021 - 0.050)	0.014	(-0.020 - 0.049)	0.017	(-0.023 - 0.058)	0.054***	(0.023 - 0.085)	5,778	0.003
Main Sector=M (Professional Scientific Activities)	0.022	(-0.005 - 0.048)	0.019	(-0.017 - 0.055)	0.022	(-0.040 - 0.084)	0.028**	(0.005 - 0.052)	5,778	0.006
Restricted Sector=1	-0.070*	(-0.149 - 0.008)	-0.024	(-0.093 - 0.044)	0.004	(-0.076 - 0.084)	0.197***	(0.138 - 0.257)	5,594	0.011
Expansion Plans (1 -5)	0.152***	(0.057 - 0.247)	0.102**	(0.006 - 0.197)	0.018	(-0.134 - 0.169)	4.995***	(4.922 - 5.069)	5,519	0.083
Total Revenue in Entry Year (ln)	-2.816***	(-4.540 - -1.092)	-0.053	(-0.433 - 0.327)	1.330	(-0.523 - 3.183)	13.385***	(13.009 - 13.762)	2,386	0.042
Customer: SOE	-0.010	(-0.048 - 0.027)	-0.050***	(-0.081 - -0.019)	-0.035	(-0.085 - 0.014)	0.123***	(0.097 - 0.149)	5,818	0.017
Customer: Government	0.010	(-0.007 - 0.028)	-0.019*	(-0.039 - 0.001)	-0.018	(-0.049 - 0.012)	0.048***	(0.036 - 0.061)	5,818	0.005
Customer: Private Individual or Firm	0.070***	(0.028 - 0.113)	-0.105***	(-0.159 - -0.051)	-0.044	(-0.129 - 0.041)	0.340***	(0.303 - 0.376)	5,818	0.027
Customer: Foreign Individual or Firm	0.086***	(0.034 - 0.139)	0.002	(-0.035 - 0.040)	-0.041	(-0.148 - 0.066)	0.295***	(0.269 - 0.322)	5,818	0.030
Customer: Exporting to Home Country	-0.169***	(-0.257 - -0.081)	0.098**	(0.005 - 0.191)	0.137**	(0.032 - 0.241)	0.477***	(0.413 - 0.542)	5,818	0.034
Customer: Exporting to Home Country	-0.092**	(-0.181 - -0.004)	-0.023	(-0.090 - 0.044)	-0.087*	(-0.189 - 0.015)	0.111***	(0.078 - 0.145)	5,818	0.146
Total Expenditures in Entry Year (ln)	-2.911***	(-4.051 - -1.771)	0.025	(-0.335 - 0.385)	1.137*	(-0.085 - 2.359)	13.270***	(13.017 - 13.522)	1,901	0.034
Supplier: SOE	-0.005	(-0.035 - 0.025)	-0.006	(-0.031 - 0.019)	-0.027	(-0.084 - 0.029)	0.142***	(0.112 - 0.172)	5,818	0.010
Supplier: Government	-0.038	(-0.095 - 0.019)	-0.033*	(-0.071 - 0.005)	0.014	(-0.059 - 0.088)	0.566***	(0.545 - 0.588)	5,818	0.035
Supplier: Private Individual or Firm	-0.012	(-0.036 - 0.013)	-0.018	(-0.040 - 0.005)	0.024	(-0.007 - 0.054)	0.137***	(0.110 - 0.165)	5,818	0.011
Supplier: Foreign Individual or Firm	0.014	(-0.018 - 0.046)	-0.013	(-0.033 - 0.008)	-0.009	(-0.054 - 0.036)	0.081***	(0.061 - 0.102)	5,818	0.008
Supplier: Importing Home Country	-0.049	(-0.130 - 0.031)	0.038	(-0.039 - 0.115)	0.011	(-0.103 - 0.125)	0.273***	(0.232 - 0.314)	5,818	0.072
Supplier: Importing from Third Country	-0.092**	(-0.169 - -0.016)	0.017	(-0.022 - 0.055)	-0.064	(-0.151 - 0.023)	0.336***	(0.293 - 0.379)	5,818	0.029
Days to Receive License	18.137	(-7.961 - 44.234)	-1.215	(-8.997 - 6.567)	-0.384	(-40.280 - 39.512)	66.438***	(57.412 - 75.465)	3,683	0.002
License and Registration Issued Concurrently =1	0.024	(-0.013 - 0.061)	-0.005	(-0.029 - 0.020)	-0.052	(-0.136 - 0.031)	0.881***	(0.858 - 0.903)	5,120	0.034
Firm Paying VAT =1	0.024	(-0.103 - 0.151)	-0.084	(-0.186 - 0.018)	-0.070	(-0.222 - 0.082)	0.785***	(0.747 - 0.823)	1,512	0.012
Firm Paying CIT =1	-0.206***	(-0.280 - -0.131)	0.026*	(-0.003 - 0.054)	0.011	(-0.090 - 0.112)	0.838***	(0.811 - 0.865)	1,512	0.032

Appendix A3: No Difference in Trending in Sector over Time

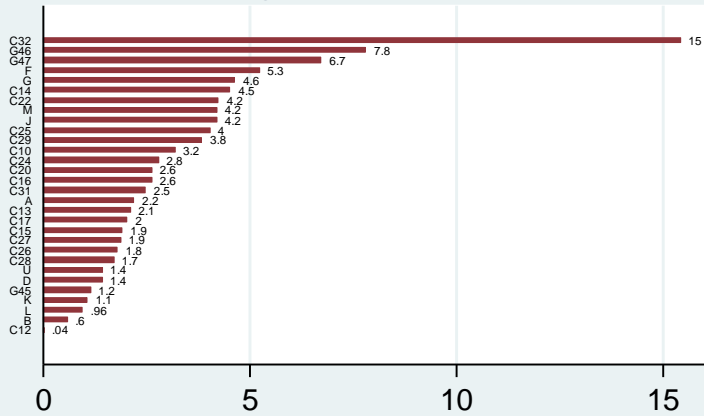
Signatory, Pre-Phase 3



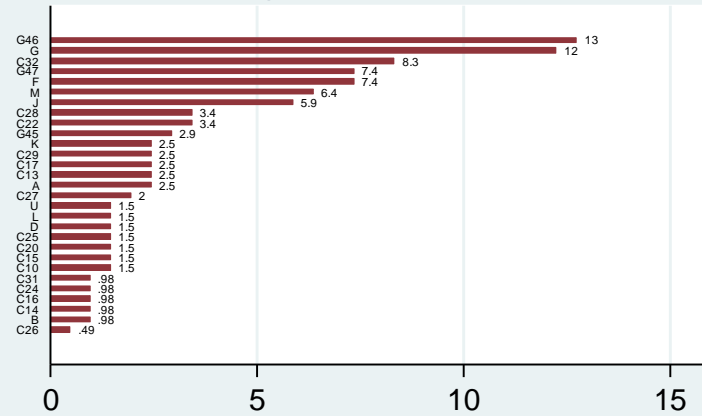
Signatory, Post-Phase 3



Non-Signatory, Pre-Phase 3



Non-Signatory, Post-Phase 3



Share of Firms in Each ISIC Revision 4 Sector (%)

Appendix A4: Balance between Treatment and Control Groups for UCT

Potential Confounders	Mean		Standard Deviation		Differences	
	Treatment	Control	Treatment	Control	p-value	t-test
DV 1: Number of Activities at Entry	1.40	1.60	0.83	0.98	0.00	-7.12
DV 2: Number of Activities during Procurement	1.21	0.78	1.11	0.98	0.00	10.06
Employment Size at Establishment	3.78	3.76	1.67	1.65	0.58	0.55
Equity Size at Establishment	4.57	4.61	1.74	1.82	0.51	-0.66
Entry Type: 100% Foreign Owned Venture =1	0.83	0.82	0.37	0.38	0.47	0.72
Located in Industrial Zone =1	0.50	0.48	0.50	0.50	0.18	1.33
Land Use Rights=1	0.21	0.30	0.01	0.01	0.58	-0.55
Main Sector=C32 (Other Manufacturing)	0.06	0.06	0.25	0.24	0.85	0.19
Main Sector=G (Wholesale and Retail Trade)	0.08	0.07	0.27	0.26	0.17	1.36
Main Sector=G46 (Wholesale Trade, No Vehicles)	0.05	0.05	0.21	0.22	0.28	-1.07
Main Sector=C14 (Manufacturing Garments)	0.06	0.05	0.23	0.22	0.46	0.74
Main Sector=J (Information)	0.06	0.05	0.23	0.21	0.14	1.47
Main Sector=M (Professional Scientific Activities)	0.20	0.19	0.40	0.39	0.52	0.64
Restricted Sector=1	4.55	4.60	0.93	0.96	0.05	-1.99
Expansion Plans (1 -5)	13.85	13.92	3.37	3.14	0.57	-0.57
Total Revenue in Entry Year (ln)	0.13	0.12	0.33	0.32	0.28	1.08
Customer: SOE	0.06	0.06	0.24	0.24	0.80	-0.25
Customer: Government	0.42	0.40	0.49	0.49	0.35	0.93
Customer: Private Individual or Firm	0.25	0.27	0.43	0.44	0.11	-1.59
Customer: Foreign Individual or Firm	0.39	0.41	0.49	0.49	0.03	-2.15
Customer: Exporting to Home Country	0.41	0.38	0.01	0.01	0.03	-2.10
Customer: Exporting to Third Country	0.20	0.20	0.01	0.01	0.84	0.20
Total Expenditures in Entry Year (ln)	13.39	13.11	0.10	0.13	0.07	-1.80
Supplier: SOE	0.41	0.43	0.49	0.50	0.08	-1.76
Supplier: Government	0.08	0.09	0.27	0.28	0.22	-1.23
Supplier: Private Individual or Firm	0.08	0.10	0.27	0.30	0.03	-2.16
Supplier: Foreign Individual or Firm	0.31	0.32	0.46	0.47	0.51	-0.67
Supplier: Importing from Home Country	0.25	0.28	0.43	0.45	0.02	-2.28
Supplier: Importing from Third Country	0.28	0.25	0.01	0.01	0.02	-2.28
Days to Receive License	49.82	57.73	87.17	188.47	0.11	-1.59
License and Registration Issued Concurrently =1	0.72	0.76	0.45	0.43	0.01	-2.65
Firm Paying VAT =1	0.73	0.74	0.45	0.44	0.48	-0.71
Firm Paying CIT =1	0.83	0.82	0.37	0.38	0.48	0.70
Firm is the subsidiary of a multi-national corporation	0.38	0.42	0.49	0.49	0.00	-2.93
Survey Year	2011.71	2011.47	0.99	1.09	0.00	8.98
Year of Entry into Vietnam	2003.86	2003.44	4.85	5.01	0.00	3.26
Constant GDP Per Capita (ln)	8.79	8.74	1.74	1.76	0.36	0.92
Democracy	0.62	0.61	0.48	0.49	0.37	0.89
Distance from Vietnam in KM (ln)	7.89	7.87	0.73	0.73	0.49	0.69
Corruption Perceptions Index	5.23	5.24	2.01	2.02	0.86	-0.18
Population (ln)	18.20	18.18	1.27	1.35	0.57	0.56

Appendix A5: Representativeness of PCI-FDI Sample (Comparison to Census Data)

<u>Legal form of investment</u>	<u>Weighted PCI</u>	<u>GSO</u>	<u>Sector</u>	<u>Weighted PCI</u>	<u>GSO</u>
100% Foreign-directed enterprise	84.35%	82.95%	Industry/manufacturing	64.59%	59.44%
Joint venture with a Vietnamese private	4.84%	16.36%	Construction/infrastructure investment	4.09%	4.72%
Joint venture with a Vietnamese SOE	4.55%		Service/commerce/finance	29.33%	28.94%
Registered as a domestic company	2.52%	0.46%	Agriculture/forestry/aquaculture	2.36%	5.87%
Domestic company w/overseas VN capital	0.61%		Mining/natural resource exploitation	0.86%	1.03%
Other	3.13%	0.23%			
<u>Sector</u>	<u>Weighted PCI</u>	<u>GSO</u>	<u>Major customer</u>	<u>Weighted PCI</u>	<u>GSO</u>
Industry/manufacturing	64.59%	59.44%	Export directly or indirectly	55.00%	66.8%
Construction/infrastructure investment	4.09%	4.72%	Foreign individuals or companies in Vietnam	24.51%	16.2%
Service/commerce/finance	29.33%	28.94%	Sold domestically to SOE	3.52%	2.8%
Agriculture/forestry/aquaculture	2.36%	5.87%	Sold domestically to state agency	1.42%	0.9%
Mining/natural resource exploitation	0.86%	1.03%	Sold domestically to private individuals	15.55%	13.0%
<u>Size of labor force</u>	<u>Weighted PCI</u>	<u>GSO</u>	<u>Licensed investment size</u>	<u>Weighted PCI</u>	<u>GSO</u>
Less than 5	2.92%	4.18%	Under 0.5 BVND (\$25,000 USD)	2.52%	2.25%
5 to 9	5.99%	6.79%	From 0.5 to under 1 BVND (\$50,000 USD)	1.39%	2.17%
10 to 49	31.79%	29.67%	From 1 to under 5 BVND (\$250,000 USD)	15.85%	12.75%
50 to 299	31.35%	30.95%	From 5 to under 10 BVND (\$500,000 USD)	8.75%	11.71%
300 to 399	6.38%	7.64%	From 10 to under 50 BVND (\$2.5 Million USD)	35.14%	36.04%
400 to 499	7.26%	7.09%	From 50 to under 200 BVND (\$10 Million USD)	23.13%	22.83%
500 to 999	7.17%	6.88%	From 200 to under 500 BVND (\$25 Million USD)	7.62%	7.29%
1000 and over	7.13%	7.81%	Above 500 BVND (\$25 Million USD)	5.61%	4.97%

Note: This table compares data on the nationally weighted sample of foreign firms from the PCI to the data collected from the National Tax Authority (Tax) and General Statistical Office (GSO) Enterprise Census. Weighted PCI is the PCI survey sample, but weighted by provincial share of enterprises to create a nationally representative sample. General Statistical Office (GSO) Data available at (www.gso.gov.vn) and GSO Enterprise Census (2009) available at (http://www.gso.gov.vn/default_en.aspx?tabid=515&idmid=5&ItemID=9775). NA = Not Available for 2010. *Tax Authority data does not disaggregate construction firm from manufacturing. The PCI data records 15 percent construction. (BVND = Billions of Vietnamese Dong; SOE=State Owned Enterprise; VN=Vietnamese)

Appendix A6: Summary Statistics and Source Data of Key Variables Used in Analysis

Variable	n	Mean	SD	Min	Max	Source
<i>Standard Measures of Corruption</i>						
Firm Paid a Bribe of Any Size = 1	4361	0.34	0.47	0.00	1.00	PCI-FDI (Qe6)
Bribe Size/Revenue (8-Point Scale)	4361	2.13	3.59	0.00	35.00	PCI-FDI (Qe7)
<i>List Questions</i>						
Procedures completed during registration	4698	1.51	0.92	0.00	4.00	PCI-FDI (Qc6)
Procedures completed during procurement	2408	0.98	1.07	0.00	4.00	PCI-FDI (Qe9)
<i>Key Independent Variables</i>						
Signed OECD Bribe Convention =1	6064	0.42	0.49	0.00	1.00	TI.a (Table A)
Registered after Phase 3=1	5818	0.08	0.27	0.00	1.00	PCI-FDI (Qa1)
Surveyed after Phase 3=1	6064	0.82	0.38	0.00	1.00	PCI-FDI
Entry Year	5818	2003.63	4.94	1941	2013	PCI-FDI (Qa1)
<i>Enforcement Data</i>						
Domestic Enforcement of Convention (1 to 3)	6064	0.90	1.08	0.00	3.00	TI.a (Table A)
New Anti-Bribery Cases Prosecuted in Year	4827	4.35	19.91	0.00	275.00	TI.a (Table A)
New Major Anti-Bribery Cases Prosecuted in Year	3914	0.12	1.16	0.00	21.00	TI.a (Table A)
New Sanctions Against Companies in Year	3914	0.14	1.64	0.00	27.00	TI.a (Table A)
<i>Firm Level Controls</i>						
Located in Industrial Zone =1	5759	0.49	0.50	0.00	1.00	PCI-FDI (Qd2)
Land Use Rights=1	5668	0.30	0.46	0.00	1.00	PCI-FDI (Qd4)
Customer: Exporting to Home Country	6064	0.40	0.49	0.00	1.00	PCI-FDI (Qa15_e)
Customer: Exporting to Third Country	6064	0.40	0.49	0.00	1.00	PCI-FDI (Qa15_f)
Total Expenditures in Entry Year (ln)	1976	0.20	0.40	0.00	1.00	PCI-FDI (Qa16)
Capital Size of Firm at Establishment (1 to 8)	4379	4.59	1.79	1.00	8.00	PCI-FDI (Qa5) ^B
Labor Size of Firm at Establishment (1 to 8)	5387	3.77	1.66	1.00	8.00	PCI-FDI (Qa10) ^C
100% Foreign Owned =1	6064	0.83	0.38	0.00	1.00	PCI-FDI (Qa8)
<i>Firm Level Controls</i>						
GDP/Capita (ln, PPP)	4718	8.76	1.75	5.59	11.66	WDI (2014)
Distance from VN in KM (ln)	5814	7.88	0.73	5.32	9.78	GW (2001)
Democracy =1	5812	0.62	0.49	0.00	1.00	PCI-FDI
Corruption Perceptions Index (TI)	5228	5.23	2.02	1.70	10.00	TI.b (2013)
Population (ln)	4734	18.19	1.31	10.36	21.04	WDI (2014)
<i>Survey Year Dummies</i>						
Survey Year 2010	6066	0.18	0.38	0.00	1.00	PCI-FDI
Survey Year 2011	6066	0.31	0.46	0.00	1.00	PCI-FDI
Survey Year 2012	6066	0.25	0.43	0.00	1.00	PCI-FDI
Survey Year 2013	6066	0.26	0.44	0.00	1.00	PCI-FDI

A: International Standard Industrial Classification (ISIC) Revision 4 codes are applied to the main product or service of every firm. These are then compared to the Group A restrictions listed in the Vietnam National Assembly. 2005. "Law on Investment." 59–2005-QH11. November 29.

B: 1) Under 0.5 BVND (25,000USD); 2) From 0.5 to under 1 BVND (50,000 USD); 3) From 1 to under 5 BVND (250,000 USD); 4) From 5 to under 10 BVND (500,000 USD); 5) From 10 to under 50 BVND (2.5 million USD); 6) From 50 to under 200 BVND (10 million USD); 7) From 200 to under 500 BVND (25 million USD); 8) Above 500 BVND (25 million USD).

C: 1) Less than 5; 2) From 5 to 9; 3) From 10 to 49; 4) From 50 to 299; 5) From 300 to 399; 6) From 400 to 499; 7) From 500 to 1000; 8) 1000 and over.

PCI-FDI: Vietnam Provincial Competitiveness Index, Foreign Investment Index Survey, 2010-2013) <http://eng.pcivietnam.org/pci-questionnaire/questionnaire-2013-a299.html>

WDI: World Bank. International Economics Dept. Development Data Group. (2014). *World Development Indicators*. Washington, DC: World Bank.

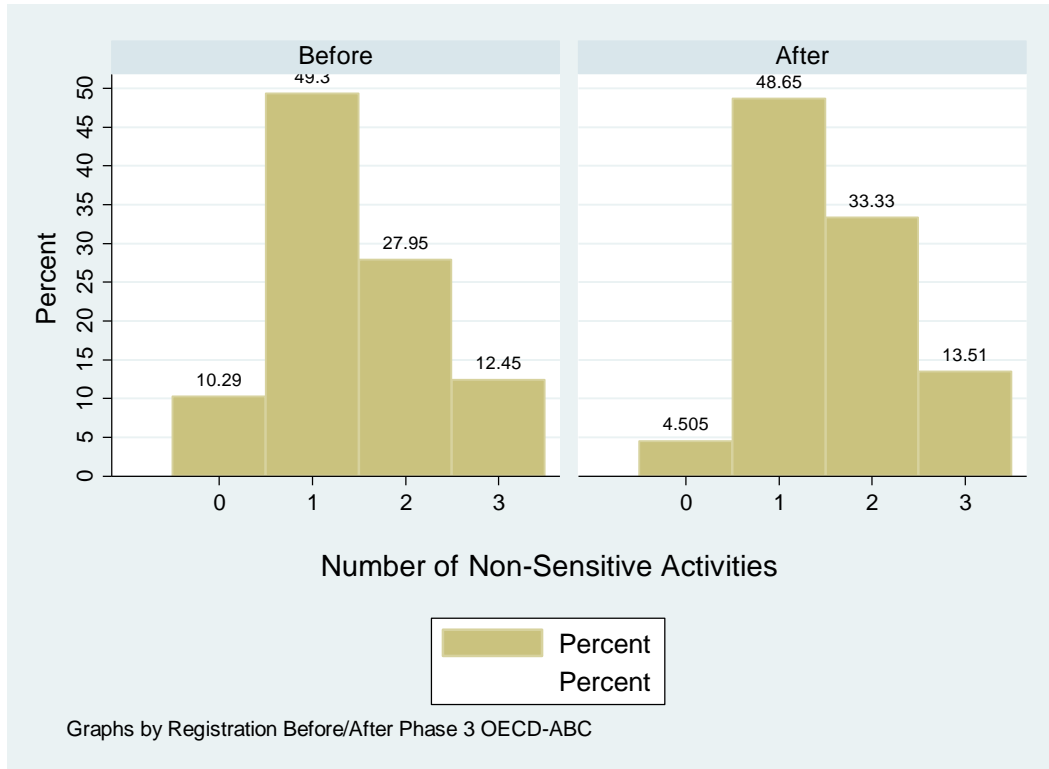
TI.a: Heimann, F. F., & Dell, G. 2012. Exporting Corruption? Country Enforcement of the OECD Anti-bribery Convention Progress Report 2012. Berlin, Germany: Transparency International, p9

TI.b: Transparency International 2013. Corruption Perceptions Index <http://cpi.transparency.org/cpi2013/>

GW: Gleditsch, K. S., & Ward, M. D. 2001. "Measuring space: A minimum-distance database and applications to international studies," *Journal of Peace Research*, 38.6, 739-758.

A7. Test of Floor and Ceiling Effects

(Change in Non-Sensitive Activities among Firms from OECD Signatories)



Appendix 8: Robustness Tests for Diff-and Diff Estimator

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 Appendix, we tackle these threats one by one: 1) the parallel trends assumption; 2) bandwidth size; and 3) earlier entry years.

A8.1. 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 A8.1 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 ($\text{after} = 1$ if $\text{entry year} > y$; 0 otherwise). For each year, we depict the coefficient on the OECD*Year interaction term surrounded by a 95% confidence interval.

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 entry years greater than 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.¹ 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 2010, are responsible for the effects we observe in Table 2.

This trend can also be observed in Figure A8.2, 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 after 2009.

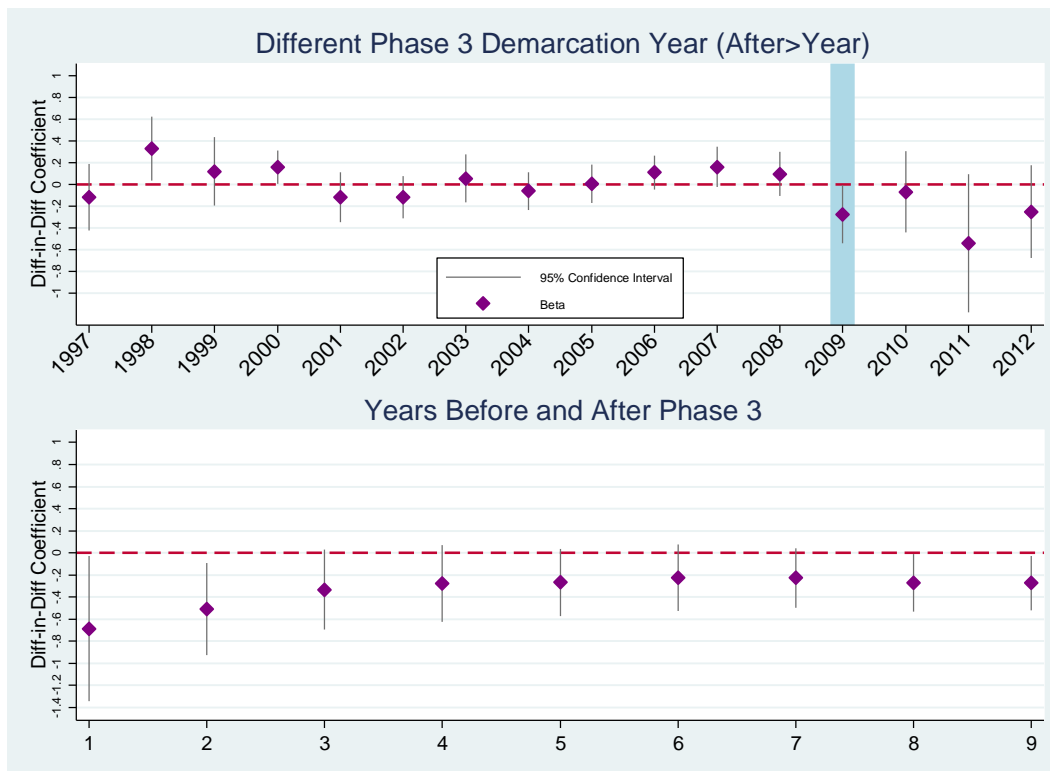
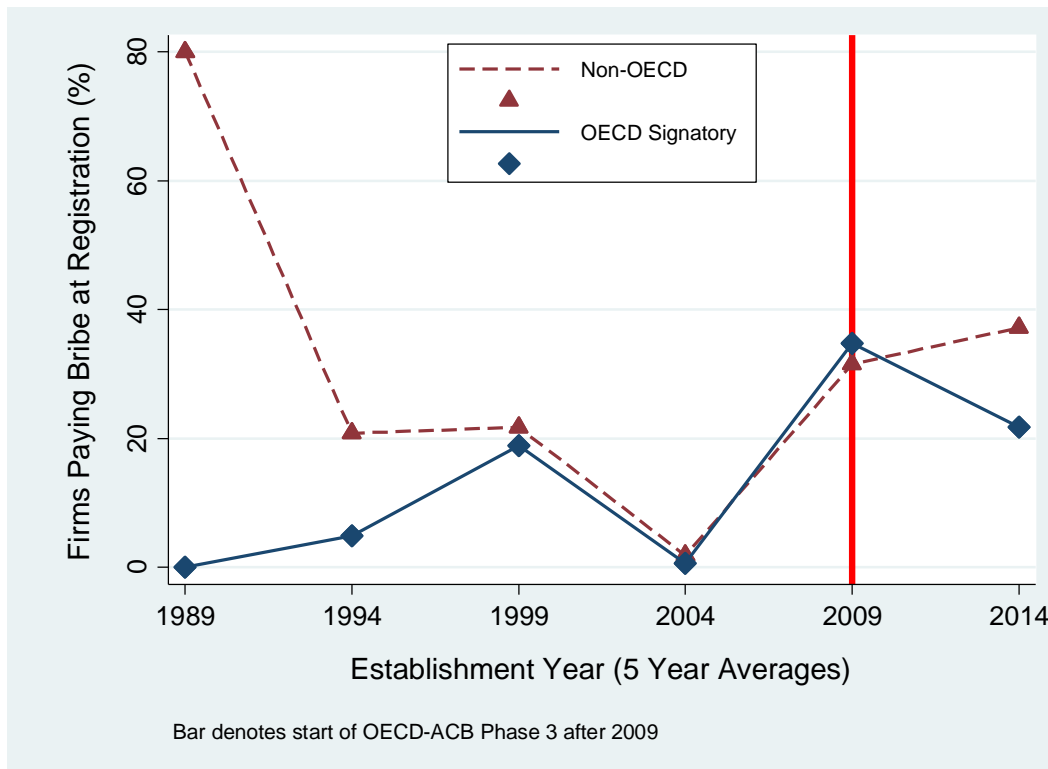


Figure A8.1: Robustness Tests. The top panel demonstrates a test of the parallel trends assumption by re-running the same analysis as Table 2 (Model 6), but replacing the year defined as the onset of Phase 3 with a range of different years. The light blue shade shows the cut-off year actually used in the main analysis. The bottom panel tests different bandwidths around the 2009 cut-off, ranging from 1 to 9 years. Range bars represent 90% Confidence Intervals.



Appendix A8.1: Graphical Display of Parallel Trends Assumption: Looks at average bribery over five-year periods among signatories and non-signatories of OECD countries. The red line at 2009 indicates the onset of Phase 3.

Appendix 8.2: 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 the beginning of 2010. 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 the beginning of 2010, we might be conflating these structural changes in the Vietnamese and global economy with responses to the Convention.²

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

² 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.

their memories. To make sure our results survive this form of bias, we re-run the analysis allowing windows around the cut-off to vary from the narrow one year since registration (only firms in 2009 and 2010) to the less narrow nine years.³ These results can be seen in the bottom panel of Figure A8.1.⁴

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.

Appendix 8.3: Earlier Entry Years

In the main estimation, we dropped all FIEs which entered after 2001, because we worried about recall bias. In Figure A8.3 we run Model 6 (Table 2), but vary the initial year below which we drop firms. As can be seen, the choice of entry year makes no difference in the analysis.

³ The last observed registration year is 2014, not 2015 in that analysis.

⁴ 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.

Appendix A8.3: Graphical Display of Varying Initial Entry Year
(Blue shade represents the actual baseline entry year used in the paper)

