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Does Enforcement Of the Rules Against Foreign Bribery Discourage Exports? A Case of the OECD Anti-Bribery Convention

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Abstract:
Although the OECD Anti-Bribery Convention has been signed by dozens of countries, only some of themenforce the laws against foreign bribery. To estimate whether the enforcement deters exports, we use amicrofounded gravity model of bilateral trade flows of 132 countries. Our results imply that enforcement ofthe rules decreases the export flows to countries with a higher corruption distance significantly, particularlyin product categories characterized by differentiated goods. Moreover, the effects of the host-countrycorruption on exports of the nonenforcing countries are limited, and similar to the impact on the exports from countries that did not sign the Convention at all. Therefore, the main aim of the Convention to level the field in international trade has not been reached yet, even among the signatory countries.

1. Introduction

The OECD Anti-Bribery Convention ("the Convention")[1] aims to reduce the corruption in international trade by criminalizing bribery of foreign public officials by companies based in countries that signed the Convention, including potential intermediaries. It entered into force in 1999, and since then, the Convention has become one of the most important instruments to abate corruption in international business.

However, despite an ongoing effort to commit the signatory countries to criminalize foreign bribery, the actual enforcement differs across countries considerably. Some countries adopted rather strict anti-bribery laws, and they already have a decent record of sanctions, such as the United States with their Foreign Corrupt Practices Act and the Bribery Act in the United Kingdom. However, there are other countries in which the enforcement of the Convention remains limited: Almost one-half of signatory countries have not reported any criminal foreign bribery case leading either to sanction or acquittance of any individual or legal person yet.

The reasons for inadequate enforcement within the signatory countries are threefold. First, the OECD itself has no executive power on the implementation of the Convention to national legislation. Instead, the OECD relies on peer pressure and performs regular monitoring of legislation and enforcement in signatory countries. As it shows up, these mechanisms may not be sufficient, especially in more corrupt countries that are unable to punish bribes even for domestic officials efficiently.

Second, the investigation of foreign corruption practices is highly demanding. It requires not only skilled investigators and prosecutors but also a high degree of mutual trust as well, which is essential for long-term cooperation of teams formed of individuals from various judicial institutions. Such cooperation is often hard to achieve, even in less sensitive cases. Darrough (2010) provides an excellent illustration of the effort needed to push Siemens AG to plead guilty to corruption of foreign officials in 2009: It has been *"a culmination of efforts made by the authorities*

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[1] Officially called *The OECD Convention on Combating Bribery of Foreign Public Officials in International Business Transactions.*

in various countries ... (including) *... the Securities and Exchange Commission, the U.S. Department of Justice, and other U.S. and international law enforcement, particularly the Office of the Prosecutor General in Munich."* Therefore, it is not surprising that the number of enforcement cases has been modest even in the United States, despite their decades-long experience with the criminalization of foreign bribery after the passage of the Foreign Corrupt Practices Act in 1977.[2]

Third, the signatory countries face a situation similar to any cartel that is effective only if none of its members deviates. However, if some countries enforce the bribery of foreign officials while the others do not, the export conditions are no longer equal, and the costs of doing business for firms from enforcing countries increase. On the other hand, firms from nonenforcing countries face a lower risk of being detected when offering a bribe to a public official than exporters from countries that exert more enforcement effort. Hence, the nonenforcement can serve as a specific form of competitive advantage for domestic exporters (Brewster, 2014; Spahn, 2013; Tyler, 2011), and the signatory countries might consider the enforcement of the Convention costly in terms of the potential loss of their market share and lower exports. Additionally, the enforcement might be selective because some governments can be willing to tolerate the corruption of foreign officials in allied countries for diplomatic and geopolitical reasons (Stevenson and Waggoner, 2011).[3]

In this paper, we estimate the impact of varying willingness to enforce the Convention on international trade. We rely on the framework of microfounded gravity models that we extend with interaction terms with the OECD data on enforcement, and with the distance of corruption of the exporter and the importer. The distance of corruption reflects that exporters can be discouraged not only by high host-country corruption but also by large differences between the home-country and host-country corruption as well (Álvarez, Barbero, Rodríguez-Pose, and Zofío,

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[2] The review of the U.S. experience is provided by Darrough (2010). Lengthy investigations are not limited to the United States only. The investigation of the Al-Yamamah arms deal (sometimes being referred to as the BAE/Saudi Scandal) started already in 1992 but was quickly discontinued, reopened in 2004, and discontinued in 2006 again. After an additional renewal of investigations both in the U.K. and in the U.S., BAE was finally forced to settle the corruption allegation by paying a $400 million fine in the U.S. in 2010, despite not being convinced of bribery.

[3] For example, the British Serious Fraud Office discontinued investigation of the corruption allegation in the Al-Yamamah arms deal (sometimes referred as BAE/Saudi Scandal) in 2006, after political pressure by both British and Saudi Governments, see Spahn (2013, p. 13). Nevertheless, McLean (2011) conducted an empirical examination of the U.S. enforcement under the FCPA, and he finds that the level of foreign policy alignment between the host country and the U.S. is not associated with FCPA enforcement actions. Rather, it is positively correlated with the level of U.S. FDIs and corruption in the host country.

2018). Such disincentives arise either due to uncertainty or because of having developed skills for different environments or both. Furthermore, we also analyze the impact of enforcement on exports in individual SITC product categories (defined by the Standard international trade classification, SITC) because the estimates on aggregate exports can mask some heterogeneity across sectors.

Gravity models have already been used for assessment of the impact of corruption and institutional quality on exports, and Cuervo-Cazurra (2016) provided a survey of this literature. Generally, corruption is being likened to the *sand in the wheels* of global commerce, due to increasing uncertainty regarding the costs of operations in the host country, creating distortions of incentives to trade and invest. However, positive effects of corruption are being acknowledged as well, mainly as the *grease in the wheels*, i.e., as an instrument to dampen the costs of extensive and often inefficient bureaucracy (Dutt and Traca, 2010; De Jong and Bogmans, 2011; Gil-Pareja, Llorca-Vivero and Martínez-Serrano, 2019). Nevertheless, these positive effects usually stem from specific forms of corruption, and the overall support for the positive effects of general corruption remains weak (Cuervo-Cazurra, 2016).[4] Regarding the quality of institutions and institutional distance, in particular, De Groot, Linders, Rietveld and Subramanian (2004) find a limited effect of institutional distance on exports only. However, the more recent contributions, such as Kuncic (2012), Álvarez et al. (2018) and Beverelli, Keck, Larch and Yotov (2018) tend to support the prominent role of good institutions for exports.[5]

On the other hand, the knowledge of the effects of enforcement of anti-bribery rules in international trade on exports remains limited despite being essential for evaluation of the effects of the Convention. Its goal was to decrease the corruption in international trade, but without

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[4] Obviously, the effects of corruption on exports and trade are being investigated using other frameworks as well. When focusing on the effects of home-country corruption on exports, Rodrik (2008) presents a theoretical model in which the corruption and inefficient institutions in general in the home country function as a tax on production that affects the production of export goods disproportionally more than the production of goods for domestic consumption. Empirically, these ideas are supported by Lee and Weng (2013) and others.

[5] Gravity models were used for estimation of institutional determinants of FDI inflows as well. Cuervo-Cazurra (2006) found that corruption decreases FDIs from countries enforcing foreign bribery to countries with higher corruption. Others, such as Brada, Drabek and Perez (2012) or Aleksynska and Havrylchyk (2013) obtained negative effects of institutional distance on FDIs, supporting the hypothesis that investors tend to prefer countries with similar institutional quality, with the exception of investors from poorer, more corrupt countries, who prefer to invest either in countries with similar institutional quality or in countries with best possible institutions.

dampening exports of signatory countries. However, international trade improves the welfare of the importers, too, due to comparative advantage. Thus, as highlighted by Spalding (2010) and Turk (2012), the adverse effects of enforcement on exports of signatory countries are harmful to the host countries as well, unless being substituted by imports from other nonsignatory countries.[6] The existing empirical evidence stems mainly from microlevel studies. Ramos (2013) and Zeume (2017) investigated the impact of the U.S. Foreign Corrupt Practices Act and the U.K. Bribery Act on the value of firms engaged in more corrupt markets. Both authors conclude that the value of firms decreased with the announcements of the anti-bribery acts, due to prospects of lower export opportunities not supported by bribes any longer. These concerns were relevant: Jensen and Malesky (2018) and Chapman, Jensen, Malesky and Wolfort (2019) showed that the OECD Convention decreased the propensity to bribe among the firms from signatory countries. However, it has increased the bribery effort of the firms from nonsignatory countries even more. Thus, their results imply that the Convention has failed to deliver lower corruption in international trade. On the aggregate level, the effect of the Convention on export has been discussed by D'Souza (2012), who confirmed the moderately negative effect of the Convention on the export flows of signatory countries. However, D'Souza did not consider the impact of differences in enforcement efforts across signatory countries.

Therefore, our contribution to the existing literature is twofold. First, we analyze the heterogeneity of the effects of the OECD Anti-Bribery Convention on exports that depend on the enforcement efforts in the home-countries. Second, we provide estimates of the effect of corruption distance and enforcement on exports for the main SITC product categories, in which the incentives and the relative need to resort to foreign bribery might be different.

Our results show that indeed, firms from the countries that do enforce the Convention are more disadvantaged in international business, as their exports to countries with higher corruption distance are relatively lower than they would have been without the enforcement. Thus, we provide evidence of incentives not to enforce the rules, despite the efforts to coordinate the actions against foreign bribery, which should have addressed precisely this problem of a coordination

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[6] We discuss the implications for the developing countries in section two and in conclusions of this paper, too.

failure. Moreover, the effects of the host-country corruption on exports of the nonenforcing countries are limited, and similar to the impact on the exports from countries that did not sign the Convention at all.

These results have several important policy implications. First, we show that the record of sanctions for the violation of the anti-bribery rules appears as a more decisive signal to the domestic exporters than commenced investigations or than signaling represented by signing the OECD Anti-Bribery Convention only. Second, the effects of corruption distance are heterogeneous not only across countries but across product categories as well. Finally, the Convention has not equalized the conditions in international trade among the signatory countries to date, and additional efforts to promote common standards in international trade are still required to decrease the costs of doing international business ethically.

The remaining part of the paper is organized as follows. The next section characterizes the Convention and summarizes the debate about its efficiency. The third section contains the methodology and data. Next, we present the results together with robustness checks in section four, and we conclude and provide policy implications in section five.

2. The OECD Anti-Bribery Convention

The efforts to curb corruption in international trade date back to the 1970s and 1980s. Largely, these attempts were motivated by the need to balance conditions across countries that should be able to compete with each other by price and quality of their goods, but not by loosening their regulations and willingness to accept corruption. These motivations - along with the tradition to stress moral arguments in actual policy - led the U.S. administrations to negotiate the strengthening of anti-corruption laws across the world (Spahn, 2013). The U.S. businesses, represented by that time by General Electric's General Counsel Fritz Heinmann, shifted the discussion from normative arguments to a competitive "level playing field" as the U.S. firms were prohibited from bribing foreign officials by the Foreign Corrupt Practice Act (FCPA) since 1977, but firms from other

countries did not. Therefore, the U.S. firms perceived themselves as being disadvantaged in competition with firms from countries that have not enforced such sanctions.[7]

Interestingly, these efforts began at times when economists shared a fairly pragmatic approach to corruption. The theoretical models of that time, i.e., Lui (1985), accentuated the "efficient grease" hypothesis. Under this hypothesis, an individual might find it useful to corrupt an official to achieve a reduction of bureaucratic burden, and so corruption reflects the opportunity costs of adhering to inefficient institutions. Therefore, corruption was broadly considered as efficiency-enhancing. These views changed gradually during the 1990s, along with failures of many transition countries (Russia is by far the most prominent example) to establish effective institutions as one of the key pillars of their long-term growth. Adverse effects of corruption on growth were stressed in several contributions by Shleifer and Vishny (1993, 1994), Kaufmann (1997) and Kaufmann and Wei (1999). In their models, they relaxed the key assumption of the fixed level of the administrative burden that was present in the earlier models, suggesting the efficiency-enhancing nature of corruption. Instead, they suppose that the level of the regulatory burden is endogenous, and it depends on incentives for officials to take bribes. Therefore, corruption and bribes may actually increase inefficiencies which, in turn, may increase the level of bribes and even the overall level of corruption. On top of that, the empirical literature provided increasing evidence of the negative impacts of corruption on growth (i.e., Mauro, 1995). Hence, the actual policy preceded the gradual shift in academic literature and not vice versa.

The international coordination in the effort to systematically combat the corruption in international trade started at the OECD, where an ad hoc working group for the review of national legislation on the bribery of foreign public officials was established in 1989. The work of this group resulted in the adoption of the OECD Convention on Combating Bribery of Foreign

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[7] Note that the frequency of enforcement of the FCPA was increasing rather slowly, and the fines seemed low in comparison with the scale of business opportunities in emerging countries with intrinsically corrupt officials. Therefore, according to Stevenson and Wagoner (2011), firms consider the sanctions as mere costs of doing business. Moreover, they show that the potentially most effective sanction, debarment from future government contracts, likely will not be used due to fears of losing preferred contractors, thinner market with lower competition and risk of over-deterring the companies from doing business with the U.S. government.

Public Officials in International Business Transactions on December 17, 1997, effective since February 1999. By 2017, the Convention has been signed by 43 countries.[8]

The basic principle of the Convention is to encourage the signatory countries to sanction bribery of foreign public officials carried out by citizens and firms from countries that signed the Convention. By adhering to the principle of punishing the offering of bribes, the developed countries accepted part of their responsibility for corruption in developing countries. Hence, the Convention adopts the same principle that was already applied in the U.S. in the FCPA two decades ago.

Already at the onset, it was clear that the enforcement of the rules set by the Convention would depend on the willingness of each signatory country to bring the rules into action since the OECD itself has no own powers to enforce the compliance with the rules. The OECD has therefore focused on the monitoring of national legislations and emphasized the long-term strengthening of the ability and willingness of member countries to enforce the Convention using its soft power. Hence, the first two phases reviewed and evaluated the effectiveness of national legislation, i.e., by examining their conformity with the Convention, and the ability to enforce it.

In 2009, the signatory countries committed themselves to put in place new measures to improve the prevention and detection of foreign corrupt practices.[9] In particular, the countries committed to explicitly criminalize the bribes to foreign public officials, to strengthen the protection of whistleblowers and to adopt the measures against intermediaries to bribe for larger multinationals, including foreign subsidiaries. Any indirect tax support of foreign corporations (i.e., the tax deductibility) should have been eliminated as well.

On top of that, the Good Practice[10] was agreed and summarized by the signatory countries, and a permanent cycle of peer reviews undertaken by officials from other member states started. The

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[8] Several non-OECD countries signed the Convention as well, including Russia. On the other hand, China remains an observer and has not ratified the Convention yet. The recent ratification status can be found here: http://www.oecd.org/daf/anti-bribery/WGBRatificationStatus.pdf.

[9] The OECD Recommendation for Further Combating Bribery of Foreign Public Officials in International Business Transactions, available at http://www.oecd.org/daf/anti-bribery/44176910.pdf.

[10] Good Practice Guidance on Internal Controls, Ethics, and Compliance, available at http://www.oecd.org/daf/anti-bribery/44884389.pdf.

OECD also launched the publication of regular country reports assessing country progress and publishing data on enforcement of convention rules. Overall, all these changes significantly increased the peer pressure among signatory countries, making it the main instrument in the enforcement of the Convention.[11]

The legal literature provides mixed opinions on the effectiveness of the Convention to decrease corruption in international trade. For example, Spahn (2012) appreciates that the Convention has harmonized national laws against corruption, has reduced space for "double standards" in anti-corruption legislation, and has stimulated efforts in multilateral enforcement. The Convention is regarded as "a qualified success" by Tyler (2011). On the other hand, Tyler (2011) sees the enforcement mechanisms as the main weakness of the act, and he considers the existing mechanisms as inefficient to push national policymakers to enforce the act because it lacks a "direct accountability mechanism" and it is not supported by economic sanction.

The lack of a supranational enforcement mechanism might also motivate domestic companies to put pressure on their governments to stop complying with the act and protect their competitive advantage. Brewster (2014) compares the situation of signatory countries to a "prisoner dilemma" game where the cooperation of all agents should increase welfare (e.g., because of higher economic growth or higher political stability). However, when the vast majority of signatories are cooperating and criminalizing foreign bribery, then a member country can have an incentive to defect and become a free-rider because the positive externalities of cooperation still exist and the signatory can gain a competitive advantage on foreign markets using bribes. Brewster (2014) also stresses that the Convention does not specify internal enforcement by national states in many details. The danger of defection and the incentives for noncompliance are also raised by Spahn (2013).

Another stream of criticism refers to negative collateral effects of the anti-bribery legislation. In particular, Spalding (2010) concluded that the U.S. Foreign Corrupt Practices Act (FCPA) as well as the OECD Anti-Bribery Convention function as de facto international sanctions against

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[11] Detailed discussion on the benefits and limitations of peer pressure as an instrument of enforcing the international agreements can be found in Jensen and Malesky (2018).

emerging markets with usually higher corruption levels. The reason is that while the Convention and the FCPA deter the companies from providing bribes, they deter their investment in nonsignatory and more corrupt countries as well. Consequently, the enforcement of the FCPA does not allow exploiting the opportunities for higher economic growth for which foreign direct investments are often essential. Spalding (2010) also shows that this deterring effect on investment was unintended and that it created a "*myriad ethical, economic and foreign policy problems, as observed, for example in China's aggressive (foreign) investment*". Therefore, he proposed a reform that should (i) extend the coverage of the OECD Anti-Bribery Convention over China and India that did not ratify the Convention so far, (ii) focus on the demand side anti-bribery laws that would extend the responsibility to those who accept bribes, and (iii) bring a more nuanced application of the respondeat superior doctrine under which firms are liable for acts of their employees despite the defendant company's best preventive efforts.[12]

Then, in a follow-up analysis of the pitfalls of the OECD Anti-Bribery Convention, Spalding (2015) predicted negative effects of the enforcement of the rules against foreign bribery that remain focused on punishing the offending party and ignore the interests and the context of the host country. Spalding suggests that such a *retributive* approach toward white-collar crime will reinforce the corruption in the host country, rather than the opposite.[13] Therefore, he calls for an alternative, which is seen in *restorative justice,* that involves both the perpetrator and the victim (i.e., the community in foreign countries) in the sentencing process. Importantly, restorative justice seeks compensation to the community in the host country affected by the corruption provided by the perpetrator, rather than requiring the multinational companies to pay fines to their home-country governments. Thus, according to Spalding, rather than stressing the role of a deterrent effect of punishment, the enforcement of the rules against foreign bribery shall achieve deterrence not via external enforcement mechanisms but by boosting internal motivations and increased

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[12] Several proposals to improve the existing enforcement mechanisms appeared in Carrington (2010), Alford (2012); Turk (2013) and Spalding (2015) ask for a more symmetric approach targeting the demand side of corruption, too.

[13] "*By narrowing the focus on punishing the offending party and ignoring the conditions and relational networks in the host country, traditional responses to white-collar crime abroad can actually reinforce the very conditions that gave rise to the criminal conduct in question and proliferate a greater ethos of bribery. The consequences are numerous: American capital typically divests from the country, competitive firms that disregard anti-bribery codes enter into the vacuum (i.e. China), national firms scramble for economic stability, and victimized parties and communities in the host country receive no reparations*" (Umbrett, et al., 2015, p.42, referring to Spalding, 2015, p. 370).

awareness of negative consequences of corruption on the receivers. However, such ambitious reform has not been undertaken yet.[14]

The empirical literature evaluating the impact of the Convention is still rather scarce but increasing. The first empirical test of the efficiency of the Convention was provided by Cuervo-Cazurra (2008), who revealed that investors from signatory countries had reduced investments into more corrupt countries, and he stressed the importance of multinational coordination in the anti-corruption effort.[15]

Furthermore, D'Souza (2012) estimated the impact of the implementation of the Convention on bilateral trade flows showing that on average, the signatory countries reduced bilateral exports by 5.7% to countries with higher corruption relative to countries with lower corruption. According to D'Souza (2012: 85), the Convention effectively increased transaction costs for firms exporting to highly corrupt countries, so that they decreased exports or even exited some markets. Interestingly, the effects across product categories were heterogeneous. A significantly higher effect was reported for homogeneous goods than for differentiated products.

Additionally, Spencer & Gomez (2011) argue that the OECD Convention might play a signaling role for domestic officials to consider the subsidiaries of multinational enterprises (from signatory countries) to be less open to offering bribes.

It should be noted that these studies utilize the pre-2009 data when the Convention had been strengthened significantly by explicitly criminalizing bribes to foreign officials, and the systematic peer-review evaluation process was initiated. Since then, the effects of the Convention could have been more pronounced because the risks of offering bribes increased markedly for many exporters. Jensen and Malesky (2018) applied a difference-in-difference method to estimate the impact of the

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[14] At the time of writing, the Congress of the United States discussed the proposal of the Countering Russian and Other Overseas Kleptocracy Act that proposes to use a margin of the FCPA enforcement proceeds to fund overseas anti-corruption initiatives, see https://www.congress.gov/bill/116th-congress/house-bill/3843/text; more on potential benefits of the restorative approach to enforcement was provided in a series contribution on the FCPA Blog (https://fcpablog.com/) by A. Spalding, J. Kaplan, and G. Theirault-Lachance in 2019 and 2020.

[15] The finding by Cuervo-Cazurra (2008) that the enforcement of the rules against foreign bribery discourages FDI's served as empirical support for Spalding's (2010) parable of the OECD Anti-Bribery Convention to economic sanctions imposed on the emerging economies with higher corruption.

2009's amendment of the Convention on imports to Vietnam, and they have identified a significant decrease in the propensity of multinational corporations to bribe foreign officials. Nevertheless, the overall level of corruption did not decrease because the firms from nonsignatory countries increased the bribery effort even more. Thus, Chapman, Jensen, Malesky and Wolfort (2019) argue that substantial regulatory leakage appeared and even those who were not subject to the regulation changed their behavior. Interestingly, the conclusions of Chapman et al. (2019) corroborate the hypothesis expressed by Spalding (2015) that strengthened enforcement that remains focused on punishing the offending party and ignores the interests of the host-country would reinforce the corruption.

Overall, we revisit the literature on the impact of the Convention on exports by focusing on whether the differences in enforcement of anti-corruption rules matter not only for FDI's but also for exports as well, since such estimates were not provided in the literature yet.[16] Furthermore, we utilize the data covering the period after 2009 when the Convention had been enhanced significantly. Finally, we contribute to the debate about possible reasons for noncompliance by providing estimates of possible economic incentives for free-riding among the signatory countries.

3. Empirical Approach

3.1 Gravity model

To investigate whether active enforcement of the OECD Anti-Bribery Convention has any impact on exports, we use the framework of gravity models in which the mutual trade is determined by the output of exporters and importers, and by trade barriers representing all other determinants of trade, not just the physical distance. Both corruption and the efforts to limit the trade with corrupt countries can be considered as trade barriers as well.

The general specification of a gravity model follows the standard treatment of the microfounded gravity model (Anderson & Wincoop, 2003; Head & Mayer, 2014; Shepherd, 2013):

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[16] Note that D'Souza (2012) focused on the effects of joining the Convention, and the differences in enforcement effort were not investigated.

$$log(X_{ijt}) = \beta_0 + \beta_1 \, log(GDP_{jt}) + \beta_2 \, log(GDP_{it}) + \delta \, MTR \, (TB_{ijt}) + \lambda I_t + \varepsilon_{ijt} \qquad (1)$$

The dependent variable X_{ijt} represents the export flows from country i to the host country j, and t refers to time. The GDP_{jt} represents the importers' GDP, and the GDP_{it} stands for exporters' GDP. The I_t denotes the time dummies, and ε_{ijt} is the error term. The trade barriers, TB_{ijt}, are transformed using the so-called multilateral trade resistance terms (MTR), which correct the effect of a bilateral trade barrier for the barriers each country faces with all its trading partners. This correction is particularly relevant when more countries change their trade barriers jointly (Behar and Nelson, 2014). The MTRs are not observed, and we approximate them using the Taylor polynomials, as in Baier and Bergstrand (2009).[17]

Our independent variable of interest is the corruption distance, which is a difference between the corruption level approximated by in the exporter and importer in absolute value, i.e.:

$$Corr_{DIST,ijt-1} = |Corr_{it-1} - Corr_{jt-1}|.$$

Following Francois and Manchin (2013), the first lags are used to avoid potential reverse causality between institutions and trade.

The distance reflects the possibility that the exporters are not only deterred by high corruption in the host country but by a large difference between the domestic and the host-country corruption, too, as the difference in corruption increases uncertainty. Furthermore, the exporters from countries with higher corruption usually develop skills necessary to succeed in such environments, and these skills help them in exports to similarly corrupt countries. The distances in corruption and general institutional quality were used by Álvarez et al. (2018), Kuncic (2012) and others.

The effect of the corruption distance on exports can be diverse. It might be either negative, for the reasons expressed above, or insignificant since firms have inherent incentives to adjust to various trade barriers, including different attitudes toward corruption, in order to enter and to succeed on international markets. We are, nevertheless, interested in whether the impact of corruption distance depends on the enforcement of the rules against foreign bribery. Therefore, we introduced three dummy variables reflecting whether the exporting country enforces the rules against foreign

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[17] The details about the Taylor procedure are provided in Appendix I.

bribery or not (*ENF, NENF*), or whether it did not sign the OECD Anti-Bribery Convention at all (*ROW*). Then, we extend the equation (1) for the interaction terms between the dummies *ENF, NENF* and *ROW* and the CPI distance, adjusted for the multilateral resistance terms:

$$\log(X_{ijt}) = \beta_0 + \beta_1 \log(GDP_{jt}) + \beta_2 \log(GDP_{it}) + \delta\ MTR\ (TB_{ijt}) + \alpha_1\ ENF \cdot$$
$$MTR(Corr_{DIST,ijt-1}) + \alpha_2\ NENF \cdot MTR(Corr_{DIST,ijt}) + \alpha_3\ ROW \cdot$$
$$MTR(Corr_{DIST,ijt-1}) + \lambda I_t + \varepsilon_{ijt} \tag{2}$$

The variables *ENF, NENF* and *ROW* are considered as constant over time, and they do not switch from 0 to 1 with the first case completed or initiated, or with the date of access to the Convention. Based on the historical evidence of investigations of the foreign bribery, none of those dates or years indicates an exogenous shift in the willingness or ability to penalize bribery of foreign officials.[18] Rather, the attitude toward foreign bribery is a result of long-term political and social processes, and successful investigations require continuous efforts to develop sufficient competencies. Hence, a dummy variable that changes instantaneously from 0 to 1 cannot describe those country-specific processes sufficiently. Intuitively, we are mainly focused on values of the coefficients α_1, α_2, and α_3 that indicate the effects of corruption on exports in different sets of countries based on their enforcement effort.

Then, to assess whether the impact of enforcement is different for exports to the host countries with higher or lower corruption, we divide the corruption distance into a positive and a negative distance: *Corr_{DIST+}* and *Corr_{DIST−}* (equation 3). Note that both variables *Corr_{DIST+}* and *Corr_{DIST−}* remain in absolute values. The variable *Corr_{DIST+}* has nonzero values only if the host-country corruption is lower than the home-country corruption, and vice versa.

$$log(X_{ijt}) = \beta_0 + \beta_1\ log(GDP_{jt}) + \beta_2\ log(GDP_{it}) + \delta\ MTR\ (TB_{ijt}) + \alpha_1\ ENF \cdot$$
$$MTR(Corr_{DIST+,ijt}) + \alpha_2\ ENF \cdot MTR(Corr_{DIST-,ijt-1}) + \alpha_3 NENF \cdot$$
$$MTR(Corr_{DIST,ijt-1}) + \alpha_4 NENF \cdot MTR(Corr_{DIST-,ijt-1}) + \alpha_5 ROW \cdot$$
$$MTR(Corr_{DIST+,ijt-1}) + \alpha_6 ROW \cdot MTR(Corr_{DIST-,ijt-1}) + \lambda I_t + \varepsilon_{ijt}. \tag{3}$$

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[18] We refer, for example, to the investigation of the BAE/Saudi case and the Siemens AG case described in the Introduction. In addition, some countries might increase their willingness and ability to enforce the anti-corruption rules before signing the Convention, while the others might improve afterward, if at all. Hence, even a smooth transition centered around a predetermined threshold will not help either.

3.2 Data and variables

We employ bilateral panel data for 132 countries for the period 2000 - 2015, using the COMTRADE data on export and import flows, both on aggregate and product category level (the first digit level SITC classification).

The set of trade barriers, TB_{ijt}, includes the conventional variables, in particular, the physical distance between countries, the presence of common official or primary language, common religion, colonial relationship and contiguity. All variables and their sources are listed in Table 3.1, and the main descriptive statistics are summarized in Table A2 in the Appendix.

The enforcement effort of the signatory countries is devised from the data collected by the OECD, which include the number of criminal, administrative and civil cases of foreign bribery that have resulted in a final disposition, either in the form of a criminal conviction or acquittance under an administrative or civil procedure. We consider those countries as nonenforcing the Convention. Furthermore, Transparency International (Heimann et al., 2015) classified only four signatories as active enforcers (Germany, Switzerland, the United Kingdom, and the United States) out of 41, while approximately 20 signatory countries were listed as countries with little or no enforcement, and approximately a half of all signatory countries are investing very little or even no effort in the enforcement of the Convention. The list of the countries divided into groups based on their enforcement effort is provided in the Appendix, Table A1.

The level of corruption is measured by the Corruption Perception Index (CPI) published by Transparency International. The index takes the values between 0 and 100, so the high values of the rising index value mean lower corruption. For the robustness check and comparisons, we run estimations also for the "Control of Corruption Index" (CCI) of the World Bank and the "Government Integrity" (GI) constructed by the Heritage Foundation. We are aware of the fact that there is an ongoing debate on how corruption should be measured and what is measured by those indices. The CPI is based on a definition of corruption as a "misuse of public power for private benefit" (Lambsdorff, 2006). This definition is primarily related to corruption associated with public or state officials. It fits the situation of foreign businesspeople trying to bribe foreign officials for various reasons (obtain a contract, ease business regulation, bribery of customs

officials), which are the model situations of our interest. Hence, our results are related only to the abovementioned forms of corrupt practices while we are silent about all other forms of bribery of foreign companies and especially corruption between private firms themselves.

To isolate the effects of enforcement on trade depending on the corruption distance, we need to control for the other dimensions of institutional quality that is usually quite correlated with the indicators of corruption. Therefore, we included among the trade barriers the institutional distance as well. Our preferred proxy variables for institutions are indices of the quality of democracy from the database V-DEM: Varieties of Democracy dataset (Coppedge et al., 2017; Pemstein et al., 2017). We have selected three indices: Electoral democracy index (EDI), Participatory democracy index (PDI) and Deliberative democracy index (DDI). To reduce the dimension of our model, we extracted their common component via principal component analysis. As robustness checks, we utilized selected series from the Heritage Foundation (Tax burden, Labor freedom, Monetary freedom and Trade freedom), from the Polity IV dataset measuring the regime authority, and from the Doing Business database (Time to start up a business while a company is owned by men, Time to start up a business while a company is owned by women and Time to enforce contracts).

Table 3.1 Variables and sources

Variable	Characteristics	Sources and Notes
Exports	SITC 3rd revision, In thousands USD	UN COMTRADE
GDP of exporting country	GDP (current US$)	WDI WB
GDP of destination country	GDP (current US$)	WDI WB
Distance	Adjusted distance between economic centers in km.	CEPII
Trade barriers variables - benchmark		
Corruption Perception Index (CPI)	CPI score, btw. 0 (worst) and 100 (best)	Transparency International
Electoral democracy index (EDI)	0 (lowest level) and 1 (highest level). Name in the original dataset: "v2x_polyarchy".	V-DEM Varieties of Democracy dataset (Coppedge et al., 2017; Pemstein et al., 2017).
Participatory democracy index (PDI)	0 (lowest level) and 1 (highest level). Name in the original dataset: "v2x_partipdem".	V-DEM Varieties of Democracy dataset (Coppedge et al., 2017; Pemstein et al., 2017).
Deliberative democracy index (DDI)	0 (lowest level) and 1 (highest level). Name in the original dataset: "v2x_ delibdem".	V-DEM Varieties of Democracy dataset (Coppedge et al., 2017; Pemstein et al., 2017).
Regional Trade Agreement	Dummy (0;1), regional trade agreements	De Sousa (2012), updated dataset as of October 2014. For other information or description of the covered agreements see: http://jdesousa.univ.free.fr/data.htm
Common Official or Primary Language	Dummy (0;1)	CEPII, gravity dataset
Common Religion	Dummy (0;1)	CEPII, gravity dataset
Colonial Relationship	Dummy (0;1), 1 if pair of countries were ever in a colonial relationship	CEPII, gravity dataset
Contiguity	Dummy (0;1)	CEPII, gravity dataset
Trade barriers variables – robustness check		
Control of Corruption Index (CCI)	Original scale (-2.5, 2.5), rescaled to (0, 5)	Worldwide Governance Indicators, World bank
Government Integrity (GI)	Btw. 0 (worst) and 100 (best)	Heritage Foundation
POLITY2	Btw. -10 and 10. Based on the subtraction of AUTOC scores from DEMOC scores.	Polity IV dataset version 2016 <p4v2016 and p4v2016d>
Time to start up a business while company owned by men (SB_TMD)	No. of calendar days.	Doing Business, The World Bank. Complete historical dataset – version DB 2018.
Time to start up a business while company owned by women (SB_TWD)	No. of calendar days.	Doing Business, The World Bank. Complete historical dataset – version DB 2018.
Time to enforce contracts (EC_TD)	No. of calendar days.	Doing Business, The World Bank. Complete historical dataset – version DB 2018.
Labor Freedom (LF)	Btw. 0 (worst) and 100 (best)	Heritage Foundation
Monetary Freedom (MF)	Btw. 0 (worst) and 100 (best)	Heritage Foundation
Tax Burden (TB)	Btw. 0 (worst) and 100 (best)	Heritage Foundation
Trade Freedom (TF)	Btw. 0 (worst) and 100 (best)	Heritage Foundation

3.3 Estimation method

Equations (2) and (3) cannot be estimated directly due to a presence of the zero trade flows. Our principal data source, the COMTRADE database, does not distinguish between missing data and zero trade flows, and both are reported as missing observations. However, the zero trade flows have to be included in the sample to avoid selection bias because they might reflect prohibitively high trade barriers between the countries. Hence, without the zero trade flows, the determinants of trade would not be estimated correctly.

The number of missing observations is rather large in our sample. Table 3.2 shows the number and percentage of missing export flows between our country pairs. Overall, we have 276,672 country pairs in our dataset with approximately 25% of missing observations in the case of the aggregate exports. Once we break down the total exports into the first digit SITC level, the percentage of missing observations increases to a range between 40% and 75%.

Table 3.2 Missing trade flows

Code	Product Category	Observations Full sample (No.)	Missing (No.)	Missing (%)	Nonzero observations
Total	Aggregate exports	276 672	68 809	24.87	207 864
SITC 0	Food and live animals	276 672	123 751	44.73	152 917
SITC 1	Beverages and tobacco	276 672	172 721	62.43	103 946
SITC 2	Crude materials exc. fuels	276 672	134 355	48.56	142 320
SITC 3	Mineral fuels, lubricants, etc.	276 672	192 372	69.53	84 302
SITC 4	Animal and vegetable oils	276 672	207 494	75.00	69 168
SITC 5	Chemicals and related prod.	276 672	126 913	45.87	149 763
SITC 6	Manufactured goods (material)	276 672	109 891	39.72	166 778
SITC 7	Machinery and transport	276 672	113 207	40.92	163 458
SITC 8	Manufacturing (other)	276 672	109 353	39.52	167 331
SITC 9	Other commodities	276 672	179 355	64.83	97 306

Note: Source data are exports from COMTRADE database within period 2000–2015.

To deal with the missing values properly, we follow the approach of Egger et al. (2011) and Francois & Manchin (2013), and we implement their two-stage estimation strategy inspired by Helpman et al. (2008). It is based on a theoretical model predicting the probability of firms being

able to participate in international trade. In the first stage, we construct a Probit model (4) that estimates a probability of positive trade flows:

$$\tilde{X}_{ijt} = \gamma_0 + \gamma_1 \log(GDP_{jt}) + \gamma_2 \log(GDP_{it}) + \gamma_3 TB_{ijt} + \eta M_j + \mu R_i + \lambda I_t + \varepsilon_{ijt} \qquad (4)$$

Here, the $\tilde{X}_{ijt}$ denotes a dummy equaling 1 if a trade flow of a country pair is nonzero and 0 otherwise. The ηM_j and μR_i represent importer and exporter dummies with respective coefficients. Once the first stage model is estimated, we derive the inverse Mills ratio σ_{ijt} from the linear prediction of equation (3). Following Egger et al. (2011), we calculate the second, third and fourth power of the inverse Mills ratio to control for possible heterogeneity of firms. All terms, σ_{ijt}, σ_{ijt}^2, σ_{ijt}^3, σ_{ijt}^4, are then included as the additional control variables in equation (2) which then serves as the second stage regression.

The second stage regression is estimated on an updated dataset where all the missing trade flows are replaced by zero, with the help of the Poisson pseudo-maximum-likelihood estimator (PPML, Silva & Tenreyro, 2006), which is consistent and unbiased in the presence of heteroscedasticity and when the data have a large number of zeros (Álvarez, et al., 2018). For the PPML estimator, the final specification of the model is expressed in equation (5):

$$X_{ijt} = \exp \{\beta_0 + \beta_1 \log(GDP_{jt}) + \beta_2 \log(GDP_{it}) + \delta\, MTR\,(TB_{ijt}) +$$
$$+ \alpha_1 ENF \cdot MTR(Corr_{DIST,ijt-1}) + \alpha_2 NENF \cdot MTR(Corr_{DIST,ijt-}) +$$
$$+ \alpha_3 ROW \cdot MTR(Corr_{DIST,ijt-}) + \xi_1 \sigma_{ijt} + \xi_2 \sigma_{ijt}^2 + \xi_3 \sigma_{ijt}^3 + \xi_4 \sigma_{ijt}^4 + \lambda I_t\} + \varepsilon_{ijt} \quad (5)$$

Unlike other estimation methods, such as OLS, the Poisson pseudo-maximum likelihood applied to gravity models preserves total trade flows, i.e., the sums of the actual and predicted trade flows are identical (Arvis and Shepherd, 2012). Additionally, to cope with heteroscedasticity, we clustered the residuals according to the distance variable (Silva & Tenreyro, 2006).

4. Results

4.1 Aggregate exports

We present our main results in Tables 4.1 and 4.2. The coefficients of the *gravity* variables, such as the gross domestic products of the home and host countries, and the distance variables are usually significant, and with signs that are in line with our intuition. Thus, the sizes of both economies increase the respective export flows, but increasing distance decreases them. The coefficients at other variables often used in gravity models reveal significant and positive effects of contiguity, colonial relationship and institutional distance on bilateral exports. The regional trade agreement variable is significant for the panel of the OECD countries only, which might be driven by a large role of the EU countries in this subsample.

Regarding the effects of corruption distance on export flows, our results imply that these effects are significantly negative (see Table 4.1, column 1). We are, however, mainly concerned by the interaction terms between the corruption distance and the dummies indicating the enforcement of the rules against foreign bribery. Their respective coefficients imply that the impact of corruption distance is differentiated, and it depends on the enforcement of the rules against foreign bribery (columns 2 and 3 of Table 4.1).

Most importantly, the coefficients of the interaction term Enforcing*CPI are significantly negative. Hence, the enforcement of the rules that make foreign bribery prohibited decreases the export to countries with a higher corruption distance. While the coefficients at the Nonenforcing*CPI remain negative too, they are insignificant and lower in absolute values. In the case of the nonsignatory countries, the effect of corruption distance on exports is insignificant as well, but positive. Note that for the enforcing countries, the effect of corruption distance is rather sizable: the coefficient value -0.0060 implies that with increasing corruption distance by 10 points, the exports decrease by 6%.

If we re-estimate the model on a time sample starting in 2009 (Table 4.1, column 3) when the Convention has been strengthened by the commitment of the signatory countries to criminalize the foreign bribery explicitly, the results remain mostly intact. Similar effects of corruption

distance on exports appear on a subsample of the OECD countries as well (see the columns 7 and 8). Nevertheless, the likelihood ratio test fails to reject the null of the equality of coefficients at the interaction terms in all models of Table 4.1, except the models estimated solely on the panel of the OECD countries.

Next, we turn to the classification of the enforcement effort developed at Transparency International (Heimann et al., 2015), which exploits the number of commenced investigations rather than the record of sanctions already imposed that we use as a baseline. In this case, all coefficients of the interaction terms are negative across all signatory countries (columns 4 and 5 of Table 4.1). Interestingly, the highest coefficients of the interaction terms appear for the group of Little and not enforcing countries. However, this group includes countries that have already imposed any sanction and the nonenforcing countries as well. Therefore, we split this group into "Little" and "Nonenforcing" countries, based on the imposition of sanctions in the past. In line with our expectations, the impact of the Convention on exports to countries appeared insignificant for the nonenforcing countries (Table A3.1 in the Appendix). Thus, our main result that enforcement effort matters is confirmed with the alternative division of countries as well.

Furthermore, we distinguish the impact of enforcement on exports to countries with higher and lower corruption by using the specification of the gravity model with positive and negative corruption distance (Table 4.2). Note that our principal indicator of corruption, the Corruption Perception Index, is decreasing with higher corruption. Thus, the positive distance is associated with higher host-country corruption, while the negative distance with lower host-country corruption.

First, the model with corruption distance but without the interaction terms implies that exports are negatively affected by positive and negative corruption distance as well. However, the exports to more corrupt countries are affected by the distance in corruption much more (column 1) than the exports to countries with lower corruption. Thus, our results extend the evidence provided by Álvarez et al. (2018) who found adverse effects of corruption distance on exports but did not distinguish between exports to more or less corrupt countries.

Table 4.1: Effects of enforcement and corruption distance on exports - absolute distance

VARIABLES	(1) CPI distance	(2) Full sample	(3) 2009-2015 sample	(4) TI Classification full sample	(5) TI Classification 2009-2015	(7) OECD Countries	(8) OECD Countries 2009-2015
lnGDP_X	0.4719***	0.4815***	0.4424***	0.4812***	0.4429***	0.6965***	0.6835***
	(0.0380)	(0.0391)	(0.0361)	(0.0393)	(0.0363)	(0.0235)	(0.0245)
lnGDP_M	0.6239***	0.6223***	0.5942***	0.6253***	0.5972***	0.7548***	0.7370***
	(0.0249)	(0.0244)	(0.0234)	(0.0250)	(0.0240)	(0.0273)	(0.0297)
Distance	-0.6181***	-0.6205***	-0.5860***	-0.6184***	-0.5841***	-0.8902***	-0.9281***
	(0.0577)	(0.0576)	(0.0579)	(0.0572)	(0.0577)	(0.0701)	(0.0712)
Institutions	0.1013***	0.1010***	0.0994***	0.1020***	0.1001***	-0.0193	-0.0135
	(0.0230)	(0.0229)	(0.0233)	(0.0229)	(0.0234)	(0.0330)	(0.0373)
Contiguity	0.7632***	0.7627***	0.8647***	0.7704***	0.8699***	0.5688***	0.6482***
	(0.0829)	(0.0809)	(0.0863)	(0.0831)	(0.0880)	(0.1161)	(0.1223)
Common offic. lang.	0.0128	0.0068	-0.0363	0.0117	-0.0296	0.1065	0.0268
	(0.0840)	(0.0827)	(0.0839)	(0.0850)	(0.0853)	(0.1062)	(0.1135)
Colonial relationship	0.2077†	0.2103†	0.2982**	0.2040†	0.2932**	-0.1983	-0.2027
	(0.1109)	(0.1097)	(0.1091)	(0.1118)	(0.1102)	(0.1523)	(0.1636)
Common religion	-0.0455	-0.0384	-0.0292	-0.0358	-0.0258	0.1131	-0.0076
	(0.1148)	(0.1134)	(0.1201)	(0.1150)	(0.1223)	(0.1499)	(0.1608)
Trade agreement	-0.0018	0.0303	-0.1254	0.0302	-0.1229	0.2742*	0.1628
	(0.0822)	(0.0824)	(0.0835)	(0.0871)	(0.0877)	(0.1135)	(0.1121)
CPI distance	-0.0045***						
	(0.0013)						
Enforcing*CPI		-0.0060***	-0.0054***			-0.0043**	-0.0041*
		(0.0014)	(0.0015)			(0.0016)	(0.0018)
Nonenforcing*CPI		-0.0026	-0.0029			0.0002	0.0005
		(0.0026)	(0.0031)			(0.0026)	(0.0029)
Active enforcement*CPI				-0.0054**	-0.0049*		
				(0.0019)	(0.0020)		
Moderate enforcement*CPI				-0.0037*	-0.0032		
				(0.0018)	(0.0020)		
Limited enforcement*CPI				-0.0042*	-0.0042*		
				(0.0018)	(0.0021)		
Little/no enforcement*CPI				-0.0070**	-0.0064**		
				(0.0022)	(0.0024)		
Nonsignatory*CPI		0.0024	0.0014	0.0015	0.0002		
		(0.0052)	(0.0055)	(0.0055)	(0.0057)		
Constant	-18.8910***	-18.9975***	-17.5085***	-19.1596***	-17.6180***	-25.2911***	-24.5039***
	(1.4002)	(1.4182)	(1.3903)	(1.4427)	(1.4148)	(1.1064)	(1.1432)
Observations	199,012	199,012	101,644	199,012	101,644	22,496	9,842
R-squared	0.8310	0.8355	0.8210	0.8341	0.8199	0.8804	0.8790
Time FE	YES	YES	YES	YES	YES	YES	YES
Mills ratios	YES	YES	YES	YES	YES	NO	NO
LR-test		0.129	0.363	0.533	0.735	0.0151**	0.0969†

Note: Robust standard errors in parentheses *** p<0.001, ** p<0.01, * p<0.05, † p<0.1 The time-fixed effects and the Mills ratios are skipped. CPI = CPI Distance, absolute value. LR tests: Likelihood ratio tests of equality of coefficients at interaction terms, p-values are printed. H0 – all coefficients at interaction terms are equal. TI classification = Heimann et al., 2015.

Table 4.2: Effects of enforcement and corruption distance on exports - positive/negative distance

VARIABLES	(1) CPI distance	(2) Full sample	(3) 2009 - 2015	(4) TI Classification full sample	(5) TI Classification 2009 - 2015
lnGDP_X	0.4755***	0.4856***	0.4467***	0.4817***	0.4447***
	(0.0377)	(0.0387)	(0.0355)	(0.0390)	(0.0359)
lnGDP_M	0.6170***	0.6163***	0.5875***	0.6175***	0.5901***
	(0.0249)	(0.0247)	(0.0233)	(0.0250)	(0.0238)
Distance	-0.6176***	-0.6230***	-0.5871***	-0.6179***	-0.5828***
	(0.0577)	(0.0575)	(0.0580)	(0.0570)	(0.0577)
Institutions	0.1016***	0.0960***	0.0966***	0.0986***	0.0981***
	(0.0230)	(0.0216)	(0.0223)	(0.0214)	(0.0222)
Contiguity	0.7616***	0.7623***	0.8619***	0.7702***	0.8668***
	(0.0821)	(0.0814)	(0.0867)	(0.0823)	(0.0863)
Common offic. language	0.0087	0.0014	-0.0396	0.0076	-0.0277
	(0.0847)	(0.0834)	(0.0850)	(0.0852)	(0.0848)
Colonial relationship	0.2125†	0.2111†	0.3023**	0.2109†	0.3038**
	(0.1103)	(0.1094)	(0.1088)	(0.1110)	(0.1095)
Common religion	-0.0397	-0.0347	-0.0215	-0.0428	-0.0336
	(0.1148)	(0.1140)	(0.1208)	(0.1167)	(0.1254)
Regional trade agreement	-0.0088	0.0212	-0.1355	0.0152	-0.1351
	(0.0828)	(0.0827)	(0.0842)	(0.0878)	(0.0885)
CPI_plus	-0.0062***				
	(0.0014)				
CPI_minus	-0.0028†				
	(0.0014)				
Enforcing*CPI_plus		-0.0070***	-0.0072***		
		(0.0015)	(0.0017)		
Enforcing *CPI_minus		-0.0044**	-0.0030†		
		(0.0015)	(0.0016)		
Nonenforcing*CPI_plus		-0.0028	-0.0032		
		(0.0036)	(0.0041)		
Nonenforcing*CPI_minus		-0.0022	-0.0024		
		(0.0029)	(0.0037)		
Active enforcement*CPI_plus				-0.0058*	-0.0061*
				(0.0025)	(0.0028)
Active enforcement*CPI_minus				-0.0043*	-0.0031
				(0.0019)	(0.0021)
Moderate enforcement*CPI_plus				-0.0048*	-0.0042†
				(0.0021)	(0.0025)
Moderate enforcement*CPI_minus				-0.0005	-0.0005
				(0.0018)	(0.0021)
Limited enforcement*CPI_plus				-0.0067***	-0.0073***
				(0.0016)	(0.0018)
Limited enforcement*CPI_minus				0.0000	0.0009
				(0.0025)	(0.0030)
Little/no enforcement*CPI_plus				-0.0094***	-0.0096***
				(0.0028)	(0.0029)
Little/no enforcement*CPI_minus				-0.0054*	-0.0038
				(0.0025)	(0.0028)
Nonsignatory*CPI_plus		-0.0076	-0.0063	-0.0061	-0.0049
		(0.0085)	(0.0080)	(0.0090)	(0.0084)
Nonsignatory*CPI_minus		0.0060	0.0043	0.0045	0.0024
		(0.0054)	(0.0062)	(0.0059)	(0.0067)
Constant	-18.7574***	-18.9869***	-17.3823***	-18.9741***	-17.4555***
	(1.3962)	(1.4185)	(1.3632)	(1.4369)	(1.3929)
Observations	199,012	199,012	101,644	199,012	101,644
R-squared	0.8325	0.8359	0.8219	0.8372	0.8250
Time FE	YES	YES	YES	YES	YES
Mills ratios	YES	YES	YES	YES	YES
LR-test 5		0.508	0.637	0.730	0.633

Again, in the next columns of Table 4.2, we can see that the negative effect of corruption distance is driven by those countries that enforce the anti-bribery rules, and the effect on other countries' exports is insignificant, albeit negative. Moreover, after 2009, the deterrent effect of enforcement has started to affect the exports to countries with higher corruption more than the exports to countries with lower corruption distance. On the other hand, the coefficients at *Nonenforcing*CPI_plus* and *Nonsignatory*CPI_plus* have negative signs too, but they are insignificant. Thus, we do not find any reliable evidence supporting substitution of exports of the enforcing countries by the exports of the nonenforcing countries to more corrupt countries, and so the nonenforcement of the anti-bribery rules does not help the exporters to establish themselves in new markets.

The small effects of the corruption distance on exporters from the nonsignatory and nonenforcing countries can have multiple causes. These countries did not adopt any efficient rules against foreign bribery, and they might continue to use bribes to support their exports as if no rules were adopted at all. Alternatively, the exporters from more corrupt countries are disadvantaged by the home-country corruption already, and they export less than they would when facing lower corruption at home. Nevertheless, their exporters cope with host-country corruption with a set of skills already developed to mitigate the impact of domestic corruption.[19]

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[19] Rodrik (2008) provided a piece of empirical evidence that undervaluation promotes economic growth in developing countries. He argued that the positive link between undervaluation and exports arises because the production of export goods usually requires more complex contracts and higher sophistication, which is more difficult to achieve in corrupt environments. Therefore, he considers corruption and low-quality institutions in general as an additional tax on the production of export goods that causes distortions in the economy. Undervaluation then compensates for this implicit taxation, increases profitability of exports, and stimulates its expansion. Lower exports from more corrupt countries are highlighted by other researchers as well. For example, Lee and Weng (2013) confirm the negative effect of corruption on exports, and they argue that this effect arises because bribes provide firms with better positions within domestic markets, thus diminishing the incentive to explore foreign markets. Finally, Olney (2016) presents a theoretical model and some empirical findings supporting the hypothesis of lower exports due to high home-country corruption. Then, he shows that corruption increases the likelihood that firms export indirectly, via intermediaries, that help to handle distributional and shipping logistics and deal with bureaucratic procedures. However, the services provided by intermediaries are not costless. Therefore, corruption increases the costs of carrying out international trade.

Furthermore, the models with the classification of enforcement effort by Heimann et al. (2015) indicate the higher impact of the enforcement on exports to more corrupt countries in comparison to the effects on exports to less corrupt countries, notably on the latter part of the sample starting in 2009. As with the models with absolute distance, the enforcement effort matters, although the highest coefficient appears somewhat counterintuitively at the group of countries characterized as with little or no enforcement by Transparency International. Nevertheless, if we separate from this group the countries that did not impose any sanction in the past, the effect of higher host-country corruption on the exports from the no-enforcing countries turns out as insignificant again (see the results in Table A3.2 in the Appendix).

Our result that the corruption distance affects only the enforcing countries is consistent with the microlevel evidence of the effects of the enforcement of the U.S. Foreign Corrupt Practices Act (Ramos, 2013) and the U.K. Bribery Act (Zeume, 2017). Both authors found adverse effects of those acts on the values of firms operating in corrupt countries, and our results imply that the aggregate exports indeed decreased so that the decrease of their values was justified.

From a policy perspective, our results reveal that the record of sanctions for the violation of the anti-bribery rules forms a more decisive signal to the domestic exporters than signaling represented by signing the OECD Anti-Bribery Convention per se. The commenced investigations are not a credible signal of the enforcement either, which is in line with the policy recommendations by Darrough (2010) that the credibility of a law enforcement mechanism is a key to achieve more ethical conduct of international business.

Thus, to conclude, our results imply that the purpose of the Convention to level the field among the exporters has not been fulfilled yet because the exporters from countries that enforce the Convention are still relatively disadvantaged in international trade. Clearly, the differences in the magnitude of the effects of corruption distance on trade show that exporters from the nonenforcing countries have not been affected by the Convention and are still able to exploit the export opportunities even in countries with relatively higher corruption. Therefore, the fruits of international cooperation have not produced tangible effects so far.

4.2 Product categories perspective

Next, we explore the differences in the effects of enforcement across the SITC product categories (Table 4.3). Among other things, these categories vary in the degree of product differentiation, and the markets with highly differentiated goods require more sophisticated contracts and can be more sensitive to corruption in international trade as well (Nuun, 2007, and Nuun and Trefler, 2014). Our classification of a degree of product differentiation relies on the data by Rauch (1999), who classified products as homogeneous when their prices are determined on auctions and where a large number of suppliers exist, then reference-priced products, and finally differentiated products with prices negotiated among the suppliers.

Differentiated products characterize the SITC categories 7, 8, and 9, which include machinery and transport equipment (SITC 7), miscellaneous manufactured products (SITC 8) and "other commodities" not included in other categories (SITC 9). In those three categories, we observe significantly negative effects of corruption distance on exports of enforcing countries, and in SITC 8 of nonenforcing countries as well. Interestingly, the exports of nonsignatory countries to more corrupt countries are negatively affected by the host-country corruption as well, and so we do not find evidence for a substitution of the exports from the enforcing countries by the exports from the nonenforcing countries in more corrupt host countries.[20]

On the other hand, homogeneous goods dominate the SITC groups 0 and 4 (food and live animals, oils, fats and waxes). Here, we do not observe any significant deterrent effect of the enforcement, as the coefficients of *Enforcing*CPI* are insignificant and close to zero. The other groups contain a mixture of homogeneous, reference-priced, and - to some extent - differentiated products as well, and the impact of corruption distance varies across those categories and with the enforcement effort as well. The SITC 3 category stands out with the negative effect of corruption distance in enforcing countries and positive in nonsignatory countries. However, this category includes mineral fuels (petroleum, coal, natural gas), so the trade flows are being affected not only by the business needs but also by geopolitical considerations.

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[20]Note that the positive coefficient at *Nonsignatory*CPI* is driven by the exports to countries with lower corruption.

In contrast to the previous results on aggregate exports, the likelihood ratio test frequently rejects the equality of the coefficients at the interaction terms. Thus, the differences in the effects of the host-country corruption on exporters across enforcing, nonenforcing and nonsignatory countries are more significant at the sectoral level than at the level of aggregate exports.

Table 4.3 Product categories perspective

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
	Full sample										
VARIABLES	SITC 0	SITC 1	SITC 2	SITC 3	SITC 4	SITC 5	SITC 6	SITC 7	SITC 8	SITC 9	XT
Enforcing*CPI	0.0002	-0.0015	-0.0069	-0.0208***	-0.0012	-0.0046*	-0.0005	-0.0049*	-0.0065**	-0.015***	-0.0060***
	(0.0026)	(0.0033)	(0.0043)	(0.0041)	(0.0049)	(0.0018)	(0.0017)	(0.0023)	(0.0024)	(0.0036)	(0.0014)
Nonenforcing*CPI	-0.0099***	-0.0058	-0.0030	-0.0010	-0.0055	-0.0110*	0.0034	0.0042	-0.0082*	0.0014	-0.0026
	(0.0028)	(0.0052)	(0.0131)	(0.0076)	(0.0060)	(0.0055)	(0.0030)	(0.0040)	(0.0040)	(0.0079)	(0.0026)
Nonsignatory*CPI	0.0036	-0.0155*	-0.0164**	0.0437***	-0.0086	-0.0289**	0.0059	-0.0109	0.0295**	-0.0164	0.0024
	(0.0035)	(0.0066)	(0.0060)	(0.0126)	(0.0099)	(0.0046)	(0.0053)	(0.0083)	(0.0096)	(0.0120)	(0.0052)
Observations	199,012	199,012	199,012	199,012	199,012	199,012	199,012	199,012	199,012	199,012	199,012
R-squared	0.7284	0.5195	0.2345	0.4531	0.1124	0.7279	0.7657	0.7297	0.6124	0.4170	0.8355
LR-test	0.000735	0.0986	0.362	3.23e-07	0.606	3.28e-06	0.255	0.0426	0.00302	0.101	0.129
	Sample 2009 - 2015										
Enforcing*CPI	-0.0001	-0.0007	-0.0081	-0.0190***	-0.0015	-0.0040*	0.0005	-0.0039	-0.0071*	-0.0150**	-0.0054***
	(0.0028)	(0.0036)	(0.0052)	(0.0042)	(0.0050)	(0.0020)	(0.0019)	(0.0026)	(0.0028)	(0.0048)	(0.0015)
Nonenforcing*CPI	-0.0094**	-0.0035	-0.0049	-0.0013	-0.0047	-0.0112*	0.0028	0.0064	-0.0108*	0.0057	-0.0029
	(0.0029)	(0.0054)	(0.0172)	(0.0082)	(0.0059)	(0.0057)	(0.0032)	(0.0056)	(0.0045)	(0.0098)	(0.0031)
Nonsignatory*CPI	0.0013	-0.0138†	-0.0186**	0.0449**	-0.0105	-0.028***	0.0031	-0.0105	0.0294**	-0.0119	0.0014
	(0.0037)	(0.0073)	(0.0064)	(0.0151)	(0.0096)	(0.0047)	(0.0058)	(0.0083)	(0.0108)	(0.0132)	(0.0055)
Observations	101,644	101,644	101,644	101,644	101,644	101,644	101,644	101,644	101,644	101,644	101,644
R-squared	0.7274	0.5171	0.2122	0.4325	0.1148	0.7265	0.7493	0.7066	0.5989	0.3953	0.8210
LR-test	0.00957	0.215	0.360	3.08e-05	0.621	7.26e-06	0.733	0.103	0.00695	0.104	0.363
	Positive and negative distance, full sample										
Enforcing*CPI_plus	-0.0002	-0.0001	-0.0084†	-0.0265***	-0.0065	-0.0051*	-0.0023	-0.0052*	-0.0064*	-0.0133**	-0.0070***
	(0.0032)	(0.0037)	(0.0047)	(0.0049)	(0.0058)	(0.0021)	(0.0019)	(0.0026)	(0.0027)	(0.0041)	(0.0015)
Enforcing *CPI_minus	0.0009	-0.0033	-0.0061	-0.0122**	0.0061	-0.0045†	0.0021	-0.0044†	-0.0051*	-0.016***	-0.0044**
	(0.0029)	(0.0036)	(0.0044)	(0.0042)	(0.0056)	(0.0024)	(0.0020)	(0.0023)	(0.0023)	(0.0040)	(0.0015)
Non-enf*CPI_plus	-0.0136***	-0.0105†	dddd	-0.0110	-0.0015	-0.0065	0.0064†	0.0061	-0.0099*	0.0003	-0.0028
	(0.0031)	(0.0054)	(0.0243)	(0.0083)	(0.0072)	(0.0067)	(0.0034)	(0.0046)	(0.0045)	(0.0128)	(0.0036)
Non-enf.*CPI_minus	-0.0047	0.0002	-0.0081	0.0163†	-0.0110†	-0.0159**	0.0007	0.0027	-0.0056	0.0028	-0.0022
	(0.0043)	(0.0068)	(0.0077)	(0.0086)	(0.0066)	(0.0056)	(0.0040)	(0.0058)	(0.0053)	(0.0074)	(0.0029)
Non-sign*CPI_plus	-0.0025	0.0236	0.0234**	0.0040	0.0188	-0.0224*	-0.0029	-0.0125	-0.0177**	-0.0139	-0.0076
	(0.0041)	(0.0386)	(0.0073)	(0.0261)	(0.0139)	(0.0106)	(0.0058)	(0.0137)	(0.0060)	(0.0265)	(0.0085)
Non-sign.*CPI_minus	0.0057	-0.028***	-0.031***	0.0517***	-0.0200	-0.033***	0.0089	-0.0101	0.0393***	-0.0179†	0.0060
	(0.0043)	(0.0054)	(0.0089)	(0.0118)	(0.0140)	(0.0044)	(0.0065)	(0.0100)	(0.0088)	(0.0108)	(0.0054)
Observations	199,012	199,012	199,012	199,012	199,012	199,012	199,012	199,012	199,012	199,012	199,012
R-squared	0.7277	0.5318	0.2521	0.4809	0.1178	0.7287	0.7702	0.7284	0.6198	0.4147	0.8359
LR-test	0.00203	0.133	0.00182	0.147	0.220	0.267	0.0454	0.0514	0.246	0.562	0.508

Note: Robust standard errors in parentheses *** p<0.001, ** p<0.01, * p<0.05, † p<0.1. All regressions contained the same controls as the benchmark models in Table 4.1, as well as the time-fixed effects and the Mills ratios. CPI = Corruption Distance measured by the Corruption Perception Index, absolute value. LR tests: Likelihood ratio tests of equality of coefficients at interaction terms, p-values are printed. For the Positive and negative distance, the LR tests are used to evaluate differences in the effects of CPI plus, i.e., of corruption on exports to countries with higher corruption. Product categories: SITC 0: Food and live animals; SITC 1: Beverages and tobacco; SITC 2: Crude materials excluding fuels; SITC 3: Mineral fuels, lubricants, etc.; SITC 4: Animal and vegetable oils, fats and waxes; SITC 5: Chemicals and related products (not defined elsewhere); SITC 6: Manufactured goods classified chiefly by material; SITC 7: Machinery and transport equipment; SITC 8: Miscellaneous manufactured articles; SITC 9: Other Commodities. XT = Total exports; these estimates are the same as in Table 4.1, columns 2 and 3, and in Table 4.2, column 2.

4.3 Robustness checks

Our results were subject to two additional robustness checks. First, the corruption distance was measured using the Control of Corruption Index (World Bank) and using the Government Integrity indicator (Heritage Foundation). In addition to those indicators, we re-estimated our gravity model by also using the second power of the corruption distance derived from the Corruption Perception Index to determine if the results are different when decreasing the relative contribution of a small corruption distance while increasing the importance of exports to countries with a higher distance.

These results appear in Table 4.4, and our benchmark results are reasonably robust to the inclusion of different indicators of corruption. Nevertheless, such a conclusion is not surprising because all three alternative indices measuring corruption are highly correlated. The second power of the corruption distance yields qualitatively similar results to our baseline as well.[21]

Second, we used alternative indicators of institutional quality as controls within the gravity model. Instead of the institutional quality derived from the V-DEM database, we used the Polity IV index measuring the regime authority, and then the first principal component of selected indicators from the Doing Business database indicating the severity of bureaucratic burden[22], and of indicators from the Heritage Foundation approximating the economic freedoms[23]. In this robustness check, the coefficient of *Enforcing*CPI* is negative for all alternative specifications that appear in Table 4.5; however, it is insignificant in models without institutional variables at all, and with the institutional quality approximated with the principal component of the data from the Doing Business database. In the model without institutional controls, the estimated coefficients at the interaction terms likely capture not just corruption but the overall institutional quality. Similarly, the variables from Doing Business comprise those aspects of bureaucracy in which corruption

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[21] Note, that the size of the coefficients for the Control of Corruption Index is caused by a different scale of this index. While both the Corruption Perception Index (our baseline) and Government Integrity are scaled from 0 to 100, the Control of Corruption Index has values in the interval from -2.5 to +2.5, which we rescaled to the interval from 0 to 5.

[22] The set of indicators from the Doing Business database comprises the following: Time to start up a business while a company is owned by men, Time to start up a business while a company is owned by women and Time to enforce contracts.

[23] From the Heritage Foundation, we employed the data on Tax burden, Labor freedom, Monetary freedom and Trade freedom.

might serve as the grease in the wheels of commerce, and they do not track other aspects of the institutional framework sufficiently. Therefore, we consider our results as being reasonably robust to alternative controls of the institutional quality as well.

Table 4.4 Robustness checks: Alternative indicators of corruption

VARIABLES	(1) CPI	(2) CCI	(3) GI	(4) CPI_2nd power
lnGDP_X	0.4815***	0.4886***	0.4837***	0.47589***
	(0.0391)	(0.0392)	(0.0388)	(0.03865)
lnGDP_M	0.6223***	0.6251***	0.6257***	0.62334***
	(0.0244)	(0.0246)	(0.0245)	(0.02477)
Distance	-0.6205***	-0.6250***	-0.6260***	-0.61792***
	(0.0576)	(0.0576)	(0.0571)	(0.05810)
Institutions	0.1010***	0.0968***	0.0986***	0.09715***
	(0.0229)	(0.0234)	(0.0229)	(0.02370)
Contiguity	0.7627***	0.7607***	0.7550***	0.76300***
	(0.0809)	(0.0810)	(0.0807)	(0.08147)
Common offic. language	0.0068	0.0100	0.0137	0.01001
	(0.0827)	(0.0825)	(0.0825)	(0.08345)
Colonial relationship	0.2103†	0.2153†	0.2105†	0.21049†
	(0.1097)	(0.1100)	(0.1104)	(0.11003)
Common religion	-0.0384	-0.0302	-0.0388	-0.03828
	(0.1134)	(0.1137)	(0.1132)	(0.11367)
Regional trade agreement	0.0303	0.0333	0.0295	0.00730
	(0.0824)	(0.0835)	(0.0817)	(0.08145)
Enforcing*Corruption	-0.0060***	-0.1148***	-0.0053***	-0.00009***
	(0.0014)	(0.0301)	(0.0012)	(0.00002)
Nonenforcing*Corruption	-0.0026	-0.0374	-0.0020	-0.00003
	(0.0026)	(0.0564)	(0.0024)	(0.00004)
Nonsignatory*Corruption	0.0024	0.0764	0.0007	0.00000
	(0.0052)	(0.1203)	(0.0050)	(0.00008)
Constant	-18.9975***	-19.3081***	-19.1777***	-18.98337***
	(1.4182)	(1.4339)	(1.4110)	(1.41589)
Observations	199,012	210,100	240,358	199,012
R-squared	0.8355	0.8341	0.8354	0.83343
Time FE	YES	YES	YES	YES
Mills ratios	YES	YES	YES	YES
LR-test 3	0.129	0.114	0.187	0.188

Note: Robust standard errors in parentheses *** $p<0.001$, ** $p<0.01$, * $p<0.05$, † $p<0.1$. The time-fixed effects and the Mills ratios are skipped. Corruption = Corruption Distance, absolute value. LR tests: Likelihood ratio tests of equality of coefficients at interaction terms, p-values are printed. LR-test: H0 – all coefficients at interaction terms are equal.

Table 4.5 Robustness checks: Alternative institutional indices

VARIABLES	(1) V-DEM (Benchmark)	(2) Inst. distance excluded	(3) Heritage Foundation	(4) Doing Business	(5) Polity	(7) All institutional variables
lnGDP_X	0.4815***	0.6590***	0.6402***	0.6545***	0.4327***	0.4274***
	(0.0391)	(0.0553)	(0.0536)	(0.0555)	(0.0783)	(0.0829)
lnGDP_M	0.6223***	0.6997***	0.6904***	0.6892***	0.5989***	0.5852***
	(0.0244)	(0.0317)	(0.0318)	(0.0322)	(0.0487)	(0.0500)
Distance	-0.6205***	-0.7776***	-0.7728***	-0.7741***	-0.4956***	-0.4700***
	(0.0576)	(0.0569)	(0.0565)	(0.0569)	(0.1287)	(0.1426)
Contiguity	0.7627***	0.6164***	0.6337***	0.6308***	1.0597***	1.0753***
	(0.0809)	(0.0820)	(0.0847)	(0.0834)	(0.1408)	(0.1674)
Common offic. language	0.0068	0.3365*	0.3103*	0.3268*	-0.2440†	-0.2323
	(0.0827)	(0.1326)	(0.1254)	(0.1340)	(0.1423)	(0.1509)
Colonial relationship	0.2103†	-0.0485	-0.0433	-0.0411	1.3710***	1.2913***
	(0.1097)	(0.1422)	(0.1412)	(0.1424)	(0.3381)	(0.3417)
Common religion	-0.0384	-0.2659**	-0.2478*	-0.2708*	-0.4492†	-0.4066
	(0.1134)	(0.1031)	(0.1002)	(0.1055)	(0.2446)	(0.2517)
Regional trade agreement	0.0303	0.2242†	0.1924	0.2045	-0.2147	-0.1825
	(0.0824)	(0.1262)	(0.1220)	(0.1301)	(0.1777)	(0.1838)
Enforcing*CPI	-0.0060***	-0.0020	-0.0025†	-0.0011	-0.0068**	-0.0100***
	(0.0014)	(0.0013)	(0.0014)	(0.0014)	(0.0021)	(0.0027)
Nonenforcing*CPI	-0.0026	0.0011	0.0005	0.0021	0.0011	0.0003
	(0.0026)	(0.0025)	(0.0025)	(0.0026)	(0.0097)	(0.0117)
Nonsignatory*CPI	0.0024	0.0038	0.0029	0.0037	0.0084	0.0033
	(0.0052)	(0.0079)	(0.0078)	(0.0078)	(0.0118)	(0.0122)
Institutions - V-DEM	0.1010***					0.0920*
	(0.0229)					(0.0383)
Institutions – Heritage F.			0.0475			-0.1020
			(0.0359)			(0.0838)
Institutions – Doing Bus.				-0.0908		0.0585
				(0.0561)		(0.0948)
Institutions – Polity					0.0208**	0.0106†
					(0.0076)	(0.0060)
Constant	-18.9975***	-25.1547***	-24.5106***	-24.8298***	-17.7945***	-17.4549***
	(1.4182)	(1.9523)	(1.9325)	(2.0316)	(2.8416)	(3.0244)
Observations	199,012	217,228	217,228	159,004	44,370	31,396
R-squared	0.8355	0.7686	0.7661	0.7589	0.8795	0.8792
Time FE	YES	YES	YES	YES	YES	YES
Mills ratios	YES	YES	YES	YES	YES	YES
LR-test	0.129	0.384	0.408	0.428	0.325	0.446

Note: Robust standard errors in parentheses *** p<0.001, ** p<0.01, * p<0.05, † p<0.1. The time-fixed effects and the Mills ratios are skipped. CPI = CPI Distance, absolute value. LR tests: Likelihood ratio tests of equality of coefficients at interaction terms, p-values are printed. H0 – all coefficients at interaction terms are equal.

5. Conclusions and policy implications

This study has investigated the effects of enforcement of the OECD Anti-Bribery Convention on export flows. The signatory countries decided to ban and criminalize foreign bribery in order to level the field in international business. More specifically, we have inferred the impact of the enforcement from the gravity model in which the corruption distance interacts with dummy variables indicating whether the home country enforces the Convention or not. Thus, we have checked whether the enforcement of the Convention results in lower exports to more corrupt host countries. If this is the case, then the OECD Anti-Bribery Convention has unintended negative consequences because its purpose was to decrease the corruption in international trade and not to harm exports. Importantly, lower exports are harmful to the host countries of their imports as well, unless these imports are substituted by imports from other countries.

In our paper, we have shown that the impact of corruption distance on export flows is significantly negative only for those countries that enforce the Convention, but not for the other signatory countries. For the nonenforcing signatory countries, as well as for the nonsignatory countries, the effect of host-country corruption is statistically insignificant. Thus, according to our results, signing the Convention without actually enforcing the rules has barely any effects on export flows. However, at the same time, we did not find robust support for a hypothesis that exports of the other countries are substituting the exports of the enforcing countries. Furthermore, we have shown that sanctions imposed on companies that do not respect the laws against foreign bribery serve as a stronger deterrent than commenced investigations that might end up with acquittance or another form of settlement.

We have also found that the effect of corruption distance on export flows from enforcing countries is rather sizable. An increasing corruption distance, measured as an increase in the Corruption Perception Index by 10 points, decreases the exports by 6%. Note that for example, the difference between CPI in the United States and Argentina is 35 points, and the difference by 10 is equivalent to the difference in corruption levels between the United States and Israel or Spain.

Interestingly, the results are virtually identical when considering our full sample starting in the year 2000, and when utilizing just the subsample starting in 2009 when the signatory countries committed to strengthen the enforcement mechanisms by criminalizing foreign bribery in domestic legislation explicitly. Our main results were also robust to various sensitivity checks.

Therefore, we argue that so far, the OECD Anti-Bribery Convention did not level the field in international business between those countries that enforce the rules against foreign bribery and those that do not exert such effort, no matter whether they signed the Convention or not. Furthermore, our results complement the existing microlevel studies, according to which the enforcement of the rules against corruption harms exporters, and the impact on the corruption level remains limited at best. Even the Convention's Amendment of 2009 that aimed to strengthen the international coordination and domestic enforcement mechanisms did not make a difference.

In addition, we have found that the effect of enforcement of the Convention on trade is very similar to the effects on foreign direct investment found by Cuervo-Cazurra (2008). Therefore, our results provide further support to the claims by Spalding (2010, 2015) that the current rules against foreign bribery and excessive punishment deter firms from enforcing countries of doing business with developing and emerging countries even more than previously thought. Thus, we support the worries that the current rules function as de facto economic sanctions against countries with higher corruption.

Moreover, since the effects of enforcement on exports are diverse across product categories, we argue that the international coordination shall focus not only on laws adopted by the governments of the signatory countries but also on corporate governance that disincentives unethical business conduct. Similar points were highlighted already by Darrough (2010) and others. Those include the extension of principles of (1) good bookkeeping and disclosure to regulators, and (2) maintenance of internal control systems, which would prevent valuable assets of companies from being stripped away tacitly.

From a policy perspective, our results imply that the policies against bribery in foreign trade require a significant overhaul that could be beneficial not only for the current signatory countries but also for the developing countries. Likely, to achieve the goal of lower corruption, the current

focus on the supply side needs to be complemented by stronger policies against the demand for corruption. Therefore, as a first step, the signatory countries should provide broader institutional support to countries that are willing to enforce the anti-bribery rules but lack the adequate level of skills needed to do so effectively. Then, the policymakers should carefully reflect the proposals from the legal literature suggesting utilization of proceedings from enforcement of the anti-bribery rules on compensations to communities where the crime has occurred. Finally, such policy reform may also increase the attractiveness of the Convention for countries that decided to distance themselves from the attempts to coordinate the fight against corruption at the international level.

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Appendix

Appendix I: Taylor Approximation of Multilateral Resistance Terms

We use trade barrier variables in three specific forms. First, we work with factors varying in all three dimensions (exporter, importer, and time) such as tariffs. Second, our estimation is focused on institutional factors varying only in two dimensions (exporter time or importer time). Following Baier and Bergstrand (2009), we construct an estimation of multilateral resistance terms by first-order log-linear Taylor series expansion. Since institutional variables vary in two dimensions, we have to avoid the problem of multicollinearity, and therefore, we include our institutional variables into the gravity model in the form of institutional distance. Therefore, equation (A.1) describes an approximation of the multilateral resistance terms (MRT) of variables representing trade barriers TB varying in i, j and t dimensions:

$$MRT\big(\log(TB_{ijt})\big) = \log(TB_{ijt}) - \sum_{i=1}^{N} \theta_{it} \log(TB_{ijt}) - \sum_{j=1}^{N} \theta_{jt} \log(TB_{ijt}) + \tag{A.1}$$

$$+ \sum_{i=1}^{N} \sum_{j=1}^{N} \theta_{it}\theta_{jt} \log(TB_{ijt})$$

where θ_{it} and θ_{jt} are either GDP shares (e.g., $\theta_{it} = \frac{GDP_{it}}{GDP_{wt}}$, GDP_{wt} is a "world" GDP – sum of GDP for all countries in the sample) or simple $\frac{1}{N}$ weights (N – number of countries in the sample). However, because of potential endogeneity, we have decided to utilize $\frac{1}{N}$ weights (Baier & Bergstrand, 2010: 104; Shepherd, 2013: 40). A natural robustness check would be to re-estimate the model using an approximation of MRT via set of dummies (Baldwin & Taglioni, 2006); however, we have to skip this step because time-varying importer and exporter dummies would be correlated with institutional variables of our interest.

Appendix II: Tables

Table A1: Country List

A. Enforcing countries

Austria	Belgium	Bulgaria	Canada
Finland	France	Germany	Hungary
Chile	Israel	Italy	Japan
Korea (South)	Luxembourg	Netherlands	Norway
Poland	Sweden	Switzerland	Turkey
United Kingdom	United States		

B. Nonenforcing countries

Argentina	Australia	Brazil	Colombia
Czech Rep.	Denmark	Estonia	Greece
Ireland	Mexico	New Zealand	Portugal
Slovakia	Slovenia	South Africa	Spain

C. Nonsignatory countries

Algeria	Armenia	Azerbaijan	Bahamas
Bahrain	Bangladesh	Barbados	Belarus
Belize	Benin	Bolivia	Botswana
Burkina Faso	Cabo Verde	Cameroon	Congo
Costa Rica	Côte d'Ivoire	Croatia	Cuba
Cyprus	Dominican R	Ecuador	Egypt
El Salvador	Ethiopia	Fiji	Gabon
Georgia	Ghana	Guatemala	Guinea
Guyana	Haiti	Honduras	Hong Kong
China	India	Indonesia	Iran
Jamaica	Jordan	Kenya	Kuwait
Laos	Lebanon	Lesotho	Libya
Lithuania	Madagascar	Malawi	Malaysia
Mali	Malta	Mauritania	Moldova
Mongolia	Morocco	Mozambique	Myanmar
Nepal	Nicaragua	Niger	Nigeria
Oman	Pakistan	Panama	Paraguay
Peru	Philippines	Romania	Russia
Saudi Arabia	Senegal	Singapore	Sri Lanka
Suriname	Swaziland	Syria	Tanzania
Thailand	Trinidad a. Tobago	Tunisia	Uganda
Ukraine	U. Arab Emirates	Uruguay	Venezuela
Vietnam	Yemen	Zambia	Zimbabwe

I. **Active enforcement**

Germany	Switzerland	United Kingdom	United States

II. **Moderate enforcement**

Austria	Canada	Finland	Italy
Norway	Australia		

III. **Limited enforcement**

France	Hungary	Korea (South)	Netherlands
Sweden	Greece	New Zealand	Portugal
South Africa			

IV. **Little or none enforcement**

Belgium	Bulgaria	Chile	Israel
Japan	Luxembourg	Poland	Turkey
Argentina	Brazil	Colombia	Czech Republic
Denmark	Estonia	Ireland	Mexico
Slovakia	Slovenia	Spain	Russia

V. **Nonsignatory countries**

Algeria	Armenia	Azerbaijan	Bahamas
Bahrain	Bangladesh	Barbados	Belarus
Belize	Benin	Bolivia	Botswana
Burkina Faso	Cabo Verde	Cameroon	Congo
Costa Rica	Côte d'Ivoire	Croatia	Cuba
Cyprus	Dominican R	Ecuador	Egypt
El Salvador	Ethiopia	Fiji	Gabon
Georgia	Ghana	Guatemala	Guinea
Guyana	Haiti	Honduras	Hong Kong
China	India	Indonesia	Iran
Jamaica	Jordan	Kenya	Kuwait
Laos	Lebanon	Lesotho	Libya
Lithuania	Madagascar	Malawi	Malaysia
Mali	Malta	Mauritania	Moldova
Mongolia	Morocco	Mozambique	Myanmar
Nepal	Nicaragua	Niger	Nigeria
Oman	Pakistan	Panama	Paraguay
Peru	Philippines	Romania	Saudi Arabia
Senegal	Singapore	Sri Lanka	Suriname
Swaziland	Syria	Tanzania	Thailand
Trinidad a. Tobago	Tunisia	Uganda	Ukraine
U. Arab Emirates	Uruguay	Venezuela	Vietnam
Yemen	Zambia	Zimbabwe	

Table A2: Correlation matrix

	Count	Mean	SD	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
(1) lnExport	207863	8.95	3.85															
(2) lnGDP	274838	24.70	2.04	0.5849														
(3) lnDistance	272480	8.70	0.79	-0.2167	0.1464													
(4) Contiguity	272480	0.02	0.15	0.1949	0.0089	-0.3833												
(5) Com. language	272480	0.13	0.33	0.0815	-0.0593	-0.1618	0.1284											
(6) Colony	272480	0.01	0.12	0.1230	0.0116	-0.1076	0.1807	0.1130										
(7) Com. religion	272480	0.17	0.25	0.0799	-0.0485	-0.1781	0.1581	0.3460	0.0670									
(8) Trade agreement	276672	0.15	0.36	0.2482	-0.0305	-0.4733	0.1995	0.1134	0.0827	0.1443								
(9) CPI	228708	23.59	19.36	0.1123	0.0894	0.1139	-0.0845	-0.0252	0.0041	-0.1140	-0.0371							
(10) CCI	259380	1.13	0.90	0.1007	0.0850	0.1091	-0.0855	-0.0241	0.0054	-0.1140	-0.0326	0.9660						
(11) GI	276672	24.69	20.16	0.1162	0.0944	0.1155	-0.0872	-0.0222	0.0042	-0.1147	-0.0364	0.9664	0.9537					
(12) pc1_VDEM	247752	-0.00	1.68	-0.0049	0.0733	0.0702	-0.0569	-0.1224	-0.0173	-0.2628	-0.1522	0.3408	0.3614	0.3281				
(13) pc1_WGI	242088	0.00	1.18	0.0413	0.0966	0.0827	-0.0755	-0.0758	-0.0219	-0.2029	-0.1145	0.6086	0.6300	0.5933	0.6620			
(14) pc1_Heritage	276672	0.00	1.10	-0.0245	-0.0057	-0.0015	-0.0487	-0.0454	0.0178	-0.0763	-0.1010	0.2104	0.2185	0.1973	0.2642	0.3138		
(15) pc1_DB	168764	-0.00	1.46	-0.0826	-0.0636	0.0707	-0.0077	-0.0305	-0.0202	0.0332	-0.0506	-0.0110	-0.0131	-0.0107	-0.0450	-0.0376	0.0489	
(16) Polity	123664	4.79	6.14	0.0818	0.1166	0.0957	-0.0247	0.0375	0.0013	0.0539	0.0828	0.1287	0.1220	0.1323	-0.2480	-0.1049	-0.1124	0.0080

Table A3.1: Effects of enforcement and corruption distance on exports - absolute distance
(Group Little and no enforcement divided into two groups: little enforcing and no enforcing)

VARIABLES	(1) TI Classification full sample	(2) TI Classification 2009-2015 sample	(3) TI Classification full sample	(4) TI Classification 2009-2015 sample
lnGDP_X	0.4812***	0.4429***	0.4730***	0.4372***
	(0.0393)	(0.0363)	(0.0382)	(0.0362)
lnGDP_M	0.6253***	0.5972***	0.6197***	0.5935***
	(0.0250)	(0.0240)	(0.0243)	(0.0239)
Distance	-0.6184***	-0.5841***	-0.6148***	-0.5818***
	(0.0572)	(0.0577)	(0.0569)	(0.0575)
Institutions	0.1020***	0.1001***	0.1040***	0.1016***
	(0.0229)	(0.0234)	(0.0229)	(0.0234)
Contiguity	0.7704***	0.8699***	0.7688***	0.8688***
	(0.0831)	(0.0880)	(0.0802)	(0.0856)
Common offic. language	0.0117	-0.0296	-0.0067	-0.0406
	(0.0850)	(0.0853)	(0.0847)	(0.0851)
Colonial relationship	0.2040†	0.2932**	0.2222*	0.3042**
	(0.1118)	(0.1102)	(0.1103)	(0.1094)
Common religion	-0.0358	-0.0258	0.0033	0.0047
	(0.1150)	(0.1223)	(0.1119)	(0.1191)
Regional trade agreement	0.0302	-0.1229	0.0251	-0.1280
	(0.0871)	(0.0877)	(0.0856)	(0.0870)
Active enforcement*CPI	-0.0054**	-0.0049*	-0.0054**	-0.0050*
	(0.0019)	(0.0020)	(0.0019)	(0.0020)
Moderate enforcement*CPI	-0.0037*	-0.0032	-0.0039*	-0.0033†
	(0.0018)	(0.0020)	(0.0018)	(0.0020)
Limited enforcement*CPI	-0.0042*	-0.0042*	-0.0043*	-0.0042*
	(0.0018)	(0.0021)	(0.0018)	(0.0021)
Little/no enforcement*CPI	-0.0070**	-0.0064**		
	(0.0022)	(0.0024)		
Little enforcement*CPI			-0.0106***	-0.0089***
			(0.0021)	(0.0022)
No enforcement*CPI			-0.0025	-0.0027
			(0.0032)	(0.0039)
Nonsignatory*CPI	0.0015	0.0002	0.0017	0.0003
	(0.0055)	(0.0057)	(0.0056)	(0.0057)
Constant	-19.1596***	-17.6180***	-18.8312***	-17.3949***
	(1.4427)	(1.4148)	(1.3976)	(1.4105)
Observations	199,012	101,644	199,012	101,644
R-squared	0.8341	0.8199	0.8386	0.8236
Time FE	YES	YES	YES	YES
Mills ratios	YES	YES	YES	YES
LR-test	0.533	0.735	0.0325	0.222

Note: Robust standard errors in parentheses *** p<0.001, ** p<0.01, * p<0.05, † p<0.1 The time-fixed effects and the Mills ratios are skipped. CPI = CPI Distance, absolute value. LR tests: Likelihood ratio tests of equality of coefficients at interaction terms, p-values are printed. H0 – all coefficients at interaction terms are equal. TI classification = Heimann et al., 2015.

Table A3.2: Effects of enforcement and corruption distance on exports - positive/negative distance (Group Little and no enforcement divided into two groups: little enforcing and no enforcing)

VARIABLES	(1) TI Classification full sample	(2) TI Classification 2009 - 2015 sample	(3) TI Classification full sample	(4) TI Classification 2009 - 2015 sample
lnGDP_X	0.4817***	0.4447***	0.4727***	0.4381***
	(0.0390)	(0.0359)	(0.0379)	(0.0359)
lnGDP_M	0.6175***	0.5901***	0.6108***	0.5856***
	(0.0250)	(0.0238)	(0.0244)	(0.0239)
Distance	-0.6179***	-0.5828***	-0.6148***	-0.5812***
	(0.0570)	(0.0577)	(0.0571)	(0.0577)
Institutions	0.0986***	0.0981***	0.1009***	0.1002***
	(0.0214)	(0.0222)	(0.0214)	(0.0221)
Contiguity	0.7702***	0.8668***	0.7676***	0.8655***
	(0.0823)	(0.0863)	(0.0794)	(0.0841)
Common offic. language	0.0076	-0.0277	-0.0108	-0.0388
	(0.0852)	(0.0848)	(0.0847)	(0.0845)
Colonial relationship	0.2109†	0.3038**	0.2293*	0.3136**
	(0.1110)	(0.1095)	(0.1099)	(0.1095)
Common religion	-0.0428	-0.0336	-0.0013	0.0006
	(0.1167)	(0.1254)	(0.1131)	(0.1214)
Regional trade agreement	0.0152	-0.1351	0.0093	-0.1402
	(0.0878)	(0.0885)	(0.0863)	(0.0882)
Active enforcement*CPI_plus	-0.0058*	-0.0061*	-0.0060*	-0.0062*
	(0.0025)	(0.0028)	(0.0025)	(0.0028)
Active enforcement*CPI_minus	-0.0043*	-0.0031	-0.0043*	-0.0032
	(0.0019)	(0.0021)	(0.0019)	(0.0020)
Moderate enforcement*CPI_plus	-0.0048*	-0.0042†	-0.0051*	-0.0044†
	(0.0021)	(0.0025)	(0.0021)	(0.0025)
Moderate enforcement*CPI_minus	-0.0005	-0.0005	-0.0005	-0.0005
	(0.0018)	(0.0021)	(0.0019)	(0.0021)
Limited enforcement*CPI_plus	-0.0067***	-0.0073***	-0.0067***	-0.0073***
	(0.0016)	(0.0018)	(0.0016)	(0.0018)
Limited enforcement*CPI_minus	0.0000	0.0009	-0.0000	0.0008
	(0.0025)	(0.0030)	(0.0024)	(0.0029)
Little/no enforcement*CPI_plus	-0.0094***	-0.0096***		
	(0.0028)	(0.0029)		
Little/no enforcement*CPI_minus	-0.0054*	-0.0038		
	(0.0025)	(0.0028)		
Little enforcement*CPI_plus			-0.0142***	-0.0135***
			(0.0027)	(0.0029)
Little enforcement*CPI_minus			-0.0088***	-0.0060**
			(0.0021)	(0.0021)
No enforcement*CPI_plus			-0.0050	-0.0051
			(0.0036)	(0.0039)
No enforcement*CPI_minus			-0.0004	-0.0003
			(0.0040)	(0.0054)
Nonsignatory*CPI_plus	-0.0061	-0.0049	-0.0062	-0.0050
	(0.0090)	(0.0084)	(0.0090)	(0.0084)
Nonsignatory*CPI_minus	0.0045	0.0024	0.0048	0.0025
	(0.0059)	(0.0067)	(0.0059)	(0.0066)
Constant	-18.9741***	-17.4555***	-18.6056***	-17.1876***
	(1.4369)	(1.3929)	(1.3908)	(1.3933)
Observations	199,012	101,644	199,012	101,644
R-squared	0.8372	0.8250	0.8420	0.8287
Time FE	YES	YES	YES	YES
Mills ratios	YES	YES	YES	YES
LR-test	0.730	0.633	0.0896	0.170

Note: Robust standard errors in parentheses *** p<0.001, ** p<0.01, * p<0.05, † p<0.1 The time-fixed effects and the Mills ratios are skipped. CPI = CPI Distance, absolute value. LR tests: Likelihood ratio tests of equality of coefficients at interaction terms with CPI plus (equivalent to the effects of corruption distance on exports to countries with higher corruption), p-values are printed. H0 – all coefficients at interaction terms are equal. TI classification = Heimann et al., 2015.

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