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Bribes and Audit Fees

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Abstract

We exploit the UK Bribery Act of 2010 to test whether the pricing of audit changes with the level of corruption/bribery in the firm's business environment. Adopting a triple difference design, we show that affected firms operating in countries perceived as more corrupt, where bribery may be necessary to get contracts, pay higher audit fees after the law enforcement. Moreover, we show that the increase in audit fees (i) is not the result of changes in the financial reporting quality of these firms; (iii) is mainly driven by Big-4 auditors; and (iii) is not due to higher compliance costs for companies that have a larger number of subsidiaries in corrupt countries. All these results are consistent with the increase in audit fees as a compensation for the higher perceived litigation and reputational costs for the auditors, rather than an additional price paid for significant increases in the compliance and monitoring costs. Moreover, subject firms that operate in countries with low corruption indexes and low bribery risk experience a reduction in audit fees, suggesting that the law was effective in reducing bribery, at least for firms with lower exposure to bribery in their business environment. In this case the reduction in the litigation/reputational risk for the auditor was high enough to compensate any potential increase in compliance/monitoring costs and potential penalties

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Keywords: Audit Fees; Audit Quality; Corruption; Bribes; UK Bribery Act 2010

JEL Classifications: K420, M4, M410, M420, M480, M140

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Bribes and Audit Fees *

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1 Introduction

Bribery is a mayor form of corruption and represents not only an ethical concern, but also an important economic problem for external auditors that confront legal fines if they fail in its detection [1]. In this study we test whether bribe-related activities are reflected in audit fees using a quasi experimental design.

Audit risk increases when client firms pay bribes to obtain public contracts because, in case of detection, the auditor of the corrupt firm is very likely to be involved in the litigation process and to suffer a loss of reputation irrespective of the final verdict. Specifically, auditors faced litigation in 404 of the 596 cases that have been brought to court under the US Foreign Corrupt Practices Act (FCPA) during the 2001-2019 period (Audit Analytics).

Because of the high costs it imposes on the economy, during the last decades there has been a surge of research in the economics of corruption[2] and, more specifically, there is a lot of interest in estimating the extent of bribery at the firm level. In particular, the World Bank (2014) estimates that 20% of firms anticipate that they may have to offer bribes in order to achieve a construction permit, and D'Souza and Kaufmann (2013), surveying 11,000 companies in over 125 countries, show that one third of managers are willing to pay bribes to obtain public contracts. Moreover, even though corruption is usually associated with developing countries, the World Bank (2014) estimates that bribes in international business transactions of OECD countries account for about 5% to 25% of the total value of the contract whereas 73% of European citizens believe that bribery and connections is the easiest way to get quick access to public services (EU Anti-Corruption Report, 2014). But, because bribery is an illegal activity, almost all data estimating the extent of these practices at the firm level are indirect, and empirical researchers have usually relied on country-level estimates[3]. This is also a problem for those researchers concerned with the role that auditors and accountants should play in preventing bribery (Cooper,

[1] Transparency International defines corruption as the "abuse of entrusted power for private gain". In this study, we focus on a specific form of corruption, namely bribes, (i.e. payments in cash or in kind made by firms' employees or intermediaries to foreign public officials or to any other private businessperson to obtain a business contract) and throughout the paper we will use corruption at firm level and bribery as synonyms. Corruption may take various other forms such as fraud, extortion, nepotism or cronyism. These, however, are beyond the scope of this paper.

[2] It has been shown that corruption increases income inequality and decreases growth and investment (Burguet, Ganuza, & Montalvo, 2016; Mauro, 1995; Mo, 2001).

[3] Direct estimates can be obtained in field studies such as Olken and Barron (2009) and Sequeira and Djankov (2014) but they are difficult to generalize.

Dacin, & Palmer, 2013). Therefore, empirical studies about the impact of bribery in the accounting and auditing literature have been but few, and have mainly focused on country-level evidence on global corruption figures (Gago, Márquez, & Núñez, 2020).

Our paper aims to fill this gap in the auditing literature by measuring the extent to which bribery practices at the firm level are reflected in audit fees. In particular, we test the hypothesis that, because auditors are expected to act as anti-bribery gatekeepers at the firm level, firms expected to pay more bribes will also pay higher audit fees. Interestingly, these higher audit fees may be reflecting different effects. On the one hand, they may reflect higher expected litigation and/or reputational costs for the auditor; on the other hand, they may reflect higher compliance costs and monitoring efforts leading to higher audit quality. In order to tease out these effects, and given the severe endogeneity challenges that we face in testing this idea, our identification strategy follows Zeume (2017)[4]. Specifically, we use the passage of the UK Bribery Act (BA) of 2010 as a quasi-natural experiment in the form of an exogenous shock to the costs of bribery, both in terms of compliance costs and in terms of expected litigation and reputational costs[5]. The UK BA prohibits bribing a business person or a foreign public official and creates a strict liability offence if businesses fail to prevent bribery. The act has an extraterritorial reach applying not only to UK firms but also to overseas firms with a UK subsidiary. For our identification strategy, we measure the change in audit fees before and after the passage of the law both for firms affected by the act (our treated group) and for firms beyond the reach of the new regulation (our control group). We proceed to further separate our treated and control groups based on the perceived exposure to corruption and bribery in the firm's business environment - which depends on the location of its subsidiaries - using the Corruption Perception Index of Transparency International.

The main result from this triple difference identification strategy is that firms that are subject

[4]Zeume (2017) conducts an event study finding a negative market reaction to the passage of the UK Bribery Act of 2010 and showing that affected firms operating in high corruption environments experienced significant market price drops, which indicates that the new law represented an important exogenous shock to the costs of doing business in corrupt environments.

[5]Two high profile cases that have been prosecuted under the UK BA to date are the Airbus case, where the Dutch company paid nearly $4 billion to settle bribery charges involving Airbus' managers bribing to secure deals with the Malaysian, SriLankan and Chinese airlines; and the Rolls-Royce case, where the company was accused of bribing top managers and government officials to sell turbines and engines for passenger jets and military aircraft in Indonesia, Thailand, India, Russia, Nigeria, China and Malaysia.

to the UK BA and operate in higher (lower) exposure environments suffer an increase (decrease) in their audit fees. Interestingly, the decrease in audit fees, experienced by the firms who are subject to the act but operate in low exposure environments, shows that, at least for these firms, the law decreased the expectations of bribery taking place, reducing the expected litigation/reputational costs for the auditors to such extent as to compensate for any increase in compliance costs. And this proves that these litigation/reputational costs are a significant determinant of audit fees. Moreover, for the firms which are subject to the act and operate in high exposure environments, we have three additional important results. First, the increase in audit fees is not the result of changes in the financial reporting quality of these firms (proxied by abnormal operating expenses and discretional accruals). Second, it is highly reputed Big-4 auditors who are mainly driving the increase. And, third, the increase is not due to higher compliance costs for companies that have a larger number of subsidiaries in corrupt countries. All these results are consistent with the increase in audit fees for firms operating in high corruption environments corresponding to higher perceived litigation and reputational costs for the auditors, rather than to significant increases in compliance costs and monitoring efforts.

Our paper contributes directly to the literature on the impact of bribery on audit fees. In particular, recent studies have found that US firms operating in countries with higher levels of political corruption (Jha, Kulchania, & Smith, J., 2020; Xu, Dao, & Petkevich, 2019) or higher country-level corruption (Houqe, Van, Waresul, Mahoney, 2019) pay higher audit fees. Also, for the US, Lyon and Maher (2005), relying on voluntary disclosure of bribe related activities, show that audit fees are higher for client firms that disclosed paying bribes in the period prior to the US FCPA enactment; and Lawson, Martin, Muriel and Wilkins (2019) find that audit fees are higher for FCPA violators. Nevertheless, firms that operate in corrupt environments and firms that confess to, or are convicted of bribery differ in many respects from other firms. Therefore, while these studies show a positive correlation between bribery and audit fees, they are unable to solve these endogeneity issues that may be biasing the results[6]. We depart from these studies because our identification strategy allows us to prove causality running form bribery to audit

[6]Lawson et al. (2019) find that FCPA violators differ from their counterparts in many firm characteristics such as size, profitability and the probability of being audited by a Big-4 auditing firm.

fees. Moreover, given the extraterritorial reach of the UK bribery act, our results have a strong international validity.

We also contribute to the literature that analyzes trade-offs between litigation/reputational risks and audit quality and their reflection in audit fees. The basic insight in this literature is that auditors can protect themselves from litigation/reputational risks (i) by charging a "fee premium" to compensate from higher risk and/or (ii) by increasing monitoring effort and audit quality to mitigate the risk (DeFond & Zhang, 2014), which should also result in higher fees for the additional effort. Evidence of a fee premium for litigation risk is provided by Seetharaman, Gul, and Lynn (2002)[7]. But, conversely, Blankley, Hurtt, and MacGregor (2012); Hope and Langli (2010); Kinney, Palmrose, and Scholz (2004); Venkataraman, Weber, and Willenborg (2008), and, more recently, Knechel, Mintchik, Pevzner, and Velury (2019) find that auditors operating in riskier environments and charging higher fees provide higher quality of audits. Moreover, Ettredge, Fuerherm, and Li (2014) find that, after the great financial crisis, when auditors where faced with substantial litigation risk, they provided more effort and increased audit quality, reducing financial misstatements, even though audit fees experienced an overall decline because of market pressures. Our study uses an exogenous shock that increases litigation and reputational risk related to bribery for the treated group and is followed by an increase in audit fees, but we do not observe any change in audit quality. Therefore, our results cast doubts on the ability of auditors to detect and control bribery, which in many cases may involve large but immaterial payments. In terms of policy implications, we thus conclude that, although auditors play an important role as gatekeepers, and may generally reduce litigation and/or reputational risk by providing higher effort in issues such as securities litigation, by providing higher effort, this is unlikely to happen in the case of bribery.

Finally, we contribute to the more general literature on corruption in two respects. First, we show that audit fees can be a good proxy for corruption at firm level. Because of the difficulty in observing the illegal activities of firms, empirical results on corruption have mainly focused on either cross-country macro evidence, direct field studies, lab experiments, questionnaires, and

[7]Seetharaman et al. (2002), using UK firms that sell securities in the US, show that auditors respond to a higher litigation risk in the US by charging higher fees to these UK firms.

use of audit data on public expenditures. As Burguet et al. (2016) discuss, each of these measures has problems of its own. Cross-country macro evidence in Mauro (1995) fails to establish clear causality[8]. Direct field studies, such as Olken and Barron (2009), and lab experiments, like Abbink, Irlenbusch, and Renner (2002), do not have endogeneity problems, but usually lack external validity (Armantier & Boly, 2011). Questionnaires, such as D'Souza and Kaufmann (2013), have been widely used to provide bribery estimates, but suffer form an under-reporting problem. Second, we also contribute by showing that anti-bribery laws and in particular, the UK Bribery Act, can be effective in curving bribery at firm level. The results in Zeume (2017) already showed that the market expected subject firms to become less competitive in corrupt environments, as reflected by the drop (increase) in market value of the subject (non-subject) firms, reflecting the idea that bribes are a necessary cost of doing business in corrupt environments. Our results are consistent with the law being effective in reducing bribery, at least in low corruption environments, as reflected in lower fees for affected firms that operate in those environments. This goes in line with previous results in the literature showing that monitoring and punishment can have a big deterrence effect on corruption (Abbink et al.2002; Olken, 2007). The rest of the paper proceeds as follows. In the next section, we discuss the main differences between the UK BA and previous anti-bribery legislations and the expected impact that these characteristics may have on client firms and their auditors. This analysis leads us to derive our main testable hypothesis. Section 3 explains in detail our quasi-experimental research design, presenting the empirical methods and the variables we use to identify changes in the pricing of audit and in financial reporting quality after the law. In Section 4 we discuss the main results of the difference-in-difference and triple-difference approach. Robustness checks are presented in Section 5. Finally, in Section 6 we conclude.

[8]Popular measures that we use in this paper are the Corruption Perception Index, the Bribe Payers Index (both from Transparency International) and the Worldwide Governance Indicators (WGI) of the World Bank, covering 215 countries (Kaufmann, Kraay, & Mastruzzi, 2011).

2 The Institutional Setting and Development of Hypotheses

2.1 The UK Bribery Act, 2010

Fighting corruption has been a main concern for many nations, with most of them applying anti-corruption laws to discourage fraud activities (World Bank, 2018)[9]. However, companies that are subject to anti-bribery regulations seem to object to it, arguing that these regulations place them in an unfavorable position compared to their unregulated competitors. This builds on the opinion that bribery is a necessary cost of doing business (Zeume, 2017). In an attempt to address the issue, the UK parliament established the UK Bribery Act in 2010 as the main governing body for prosecuting bribery. The Bribery Act of 2010 (hereafter, UK BA), unlike any previous legislation, imposes strict liabilities upon both UK and non-UK firms with a UK subsidiary for failing to impede bribes, either received or given. The charges may include unlimited fines and imprisonment. The peculiarity of this legislation is that the prosecution can be applied to any UK-associated person; regardless of the place where the bribery takes place. "Associated person" could be the company's employees, agents, joint venture partners or subsidiaries established in the UK. For example, a non-UK firm with a UK subsidiary is liable under the act even if the bribery takes place outside the UK by a non-UK subsidiary or by the non-UK parent (e.g. the Airbus prosecution case). Its main purpose was to combat bribery at a time where bribery rates were constantly rising, repealing all the anti-bribery laws that previously applied in the UK up to that point.

2.2 Increase in litigation risk and compliance costs after the UK Bribery Act of 2010

2.2.1 Litigation Risk The BA causes an upward shift in the litigation risk for the affected firms. Specifically, for a given level of bribery, we can define litigation risk as a function of the probability of detection times the expected sanctions. As we will discuss, both, the probability of detection and the expected sanctions are anticipated to be higher for the affected firms after the passage of the BA act. Moreover, the UK BA introduces new compliance costs.

Regarding the probability of detection, in the post-UK BA period, for the affected firms, it will

[9] https://www.worldbank.org/en/topic/governance/brief/anti-corruption.

be higher than before. Non-UK firms with a UK subsidiary are now subject to an additional anti-bribery law, and can be prosecuted by UK authorities, irrespective of any previous regulation operating in their countries of incorporation[10]. Regarding UK firms, even though prior anti-bribery laws applied in the UK[11], these laws had been enacted in the late 1800's and early 1900's and were considered outdated and inadequate for detecting bribery of foreign officials in international business transactions[12]. This is in sharp contrast with the number and prominence of the 14 cases prosecuted after the passage of the UK BA (detailed information can be found in Appendix B). Although this number may seem small, it can be put in perspective considering the following. First the US FCPA, regarded as one of the best anti-bribery laws, had only 21 convictions in the first 10 years of its enforcement. Second, the UK BA only applies to cases prosecuted after July 2011. Moreover, the director of the UK Serious Fraud Office (SFO)[13], Lisa Osofksy states that there are 70-75 pending for trial investigations relating to bribery and "dozens of bribery cases in the investigation pipeline-just over half of our docket" (FCPA conference, November 2018). Third, the crime is hard to be detected and in most of the cases is revealed when the bribery was unsuccessful and the bribe recipient went to the police. It can also be identified through self-reporting (e.g. Skansen Interiors Ltd) or with the help of a whistleblower (e.g. Airbus). The UK BA improves detection of the crime by providing guidance for companies on how to protect whistle-blowers. It also encourages the 'mutual legal assistance

[10]Of course, the increase in litigation risk, especially for firms not incorporated in the UK, will depend on cooperation among countries to facilitate international prosecution. International prosecution can be achieved through the mutual legal assistance between countries. This also helps firms to obtain assistance during the investigation procedures. Foreign law enforcement agencies therefore are cooperating with each other to provide anti-corruption enforcement. This is highly encouraged after the OECD anti-Bribery Convention (1997) according to which, OECD countries are required to cooperate in anti-corruption investigations. In the majority of the FCPA enforcement actions, foreign authorities provide their assistance (Christensen et al., 2019) which makes the international prosecution under the UK BA easier. According to the director of the Serious Fraud Office in the UK "The growing collaboration among the international law enforcement community is inspiring… Prosecutors, regulators and law enforcement around the world are working more closely together than we ever have before".

[11]Prior to the UK BA, 2010, the main anti-corruption laws in the UK were the Public Bodies Corrupt Practices Act 1889 and the Prevention of Corruption Act 1906, as amended by the Prevention of Corruption Act 1916 and the Anti-Terrorism, Crime and Security Act 2001. The most important international anti-corruption laws are the US Foreign Corrupt Practices Act (FCPA) (1977) and the OECD Anti-Bribery Convention (1997).

[12]The OECD working group specified: "The absence of specific case law on the bribery of foreign officials in a common law country makes it difficult to evaluate how effectively the current system works (with regards for instance to the scope of application, relevance and clarity of the terms used, efficiency of sanctions, etc.)". OECD, Directorate for Financial and Enterprise Affairs, United Kingdom: Phase 2 – Report on the Application of the Convention on Combating Bribery of Foreign Public Officials in International Business Transactions and the 1997 Recommendation on Combating Bribery in International Business Transactions para. 248 (March 17th (2005)), available at: http://www.oecd.org/dataoecd/62/32/34599062.pdf

[13]The Serious Fraud Office is the criminal law enforcement agency of the UK responsible for investigating and prosecuting the cases under the UK BA.

scheme' between countries to enhance prosecution.

Regarding potential sanctions associated with bribery, the UK BA represents a sharp increase in comparison to, both, previous legislations held in the UK, and legislations in other jurisdictions. Regarding previous UK laws, they applied a maximum fine of £500 and a maximum imprisonment of 2 years. In comparison, the UK BA imposes unlimited fines and a maximum of 10 years of imprisonment. Regarding international laws we will focus here on the US Foreign Corrupt Practices Act (FCPA) (1977) and the OECD Anti-Bribery Convention (1997)[14] . Moreover, since the FCPA is the most comparable law to the UK BA and it is much stricter than the OECD Anti-Bribery Convention (1997), it is sufficient to compare the FCPA with the UK BA to see whether the UK BA caused expected sanctions to increase for non-UK firms. A detailed comparison of both laws, showing the relative severity of the UK BA is provided in Appendix C. Here we will only point out that under the FCPA the penalties for bribing are up to $250.000 and five years of imprisonment (for individuals), and a maximum of $2 million in fines (for entities). The UK BA imposes unlimited fines for both entities and individuals. Individuals can also face prosecution of up to ten years of imprisonment[15].

2.3 Compliance Costs

Regarding compliance costs, the UK BA applies a strict corporate liability criterion if an organization, either incorporated in the UK or having a UK subsidiary, has not implemented all the necessary anti-bribery procedures, programs and internal controls to prevent the bribe from happening. Moreover, section seven of the legislation, requires auditors to undertake all necessary procedures to monitor the anti-bribery implementation of their client. Under this section, a corporation can defend itself against bribery charges in court if it can prove that it has implemented all the adequate procedures and internal compliance controls to combat bribery[16].

[14]These two laws were, at the time of the UK BA enforcement, the most important and stricter laws that applied at an international environment. It is also important in our study as 82% of the firms included in our final sample belong to an OECD country whilst 17% of these firms are incorporated in the US.

[15]The severity of the penalties is corroborated by the details of the cases prosecuted by the UK BA that can be found in Appendix B. The fines imposed in these cases amount to a very large percentage of the average net income of the fined company during the three years prior to the time of the sanction.

[16]More information on how compliance can be useful for defendants can be found in the UK legislation governmental page: http://www.legislation.gov.uk/ukpga/2010/23/contents

The primary audience of the UK BA are the agents responsible for ensuring that all adequate procedures to combat bribery are in place. Some of the most important agents involved are the board of directors and the corporate responsibility or ethics department of a company and its auditors. Senior management should periodically present the reports and the actions implemented to counterfeit bribing to the auditors. Auditors, in turn, should make an independent appraisal of the procedures and the program; which will then be included in the annual reports presented to the shareholders. The monitoring functions and internal control mechanisms of auditors are issued in the "UK Bribery Act, 2010 guidance"[17]. Specifically, the Ministry of Justice has issued a guideline of procedures for firms and auditors. These depend on the risks of bribery and on the nature and complexity of the organization's activities. Internal audit procedures are crucial for reinforcing the application and effectiveness of anti-bribery process. Auditors are also responsible for identifying any future probable incidents relating to fraud or bribery in the business environment. The role of internal audit is expanded to the management and board of directors as the auditor has to assess whether the tolerance of the management and board towards bribery is adequately restrictive. In summary, auditors incur costs for investigating bribery and for implementing adequate infrastructure to combat it.

Summing up, all these characteristics of the UK BA are enough to consider that it represents higher compliance and litigation costs for UK and non-UK firms with a UK subsidiary. In fact, the UK BA is generally considered the harshest anti-bribery law internationally[18].

2.4 Expected impact of the UK BA on the auditors

So far, we have argued that firms affected by the new legislation face higher litigation risk and compliance costs. But this will only affect the audit fees if these increased risks and costs are also costly for the auditor.

With respect to compliance costs, we have already seen how the compliance obligations of the UK BA affect auditors and it has been argued that these obligations are stricter and outnumber

[17] A complete analysis of the role of internal auditing in the UK Bribery act published by the ministry of justice can be found in the following link: http://www.justice.gov.uk/downloads/legislation/bribery-act-2010-guidance.pdf.

[18] Transparency International, 'The Bribery Act', available at http://www.transparency.org.uk/our-work/business-integrity/bribery-act/

the ones applied under other anti-bribery legislations[19].

With respect to litigation risk, it seems clear that this increase in litigation risk for the firms that pay bribes constitutes an increase in the business' risk of the client firm that in turn increases the engagement risk of the auditor. Auditors are subject to engagement risk defined as "the loss or injury from litigation, adverse publicity, or other events arising in connection with the audited financial statements" (Statements of Auditing Standards 106).

In particular, even if auditors comply with all anti-bribery procedures and auditing standards, they can still face a lawsuit (Statements of Auditing Standards 107, footnote 2). Thus, bribe-paying clients expose auditors to shareholder litigation in case of regulatory intervention (Lyon & Maher, 2005). Litigation threats can have a detrimental effect even for the largest auditing firms because, although these firms are better prepared to deal with the fixed costs of litigation, financial penalties usually increase with size (DeFond & Zhang, 2014).

Moreover, auditors will also bear the direct costs from adverse publicity from a lawsuit even if they are not found guilty[20]. This is because, if the market suspects that the client engages in illegal activities, there will be a spillover effect on the market's perception of audit quality (Lyon & Maher, 2005). Chaney and Philipich (2002) analyze the market reaction in the three days after Arthur Andersen's admission of having shredded important documents. They find that the market penalized the share price of other Andersen's clients, showing a negative impact of the loss of reputation of the auditor on its client firms. Arguably, that was an extreme case of reputational loss, but studies by Cahan, Emanuel, and Sun (2009) and Krishnamurthy, Zhou, and Zhou (2006) find that the market also penalizes client firms when the auditor does consulting work for the client, as a signal of loss of independence and declining audit quality. These studies cannot separate reputation and litigation risk. But, Skinner and Srinivasan (2012) and Venkataraman et al. (2008), by focusing in low-litigation jurisdictions, are able to prove that reputation damage is detrimental for the auditor and its clients.

[19] A detailed explanation of compliance costs related to bribery is found in Maher (1981), who discusses how auditors should deal with the compliance costs triggered by the introduction of the U.S. FCPA. Moreover, Bronson, Ghosh, and Hogan (2017) and Minutti-Meza (2014) show that increases in audit requirements (i.e. increases in compliance costs for auditors of US cross-listed firms contribute to higher audit fees).

[20] For example, Congressman John E. Moss highly criticized the auditor of Ashland Oil after it was revealed that the company was engaged in bribe-relating activities (U.S. House of Representatives, 1976). It can be found in the following link: https://www.justice.gov/sites/default/files/criminal-fraud/legacy/2010/04/11/houseprt-95-640.pdf.

To sum up, focusing on the impact of the UK BA on auditors we may say that, overall, the new law pressures audit firms to reconstruct their procedures under its ideals of what is good for businesses and reputation (Power, 2013).

2.5 Testable hypothesis on the impact of the UK BA on audit fees

In order to develop our testable hypothesis we follow the rationale of Simunic (1980). He uses the following model to explain how the costs and risk of a period's audit will impact audit fees.

$$E(C) = cq + E(d) * E(\theta)$$

E(C) equals the audit fees, c equals the factor cost of the external audit resources, including the opportunity costs and q is the quantity of resources that an auditor uses during his auditing. E(d) is the expected present value of future losses an auditor may bear from a period's audited financial statements and E(θ) is the likelihood that the auditor will have to cover for these losses (Seetharaman et al., 2002).

We have already established that the passage of the UK BA is expected to have increased compliance costs for all firms (which would be reflected in higher values of c and/or q) and, for a given level of bribery, it increased the risk of litigation (higher E(θ)) and the potential penalties associated to bribery (higher E(d)). Therefore, one could expect the passage of the UK BA to increase audit fees for the affected firms.

Nevertheless, it is important to keep in mind that the objective of the UK BA was to curb bribery at firm level. If the law was effective, this would mean lower bribery and, therefore, a lower probability of litigation associated to bribery. This leads us to formulate our first testable prediction.

H1: *Firms affected by the UK BA will experience a reduction in audit fees if and only if the law leads to substantially lower levels of bribery that reduce the probability of litigation and compensate the auditor for potential increases in compliance and monitoring costs and higher expected penalties in case of litigation.If this is not the case, and the level of bribery remains substantial, firms affected by the UK BA will experience an increase in audit fees.*

2.6 Firm's reaction to the UK Bribery Act, 2010 and corruption across countries

Interestingly, in spite of the extraterritorial nature of the UK BA, one cannot expect the reach of the law to be uniform across countries. Due to the diverse nature of the business environment in the distinct countries, the determinants of bribery will be markedly different across firms depending on the countries where they operate. Hence, we expect firms liable under the BA to make decisions that do not depend only on UK law and institutions but also, to some extent, on the quality of the institutions of the country where the subject firm is doing business.

Prior literature has shown that firms' bribery levels differ across countries both for moral and legal reasons, which are likely to be interrelated. In particular, the legal environment can be seen as the image of the ethical and moral standards of society (Gago et al., 2020). Focusing on the impact of regulation on firm's incentives, Shleifer and Vishny (1993) argue that firms operating in less developed countries are more likely to engage in bribery because of the lack of strong institutional and legal environments. According to Bond (2008); Brunetti and Weder (2003); and Wu (2009), this happens because in weak regulatory environments firms are encouraged by the lower probability of prosecution, implying lower litigation risk. But, it may also happen because "corruption corrupts" and weaker institutions lead to higher expectations of bribes by corrupt officials (Andvig & Moene, 1990; Brooks & Dunn, 2014). These ideas are confirmed by D'Souza and Kaufmann (2013), showing that strong legal institutions are associated with lower bribery and by Christensen, Maffett, and Rauter (2019), showing that bribes paid are positively associated with the country's corruption level, as measured by the Corruption Perception Index (CPI) compiled by Transparency International. Moreover, according to Gago et al. (2020) these measures of corruption at firm level may have a downward bias because firms operating in weak institutional environments do not only have higher incentives to bribe, but are also more

reluctant to disclose their actions in firm level surveys.

Taking all of this into account, we will distinguish between firms that operate in business environments with high versus low exposure to corrupt practices. High exposure firms are firms that operate in environments perceived as highly corrupt, where firms may be expected to pay bribes to obtain contracts and where we also foresee a less effective law enforcement. This distinction leads us to formulate our second testable hypothesis as follows:

H2: *Firms affected by the UK BA and operating in high exposure environments will experience a higher increase (lower reduction) in audit fees relative to firms affected by the UK BA and operating in low exposure environments.*

So far, we have argued that, at least for firms operating in high exposure environments, the UK BA resulted in an increase costs for the auditor and that should be reflected in higher audit fees. But this assumes a passive reaction of the auditor to the new regulation. However, faced with higher compliance costs and higher litigation risks after the passage of the UK BA the auditor may undertake actions to counter the risk. Specifically, auditors can decrease the risk they face by providing better quality of audits through additional monitoring effort, which ultimately increases audit fees[21]. This effect has been studied empirically by Venkataraman et al. (2008), finding that auditors operating in riskier environments are encouraged to reduce litigation risk by providing higher quality of audits. This implies that at least part of the increase in audit fees expected after the passage of the UK BA may be reflecting the costs of reducing the litigation risk by providing higher effort (Blankley et al., 2012; Hope & Langli, 2010; Kinney et al., 2004).

To test if this is the case in the context of bribery, we hypothesize that, if the increase in audit fees after the passage of the UK BA comes mainly from an increase in audit effort, we should observe also an increase in the financial reporting quality. The literature on financial reporting quality is quite extensive, but it usually assumes that audit quality is reflected in the quality of earn-

[21] Differences in enforcement by legal regimes, and additional audit requirements, i.e., compliance costs (e.g., for auditors of US cross-listed firms) contributes to higher audit fees (e.g., Bronson et al., 2017; Minutti-Meza, 2014).

ings, because better audit quality prevents managers from engaging in opportunistic earnings management (Caramanis & Lennox, 2008). Theoretically, the rationale for this assumption in the auditing literature is quite clear because the preparation of the financial statements should be seen as a conjoint work of both the auditor and the manager (Antle & Nalebuff, 1991). Empirically, the quality of earnings and reporting is usually measured by identifying malpractices associated with GAAP or IFRS manipulations (Levitt, 1998)[22]. It seems clear that auditors can reduce the risk of misreporting (and thus the associated litigation risk) by providing better audit quality. Nevertheless, it is not so straightforward to assume that auditors can reduce bribery and its associated costs in the same way, because many corrupt activities at firm level may not pass the materiality threshold[23].Therefore, this is an empirical question that makes us formulate our third testable hypothesis in the following way.

H3: *If auditors can reduce the risk of bribery by providing higher audit quality, the quality of reporting will increase for the affected firms after the passage of the UK BA.*

Finally, we are also interested in disentangling the differential effect of compliance cots (higher c and/or q) and litigation risk (higher E(d) and/or E(θ)) in the expected increase in audit fees. To tease out these two effects we hypothesize that, controlling for the level of exposure to corrupt practices across countries, the increase in audit fees will be higher for firms and auditors that, because of their particular characteristics, are more likely to suffer a higher impact of the compliance costs or reputational costs associated to the passage of the UK BA.

H4: *After the passage of the UK BA the increase in audit fees for the affected firms is expected to be higher for firms with higher compliance costs and for auditors with higher reputational costs.*

[22]Specifically, most previous studies have proxied financial reporting quality using earnings quality proxies and, in particular, abnormal accruals either singed (Dechow & Dichev, 2002) or unsigned (Cohen, Dey, & Lys, 2008; Hribar & Craig Nichols, 2007; Peterson, Schmardebeck, & Wilks, 2015).

[23]The most common materiality thresholds are in the range of 5%-10% of net income with values above 10% (below 5%) of net income to be considered material (immaterial) and values between 5% and 10% to require professional judgement.

3 Research Design

3.1 Identification strategy

The purpose of our paper is to offer evidence of a causal relationship between firms' likelihood of engagement in bribery and the level of audit fees that these firms have to pay. Our identification strategy is based on measuring the changes in the audit fees that firms have to pay after a shock to the cost of bribery in the form of the passage of the UK BA. This identification strategy is appropriate only if our legal shock meets certain conditions.

First, the shock has to be unanticipated and exogenous. Zeume (2017) offers an extensive discussion showing that it was unanticipated. This is mainly because the media did not cover it up until the day of the draft announcement[24]. Further, the provisions of the act were also unanticipated. It is also expected to be permanent as the main purpose of the UK BA was to replace previous obsolete anti-bribery acts. The passage of the act is also likely to be exogenous with respect to the audit fees firms have to pay. Proponents of the UK BA suggested that extending the reach of the regulation to non-UK firms was necessary to avoid placing domestic companies in a competitive disadvantage relative to foreign firms with weak anti-bribery institutions. Thus, there was an immediate need for a more effective anti-bribery legislation that would reduce bribery without placing UK firms in a competitive disadvantage. This implies that audit fees are unlikely to be the reason for the introduction of the new legislation.

The second condition has to do with the covariate balance between the treated and control group prior to the introduction of the UK BA. Our sample may include firms that are different in many observable characteristics before the enforcement of the UK BA. To address this concern, we perform our regressions using Entropy Balancing and run a further robustness test, using Propensity Score Matching, obtaining similar results to the ones obtained using the unmatched sample.

A third condition requires the law to have had substantial effect on firms. Zeume (2017) identifies that the passage of the act causes a significant decline in the share price of the companies

[24] Interestingly, contrary to the UK BA, the US FCPA enforcement in 1977 does not offer such an exogenous shock to the costs of corruption. The enforcement of the act was well known and revealed by the SECs initiative from the voluntary disclosure program. Further, for the first three decades of its enforcement, prosecutions at international environment were very limited (Christensen et al., 2019).

that were affected by the act. Additionally, Sanseverino (2019) offers evidence that US multinationals rearranged their international operations and closed subsidiaries in highly corrupt countries after the passage of the UK BA.

The last condition that should apply to our exogenous shock is the absence of other confounding effects affecting the results. There were important changes in the UK Generally Accepted Accounting Practice in year 2012 but it was estimated that 96.7% of the UK firms were not affected[25]. Therefore, this should not introduce a material noise in our results. Further, the EU made audit rotation mandatory in 2012. To the extent that this affected all EU firms in our treated and control group, it should not be a problem to our results[26]. Interestingly, the effects of audit rotation on audit independence are still an ongoing debate. Studies that show that audit rotation is positively related with audit quality (Carey & Simnett, 2006; Garven, Beck, & Parsons, 2018; Zhao, Bedard, & Hoitash 2017) would go against us finding an increase in the audit fees as a reflection of the litigation/reputation costs. In addition, in the period covering the years from 2011 until 2014, there where new regimes relating to firms and auditors. Companies started replacing auditors' work with some new forms of assurance services, including anti-bribery procedures. This again would go against us finding an increase in audit fees after the UK BA.

3.2 Data and Empirical model

To test the hypotheses developed in Section 2 we use a panel data set of international firms with annual information on audit fees for the years 2007 to 2012. To know whether a firm is affected by the UK BA we need data on its subsidiaries[27]. Therefore, we start our data collection procedure by searching for subsidiary information from the Orbis database. We com-

[25]It can be found in the UK governments' page in the following link on page 2: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/192119/uk_gaap_changes.pdf

[26]Untabulated analysis, after excluding 2012 (the year of the introduction of the mandatory rotation) shows that the results still hold. Further, the final sample of treated firms, comprises of 200 firms that are incorporated in the UK and of 148 firms that are incorporated in other countries but are liable under the UK BA because they have a UK subsidiary.

[27]The UK Bribery Act states that "the offence can be committed in the UK or Overseas and is a strict liability offence even if improper payment has no connection of any kind to the UK" and "failure to prevent bribery in the course of business applies to any overseas entity that carries on a business or part of a business in the United Kingdom". "Part of a business" is understood to refer to a subsidiary. Therefore, for ownership to be established, it must be the case that the company has more than 50% of shares in the subsidiary. This information can be accessed in Transparency International UK in the following link: https://www.transparency.org.uk/our-work/business-integrity/bribery-act/

menced with 18,207 unique listed and major un-listed/delisted industrial companies around the world that had at least one subsidiary in which the parent company had direct ownership above 50% in year 2018. After obtaining the incorporation date of the subsidiaries, our sample amounted to 6,363 publicly listed firms that had their subsidiaries incorporated in 2007 or before that year[28]. In the second step, we collected information on audit fees from Thompson Reuters Worldscope and all other accounting information regarding the consolidated financial statements from Osiris database. After merging Thompson Reuters Worldscope with Osiris, our sample dropped to 1,796 companies[29]. After deleting additional missing information on firm related characteristics, our final sample of firms is reduced to 1,309 observations. We then use this sample to estimate the following difference-in-difference and triple difference regression models in equations (1) and (2) respectively:

$$Auditfees_{i,t} = \beta_{i,1} Treated \times Post_{i,t} + \beta_{i,2} Controls_{i,t} + \alpha_i + \gamma_{industry,t} + \epsilon_{i,t} \tag{1}$$

$$\begin{aligned} Auditfees_{i,t} = \beta_{i,1} Exposure_{i,t} + \beta_{i,2} Treated \times Post_{i,t} + \beta_{i,3} Post \times Exposure_{i,t} \\ + \beta_{i,4} Treated \times Exposure_{i,t} + \beta_{i,5} Treated \times Post \times Exposure_{i,t} \\ + \beta_{i,6} Controls_{i,t} + \alpha_i + \gamma_{industry,t} + \epsilon_{i,t} \end{aligned} \tag{2}$$

Our main dependent variable, "Audit fees", is directly taken form the annual firms reports in Thompson Reuters Worldscope and is measured as the natural logarithmic of audit fees in US dollars for each firm in each year[30]. Among the independent variables, "Post", is a binary indicator that takes the value one after the passage of the BA and zero before. The UK BA,

[28] A limitation of our study is that our Orbis and Osiris database only includes large and very large firms. Hence, the final sample of firms that had subsidiaries comprises only of those large or very large firms that had large or very large subsidiaries. Thus, our results may not be generalized to smaller size firms.

[29] The reason for such a low number of observations is that there are many missing observations on audit fees. Further, we had to merge the information from Thompson Reuters Worldscope with Osiris by name since there is not a common firm identification code. We merged based on name requiring a 97% similarity for the firms from Thompson Reuters to have the respective matched firm in Osiris. The merging resulted in 1,951 unique company observations. Then we hand crossed the merging and we deleted observations that were not correctly matched ending up with 1,796 unique firm observations.

[30] We use the natural logarithm of audit fees as it provides a convenient (elasticity based) interpretation (Venktaraman et al., 2008). We use exchange rates for each of the years of interest from the World Bank Database to convert all audit fees into United States dollar (USD), since all other firm accounting-information is directly downloaded in USD.

2010 passes on the 25th March, 2009 but receives its Royal Assent on the 8th of April 2010. At that time it became clear for the companies that the law would be enacted. The law enforcement started on the 1st July, 2011[31]. To the extent that in 2009 it was not certain whether the law would be enacted, we delete it from our regression analysis and we consider 2010 as our event year. Moreover 2010 is also deleted from our analysis as it might bias our results since the enforcement of the legislation began in 2011. We thus determine a two-year pre-and post-UK BA period considering years 2007 and 2008 as our pre-period, and years 2011 and 2012 as our post-period[32]. Hence, our "Post" variable is a dummy that takes the value of one if the firm-year accounting information is in 2011 or 2012 and zero otherwise[33]. Our "Treated" variable identifies the firms that were affected by the passage of the UK BA, taking the value one if the company is either incorporated in the UK or has a UK subsidiary before the passage of the act, and zero otherwise. A possible consideration is that firms could respond to the act by closing their subsidiaries in countries perceived as corrupt or even in the UK[34]. To eliminate such concern, our treated sample consists of firms that where incorporated in the UK or had a UK subsidiary both before and after the passage of the UK BA[35]. Thus, our difference-in-difference variable is the interaction between the "Treated" and "Post" variables. In equation (1) this interaction shows the average differential change in audit fees from the pre- to the post-UK BA period for firms affected by the act as compared to firms not affected by the act.

To construct our triple difference design we introduce the dummy variable "Exposure", which measures the firm's exposure to corrupt practices in the business environment where it operates, and then interact this variable with the "Treated" and "Post" variables.

To build this variable we follow Zeume's (2017) and estimate the overall exposure of the firm as the sum of all its subsidiaries' exposure to corruption according to the country where each of

[31] In a monarchy, for a law to be enacted and enforced, the monarch should approve it first.

[32] In untabulated analysis we include the year 2010 in our regressions and results remain unchanged.

[33] We conduct alternative tests considering a three year and a four year pre- and post-BA period. Results are shown in section 5.5. The main results remain the same.

[34] Sanseverino (2019) finds that US multinationals were likely to discontinue operations in high corruption countries after the passage on the UK BA.

[35] This restriction biases our results in that it makes it less likely that we find any impact of the passage of the UK BA on audit fees, because the firms for which the new law was costlier are more likely to be the ones that either changed their country of incorporation or closed their UK subsidiaries after the passage of the law.

them operates. Specifically, we use the Corruption Perception Index[36]. to obtain the corruption level of each country and the Orbis database to derive subsidiary information and compute the exposure measure as following:

$$Exposure_i = \sum_{c \epsilon C} \left((10 - CPI_c) \times \frac{\#Subsidiaries_{i,c}}{\#Subsidiaries_i} \right)$$

where CPI_c is the Corruption Perception Index (CPI) of country c in each of the years that are relevant for our analysis. $\#Subsidiaries_{i,c}$ is the number of subsidiaries incorporated in country c and owned by firm i in the relevant year, $\#Subsidiaries_i$ is the total number of subsidiaries owned by firm i. The total exposure of a firm is the summation of all of its exposures coming from all of its subsidiaries[37]. The CPI takes values from 0 to 10, with 0 indicating higher levels of corruption. Thus, by construction, an increase in our measure indicates higher exposure to corrupt countries. Then we finally define our "Exposure" variable as an indicator variable that takes the value one if CPI for the firm is above or equal to the median sample and zero otherwise[38].

"Controls" denotes an extensive set of control variables taken from previous studies to capture firm characteristics that may have an impact on audit fees. We include Size measured as the log of total assets, since larger firms usually pay higher audit fees (Bell, Landsman, & Shackelford, 2001). We include Leverage, Quick ratio, Losses, and ROA to control for cross-sectional differences in the financial condition of the firm (Seetharaman et al., 2002). We expect the Quick ratio and ROA to have a negative impact on audit fees, since low values of these ratios may display problems in the company and thus higher business risk. We also anticipate a positive coefficient for Leverage and Losses because higher values of these variables indicate problems

[36]The Corruption Perception Index, published annually by Transparency International, measures bribery at the country level together with other types of corruption like extortion, cronyism or nepotism. Even though in our study we are only concerned with bribery, different measures of corruption at country level are usually highly correlated. We therefore believe that its inclusion will not cause a material error in our analysis. In section 5.1 we use the World Governance Indicators (WGI) and the Bribe Payers Index (BPI) as additional proxies. Results remain the same

[37]This measure assumes that each subsidiary is equally important to the firm. An alternative way would have been to take into account the revenues generated by each subsidiary. Untabulated analysis give similar results.

[38]In untabulated analysis, we used alternative dummy specifications, assigning the value of one to “Exposure” if the corruption exposure of the firm is in the 8th, 9th or 10th quartile and zero if it is in the 1st, 2nd or 3rd quartile. The main results remain the same. Additionally, we introduced the exposure measure as a continuous variable with no significant changes in results. For easier interpretation, we present our results taking exposure as a zero/one dummy variable relative to the median value of the sample.

of financial distress. Higher business risk should also be associated to higher audit fees. We also include Big4 because the biggest auditing firms are expected to provide better audit quality and to demand a higher fee premium (DeFond & Zhang, 2014). Moreover, we use Tenure to account for the fact that audit quality is lower in the initial years of the firm-auditor match and also to control for the fact that auditors may practice low balling activities in the early years of the match (Huang, Raghunandan, Huang, & Chiou, 2015). Finally, Inventory receivables are included to control complexity of auditing inventories and receivables, and Book to Market and Asset growth to control for current and future growth prospects (Bronson et al., 2017). Detailed variable definitions and data sources for each of them are presented in Appendix A[39].

In order to control for time-invariant unobserved heterogeneity at the firm level, we include (α_i) firm fixed effects in all of the regressions. We also account for the factors that are common within each industry and year using year-industry fixed effects ($\gamma_{industry,t}$) [40]. Finally, in all the regressions in this paper, we cluster the standard errors at country level.

3.3 Interpretation of the triple difference

The interpretation of these triple difference requires some care. The interaction term Treated $\times$ Post (from hereafter DiD) (β_2) from equation (2) estimates the average differential change in audit fees from the pre- to the post-UK BA period for the treated firms that have low exposure compared to the control firms that also have low exposure. In other words, the coefficient indicates the change in audit fees after the UK BA for firms that have low exposure and are held liable under the UK jurisdiction compared to their counterparts that are not under the UK court supervision. Our main explanatory variable is the triple difference variable (Treated $\times$ Post $\times$ Exposure) (from hereafter DiDiD). The β_5 coefficient estimates the extra effect on audit fees for high exposure firms, affected vs unaffected, over low exposure firms, affected vs unaffected, from the pre- to the post-UK BA period. The total treatment effect on audit fees for the affected firms with high exposure relative to the unaffected firms with high exposure is derived after the summation of the β_2 and β_5 coefficients.

[39] All continuous variables are winsorized at 1% and 99% level

[40] All regressions in our paper also include year fixed effects (not interacted with industry dummies) to capture the shocks that may affect firms similarly within a specific year.

3.4 Identifying potential changes in audit quality

We have argued that a potential increase in audit fees in reaction to the passage of the UK BA may correspond to active monitoring effort on the part of the auditors to reduce the incidence of bribery and its costs for the affected firms. In order to test this hypothesis we repeat our analysis using audit quality as our dependent variable.

The big challenge in this case is how to proxy for audit quality in relationship to bribes. Although not directly related to bribes, accounting restatements and/or the likelihood of a qualified audit opinion are commonly used in the audit literature as a measure of audit quality (DeFond & Zhang, 2014). However, these variables are not available at international level.

Bribe related payments may take different forms such as unusual fines or penalties, unspecified services to consultants, affiliates, or employees, excessive sales commissions or agents' fees, large payments in cash, bank cashiers' checks, bank accounts and similar, unexplained payments made to government officials or employees, failure to file tax returns or pay government duties or similar fees, etc. Most of these items would usually be book-recorded as operating expenses, so one could expect companies that engage in bribery to have higher abnormal operating expenses. Of course, recording any bribes directly as expenses is typified as illegal by SAS 54, but anecdotal evidence indicates that bribes are usually hidden in different disguises in the operating expenses component of the income statement[41]. Therefore, a good proxy for an increase in audit quality caused by higher perceived costs of bribery would be a reduction in abnormal operating expenses.

Taking all of this into account, we use "Abnormal operating expenses" as a first approach to measure bribe related activity following the Dechow, Kothari, and Watts (1998) model, as modified by Roychowdhury (2006). Specifically, we build our abnormal operating expenses variable

[41] A number of prosecutions under both the UK BA and FCPA lead to that conclusion. For example, the Braid Group's employees, in an attempt to hide bribes, created an expenses account funded by dishonest invoices. Sweet Group Company, used a fake fees account as a way of covering up bribe activities. Avon Products Inc. (FCPA prosecution) was found guilty of bribing Chinese officials hiding payments in the "meal and entertainment expenses", "gifts" and "travelling expenses". Another example is the Goodyear company (FCPA prosecution) where bribes were hidden through "freight expenses". Bio-Rad (FCPA prosecution) classified bribe activities as advertising fees, commissions, or training fees.

running the following regression for every industry and year[42].

$$\frac{OPEX_{i,t}}{A_{i,t-1}} = \beta_{i,0} + \beta_{i,1}\frac{1}{A_{i,t-1}} + \beta_{i,2}\frac{S_{i,t-1}}{A_{i,t-1}} + \epsilon_{i,t} \tag{3}$$

Where, OPEX stands for Operating Expenses at the end of the period, $A_{i,t-1}$ is total assets at the end of the previous period, $S_{i,t-1}$ is total sales at the end of the previous period. For every firm-year, the abnormal Operating expenses is the actual Operating Expenses minus the "normal" Operating expenses derived from equation (3) using the estimated coefficients from this industry-year model, the lagged sales and lagged assets of the firm[43].

On the other hand, it can also be argued that in many cases, and especially for large firms, such as the ones we have in our sample, the cost of bribery may be immaterial for the firm, even if the bribes imply large amounts for the corrupt officials that receive them (Transparency International UK)[44]. If this is the case, it will be difficult to find any effect of the passage of the UK BA on abnormal operating expenses. Considering these problems, we use "Abnormal discretionary accruals" as a second, indirect proxy for audit quality. Although there is not a direct relationship between bribes and discretionary accruals, it can be argued that higher audit effort, no matter its final objective, should be reflected in the most general variables measuring accounting quality. Specifically, we use the absolute value of the discretionary accruals and we implement two alternative measures.

Our first accruals measure follows the Dechow and Dichev (2002) residuals model as modified by McNichols (2002) and Francis, LaFond, Olsson, and Schipper (2005).

$$\begin{aligned} TCA_{i,t} = \beta_{i,0} + \beta_{i,1}CFO_{i,t-1} + \beta_{i,2}CFO_{i,t} + \beta_{i,3}CFO_{i,t+1} + \beta_{i,4}\Delta Rev_{i,t} \\ + \beta_{i,5}PPE_{i,t} + \epsilon_{i,t} \end{aligned} \tag{4}$$

[42] All equations are estimated per industry and year and we require at least 10 observations in a given industry-year group.

[43] Following Roychowdhury (2006), we use lagged sales rather than sales at the end of the current period. This is because, in case that managers follow sales-increasing policies, the residuals of equation (3) could be low even if operating expenses are not reduced. If sales during the current year increase, then "normal" operating expenses increase, which in turn decreases abnormal operating expenses. But this decrease would not be due to an actual decrease in the operating expenses component but due to the management of sales upwards. To solve this problem, we use the lagged sales component to estimate normal operating expenses.

[44] Transparency International UK indicates that many bribing activities are registered in offshore arrangements and off balance-sheet payments. Information about these operations can be found in this link: https://www.transparency.org.uk › plugins › includes › download.

where $TCA_{i,t}$ = change in inventory+ change in accounts receivables - change in accounts payables - change in income tax payable + change in other assets and liabilities; CFO = cash flows from operations; ΔRev =change in revenue; PPE = gross property, plant and equipment. All variables are scaled by average assets. The proxy for audit quality is the absolute value of the residuals derived from equation (4), $\epsilon_{i,t}$

Our second alternative accruals measure comes from the modified Jones Model (1991). In particular, we use the extension made to the modified Jones model by Kothari, Leone, and Wasley (2005)[45] .

$$TA_{i,t} = \beta_{i,0} + \beta_{i,1}\frac{1}{Assets_t - 1} + \beta_{i,2}(\Delta Rev - \Delta Rec)_{i,t} + \beta_{i,3}PPE_{i,t} + \epsilon_{i,t} \tag{5}$$

where $TA_{i,t}$ = Income before extraordinary items - Cash flow from operating activiies; ΔRev = change in revenue; ΔRec = change in receivables; PPE = gross property plant and equipment. All variables are scaled by lagged total assets. The proxy for audit quality is the absolute value of the residuals derived from equation (5), $\epsilon_{i,t}$.

4 Results

4.1 Summary Statistics and Correlations

Summary Statistics are presented in Table 1. Panel A shows the summary statistics of the whole sample for the pre-BA period relating to the years 2007 and 2008 and the post-BA period which covers the years from 2011 and 2012. Panel A shows that our overall sample consists of large firms that, on average, have good growth prospects but low performance. In general, our variables are in accordance to the previous literature that has studied international firms (Lawson et al., 2009).

In panel B, we see the summary statistics of the firms that are under the jurisdiction of UK

[45]The financial reporting quality measures (accrual quality) used to proxy audit quality are subject to high measurement error (DeFond & Zhang, 2014). In an attempt to reduce the bias, we use both Dechow and Dichev (2002) as modified by McNichols (2002) and Francis et al. (2005), and the modified Jones model (1991) as it is extended in Kothari et al. (2005). We also follow Chen, Hribar, and Melessa (2018) and we regress the absolute value of discretionary accruals in the second stage-regressions using the regressors from the first-and second-stage regressions. This is one way to eliminate the bias from this two-step procedure. In an untabulated analysis we include the regressors of the first stage regression in the second stage regression. The results remain the same.

courts (treated) compared to the group of firms that are not (control) before the passage of the act (years 2007 and 2008). Subject firms exhibit on average higher audit fees, lower exposure, and are more likely to be audited by a Big-4 auditor. Both sets of firms have similar abnormal operating expenses and absolute discretionary accruals based on the modified Jones model (1991). The two groups though are quite different as they differ in most of the variables. For this reason, in our main analysis, we perform entropy balancing. As a robustness check, we also perform propensity score matching to rule out the possibility that our results are driven by these differences.

Table 2 shows the correlations between our main dependent variables and control variables. The left down corner shows the Pearson correlation coefficients and the right up corner the Spearman correlations. We observe that audit fees are significantly and positively correlated with our exposure measure, which is consistent with the assumption that auditors perceive firms that operate in highly corrupt environments as riskier. Abnormal operating expenses and Jones model discretionary accruals are also significantly correlated with the exposure measure.

In Table 3 we see the summary statistics of audit fees for the years 2004-2008 per level of exposure to corrupt practices in the firm's business environment. We only include the years prior to the passage of the UK BA (after excluding 2009 and 2010) as we are interested in the relationship between audit fees and exposure to corruption prior to the shock and including the post-BA period would contaminate our results. To construct the table, we first divide the sample in four quartiles with quartile 1 containing the firms with the lowest level of exposure and quartile 4 containing the firms with the highest level of exposure. We then compute the mean difference in the audit fees of the current quartile relative to the previous quartile. These univariate results confirm that audit fees increase with the level of corruption in the firm's environment. The only exception is in quartile 2 where audit fees decrease relative to the previous quartile. This however might be because these two adjacent quartiles are very similar.

4.2 Entropy Blancing Method

We want to test whether audit fees have increased as a consequence of the passage of the UK BA for those firms that are liable for bribery under UK jurisdiction. We acknowledge a possible

bias due to the differences in the covariates of the treated and control groups prior to the shock. To address this issue and eliminate the bias, we perform Entropy Balancing to create similar treated and control groups prior to the passage of the law (Hainmueller, 2012; Quinn, 2018). The entropy balancing method is closely related to the Propensity Score Matching (PSM) method. The advantage of entropy balancing over PSM is that it designates weights for the control and treatment groups achieving, not only an identical covariate balance before the treatment, but also similar higher-order moments of the covariate distribution between the treated and control sample (Quinn, 2018). We apply entropy balancing in the years prior to the law enactment, excluding 2009. We thus take the average of the observable characteristics of the years 2007 and 2008 and we assign weights to the treatment and control group in such a way so as to achieve perfect equality with regard to the first, second and possibly higher moments (Hainmueller, 2012).

To implement the entropy balancing method, we identify a set of observable characteristics that could cause changes in the audit fees. Essentially these covariates constitute our control variables in the regressions. We also match on industry and country in an attempt to decrease as much as possible the bias in our results.

Table 4 shows the covariate adjustments of the control variables that affect audit fees before and after the entropy balancing process respectively. Panel A provides descriptive statistics for the pre-adoption period both for the companies that fall under UK jurisdiction and for those that do not. In particular, Panel A shows some notable differences in the observable characteristics of these two groups prior to the UK BA adoption. Panel B presents the results and the differences in the observable characteristics between the two groups after performing the entropy balancing method. The matching method is successful because it creates not only identical means between the two groups, but also almost identical variance. We therefore perform our analysis on the sample created from the entropy balancing method[46].

[46]In the main analysis we present the results after entropy balancing and, in the robustness checks, we present the results after propensity score matching. In Tables IA5 and IA6 of the online appendix, we show the results from the unmatched sample.

4.3 Testing for identification assumptions

An important assumption that is made in our identification strategy is that of parallel trends. This implies that, in the absence of the UK BA, the audit fees of treated firms and non-treated firms should have changed in the same way. The use of firm fixed effects in our analysis enables us to overcome a potential concern regarding any time invariant differences across firms affecting our results. However, possible correlated omitted variables that change around the enforcement of the UK BA could affect differently the treated and control groups biasing our results. In order to tackle the problem, we map out the counterfactual treatment effects over the sample period (Atanasov & Black, 2016; Christensen, Floyd, Liu, & Maffett, 2017). If we observe that in the pre-BA period the change in audit fees is the same between treated and control group, we can assume that the evolution will also be similar in the absence of the event. We use an OLS regression and create interactions between the treated group and one-year period excluding the year 2009 and using the 2010 as our event year. Our benchmark year is a year prior to the enforcement year, which is 2008 (after excluding the contaminated year). Specifically, to assess the validity of the parallel trends assumption, we run the following regression after matching our treated and control group using entropy balancing method :

$$\begin{aligned} Auditfees_{i,t} = \beta_{i,1} Treated \times T_{i,t-3} + \beta_{i,2} Treated \times T_{i,t-2} + ... \\ \beta_{i,6} Treated \times T_{i,t+2} + \beta_{i,7} Controls_{i,t} + \alpha_i + \gamma_{industry,t} + \epsilon_{i,t} \end{aligned} \tag{6}$$

Figure 1[47] shows the counterfactual treatment effects in the pre- and post- BA period of the double interaction (DiD) between treated group and year-periods. We observe that prior to the UK BA, there is no statistically significant difference in changes in the audit fees between the treated and control sample. This implies that the parallel trends assumption holds. The passage of the UK BA though, does not cause any change in the audit fees of the treated group relative to the control group. Notice however that our main assumption requires a triple difference depending on the level of exposure and, therefore, this non-significant result can be attributed

[47] Figure 1 is presented after applying entropy matching method. However, results on the pre- UK BA period are the same even if entropy balancing is not applied.

to firms with high and low exposure environments responding differently to the act.
Therefore, to ensure robustness, we need to test whether the parallel trends assumption holds in the case of the triple difference (DiDiD). We therefore estimate the following regression using triple interactions between the treated group, the year dummies and the exposure indicator. The regression is estimated after applying entropy balancing:

$$\begin{aligned} Auditfees_{i,t} = \beta_{i,1} Exposure_{i,t} + \beta_{i,2} Treated \times Exposure_{i,t} + \beta_{i,3} Treated \times T_{i,t-3} + \\ \beta_{i,4} Treated \times T_{i,t-2} + ... \beta_{i,8} Treated \times T_{i,t+2} + \beta_{i,9} Exposure_{i,t-3} \times T_{i,t-3} + \\ ... \beta_{i,14} Exposure_{i,t+2} \times T_{i,t+2} + \beta_{i,15} Treated \times T_{i,t-3} \times Exposure_{i,t-3} \\ + ... \beta_{i,20} Treated \times T_{i,t+2} \times Exposure_{i,t+2} + \beta_{i,21} Controls_{i,t} + \alpha_i + \gamma_{industry,t} + \epsilon_{i,t} \end{aligned} \tag{7}$$

Figure 2 shows the counterfactual effects for the triple interaction (DiDiD). The counterfactual effects in the three years prior to the BA are insignificant which indicates that there is no significant difference in audit fees' changes between the two groups of firms prior to the BA enforcement. Moreover, any firm-related differences between the high- and low-exposure firms will be eliminated by the inclusion of firm fixed effects in our main regression.

4.4 The Effect of the UK Bribery Act on Audit Fees

In order to test our first and second hypothesis we run regression (1). Table 5 shows the results of the effect of the UK BA on audit fees after performing an initial DiD estimation. After controlling for firm characteristics and adding fixed effects, the UK BA does not cause any change in the audit fees of the affected firms compared to the firms that are not liable under the new law. However, we believe that the overall effect of the UK BA on audit fees depends on the level of exposure to corrupt practices in the business environment of the firms, which requires a DiDiD estimation.
Table 6 presents the results of this DiDiD analysis from equation (2). After accounting for the exposure of each firm, we see a significant negative coefficient in the difference-in-difference coefficient. This confirms our first hypothesis, indicating that the law enforcement was indeed

effective in reducing bribery in the subset of firms that had lower exposure. The decrease is statistically significant and it translates to a 0.35 [(exp(-0.494)/1.73] standard deviations decrease or to an approximate 4 percentage points decrease [(exp(-0.494)/13.64] in audit fees. Therefore, firms subject to the UK BA and operating in low exposure environments pay 4% lower audit fees after the act, as compared to the firms that have low exposure but are not affected by the act.

Auditors, therefore, perceive firms that are now held liable under the act and operate in low exposure environments as less risky and expect them to have a lower probability of being involved in bribing. This causes a reduction of the litigation and reputational risks for the auditor. And, thus, this risk reduction is in turn translated into lower audit fees. Importantly, this happens in spite of the additional cost of the anti-bribery procedures that all firms subject to UK jurisdiction must carry out to comply with the new regulation and the increased penalties that firms face after the law enactment. Hence, in low exposure environments, the expected reduction in bribery and in the litigation/reputational costs auditors face is high enough to offset both higher potential benefits and the higher audit fees auditors should demand for working more hours to conform to the compliance measures.

The results in Table 6 also confirm our second hypothesis because we observe an important increase in audit fees for the firms that are affected by the act and operate in high exposure environments relative to the firms that are not subject to the UK BA and have high exposure. Specifically, there is a 0.6 standard deviations [(exp(-0.494+0.596)/1.73] increase or an approximate 8 percentage points [(exp(-0.494+0.596)/13.64] increase in the audit fees of high exposure firms affected by the UK BA compared to the high exposure unaffected firms. Moreover, the F-test of the difference-in-difference and triple difference variables indicate that the two variables are statistically different. This confirms the idea that "corruption corrupts". In highly corrupt environments paying bribes maybe a necessary cost of doing business and, therefore, even after the passage of the UK BA the subject firms need to engage in bribery to obtain contracts and compete effectively in these countries. For these firms the UK BA represents an increase in the cost of doing business. And, in turn, the auditors of these firms, demand higher audit fees

to compensate for the extra perceived risks they are assuming after the cost of bribery goes up with the passage of the UK BA.

Comparing the results in tables 5 and 6 we now conclude that the decrease (increase) in the average audit fees for the low (high) exposure firms causes an insignificant Treated $\times$ Post coefficient in Table 5. This is because the UK BA affects low and high exposure firms in opposite directions, which offsets the overall effect of the UK BA on audit fees of all firms, regardless of the level of exposure. An alternative explanation could be that auditors exercise an initial year fee discounting and then charge higher audit fees for the firms that operate in high exposure environments. Two reasons allow us to rule out this alternative explanation. First, looking at the mean auditor's tenure for treated and control firms before the UK BA (Table 1, panel B) we observe that, on average, auditor's tenure is five-years for the treated firms and three-years for the control group before the enforcement of the act. Second, in all specifications that include fixed effects, auditor's tenure is statistically insignificant, indicating that audit fees do not change with the auditor's tenure.

Overall, our evidence so far suggests that the UK BA was effective in reducing the level of bribery for the firms that had low exposure (resulting in lower bribe-related activities) as reflected by the drop in audit fess for treated firms operating in low exposure countries, even after taking into account the increase in compliance costs caused by the law. But, concurrently, audit fees went up for treated firms operating in high exposure environments. Since preventing bribery may be more difficult in these environments, we believe the increase in audit fees for these firms is due to an increase in the perceived cost of bribery for the auditors in terms of reputation and/or potential litigation for getting involved with these firms. The auditor charges higher audit fees as a premium for bearing the extra risk. Nevertheless, an alternative explanation for this result would be that the auditor charges higher fees to treated firms operating in high exposure environments because higher risk of bribery in these environments implies higher compliance costs. Alternatively, it is possible that the auditor counteracts actively the increased legal threat by exerting higher effort in auditing these firms and providing higher

quality audit services. Our next tests aim to disentangle these alternative explanations for the increase in audit fees.

4.5 The impact of the UK BA on audit quality

The accounting literature perceives an increase in audit fees as an indication of an enhancement in the audit quality. This may well be our case, since, faced with the higher litigation costs and penalties imposed by the UK BA, auditors may react as proactive gatekeepers, exerting higher effort to reduce bribery at the firm level. If this were the case we should expect to observe changes in the quality of financial reporting, which is considered an indicator of audit quality. We use both abnormal operating expenses and abnormal discretionary accruals as measures of financial reporting quality.

In Table 7 we use abnormal operating expenses derived from equation (3) as the accounting variable that should be more closely related to bribe payments at the firm level. But the first column of Table 7 does not show any change in abnormal operating expenses for firms affected by the UK BA after its enforcement. The result holds after we account for different exposure levels in column (2). There seems to be no change in audit quality. Nevertheless, this result could also be explained with the idea that bribe payments are made "under the table" during a shady transaction, which makes difficult their detection at the aggregate level through accounting information. Another explanation for not finding any significant results here is that our sample consists mostly of large firms. Usually, bribe payments for such large firms are immaterial and are not reflected in the company's accounts under the principle of materiality.

To continue exploring potential changes in audit quality, in Table 7 we use abnormal discretionary accruals as an alternative quality measure. Specifically, we employ the discretionary accruals measures using the Dechow and Dichev (2002) model as it was further modified by Francis et al. (2005) and McNichols (2002), and the modified Jones model (1991), as used by Kothari et al. (2005), calculated using equations (4) and (5) respectively[48]. If the increase in audit fees for the treated firms operating in high exposure environments is due to an increase in audit quality, we should expect to see a corresponding increase in this highly aggregated and

[48]First stage regressions from equations (3), (4), (5) are reported in Table IA4 in the internet Appendix

general measure of earnings quality. Nevertheless, the results of this alternative measure, found in columns (3)-(6) in Table 7, show no change in the value of the discretionary accruals, even after we control for exposure.

All these results lead us to conclude that audit quality did not change after the passage of the law. At first sight, this seems to contradict previous results in the most recent literature on audit quality, such as Ettredge et al. (2014) and Knechel et al. (2019). But we believe our results are not very surprising in the context of bribery, which is very different from the context of securities litigation and financial misstatements which these previous papers are studying. The immaterial nature of many bribe payments for large firms and the need for secrecy make it very difficult for an auditor to act as an effective and active gatekeeper in this field. Therefore, faced with increased costs of bribery after the passage of the UK BA, it seems that the auditors were unable to exercise active monitoring to reduce bribery and simply passed on the increased compliance and litigation risks to their clients in the form of higher audit fees.

4.6 Evidence of litigation and compliance costs across firms and auditors

In our next tests we try to separate the impact of litigation and compliance costs focusing on subsamples of firms that should be differentially affected by different costs.

4.6.1 Differential impact for OECD and FCPA firms In particular we re-run regression (2) first, only for the subsample of firms incorporated in OECD countries, after excluding firms affected by the FCPA (from hereafter FCPA firms), and then for the subsample of FCPA firms. Even before the passage of the UK BA these firms where already subject to anti-bribery regulations considered effective: the OECD Anti-Bribery Convention of 1997 and the US Foreign Corrupt Practices Act (FCPA) of 1977. To the extent that these pre-existing regulations where effective in curbing bribery we expect to see smaller effects for these samples.

In Table 8, in columns (1) and (2) we keep only OECD firms affected by the law in our treated sample and OECD firms not affected by the law in our control sample. We drop all the non-OECD firms and FCPA firms. We still find that, when we restrict the sample to OECD-non-FCPA firms, results are in line with the argument proposing that the UK BA is one of the harsh-

est anti-bribery laws. Interestingly, the overall average treatment effect of the UK BA on both high and low exposure firms on the OECD-non-FCPA is negative when year interacted with industry fixed effects are used. Low exposure firms though bear lower audit fees compared to their counterparts with higher exposure.

We further test whether the UK BA had any effect on FCPA firms[49]. This is interesting because FCPA firms (with/or without UK subsidiary) were already liable under the FCPA, which is considered a very strict and effective anti-bribery legislation. In column (3) of Table 8 we observe that -differently from what happens in our main and OECD samples- for FCPA firms in low exposure environments there is an increase in audit fees after the UK BA. We attributed the drop in audit fees for low exposure firms (for the whole sample and sub-sample of OECD-non-FCPA firms) to the UK BA being effective in curving bribery for these firms. In the case of FCPA firms, it can be hypothesized that, firms already subject to FCPA and operating in low exposure environments were not paying bribes posing, thus, the lowest risks for auditors in this respect. Therefore, for these firms, the only effect of the UK BA would be to increase the cost of compliance, as they face additional compliance requirements after the passage of the UK BA. Thus, the increase in audit fees for these FCPA firms would be evidence of an increase in compliance costs.

Interestingly, the effect of the UK BA for FCPA firms operating in high exposure environments also goes in the opposite direction to what happens for our whole and OECD samples. FCPA firms operating in high exposure environments and having a UK subsidiary experience a drop in audit fees after the passage of the law. These firms are now subject to two strong anti-bribery regulations and subject to double vigilance by both US and UK authorities. The cost of bribery for these firms may have increased up to the point where paying bribes is no longer an option, so they could be perceived as safer for auditors. This comes also in line with the arguments of Sanseverino (2019) who finds evidence that US firms affected by the passage of the UK BA where more likely to drop their subsidiaries in high corruption countries.

[49]Under the FCPA an enforcement is triggered in one of three ways: (i) all US companies, US citizens, any other foreign US listed company that files periodic reports with the SEC or has any transaction going through the US banking system, are liable whilst acting inside or outside of the US territory, (ii) any non-US entity or other person who acted illegally whilst on US territory, (iii) US subsidiaries bribing either inside or outside the US. We thus consider as FCPA firms the US firms or the firms that are SEC registrants

Nevertheless, these additional sub-samples are smaller than our original sample, and when we split the sample into low- and high- exposure groups (Table 9), while the results for the whole sample remain significant, the results for the high exposure group of firms disappear in the sub-sample of OECD-non-FCPA firms and for the sub sample of FCPA firms (columns (5), (6) and (9) in Table 9). However, the result on the low exposure group of firms is statistically and economically significant. The UK BA was effective in reducing bribe-related activities of firms operating in low exposure environments across all sub-samples.

4.6.2 Differential impact for Big-4 auditors An interesting characteristic of our sample is that 80% of our final sample of firms is audited by Big-10 auditors and these auditors seem highly aware of the additional risks and costs imposed by the passage of the UK BA. We looked at the websites of the Big-10 auditors. All of them are making a specific reference to the UK Bribery Act explaining the procedures they will carry out for the client firms to comply with the act. An example is KPMG which states that "The UK Bribery Act (UK Act), which came into effect in 2011, is currently the most rigorous anti-bribery legislation in the world....We can provide a full range of services from proactive compliance through to investigations to help you identify and mitigate the risks".

It is well established in the audit literature that big auditors, and specifically Big-4 auditors, have more reputation risk because they are perceived as larger auditors who offer better quality of audits (DeFond & Zhang, 2014). This leads us to make two hypothesis. First, because of their larger size and higher quality of auditing services, Big-4 audit firms will find it easier to comply with the new requirements imposed by the UK BA than other audit firms. Second, because of their higher reputation and bigger pockets (Dye, 1993) the increased in litigation/reputational risks of the law will be more important for Big-4 auditors.

With these hypotheses in mind, we search for a differential impact of the UK BA for firms audited by Big-4 auditors. If their higher efficiency in providing compliance services dominates we should see a lower increase in audit fees for firms audited by the Big-4. But if the litigation/reputational costs dominate, we expect a larger increase in audit fees for firms audited by the Big-4.

In table 10, we see the separate results for the sample of Big-4 and non-Big-4 auditors (columns (1)-(4)). Big-4 auditors demand higher audit fees (0.636) after the UK BA enforcement for the firms with high exposure, relative to low exposure firms, and as compared to non-Big-4 auditors. For non-Big-4 auditors the result not only is lower (0.415), but it is also statistically non-significant. The result also holds for the sub-sample of OECD-non-FCPA firms when year and firm fixed effects are included[50]. All this evidence indicates that a substantial part of the increase in audit fees after the passage of the UK BA is due to the increased litigation/reputational risks for the auditors[51].

4.7 Differential impact for more complex firms

So far, we have seen that audit fees decrease for subject firms operating in low exposure environments, both for our whole sample and for sub-samples of OECD and FCPA firms. This suggests that the increase in compliance cost and anti-bribery procedures after the passage of the UK BA has not been very high. However, the UK Bribery act suggests that the anti-bribery procedures should be proportionate to the business risk, complexity and nature of the organization's activities. This implies that firms operating in high exposure environments would face both higher litigation and higher compliance costs after the passage of the law.

To disentangle compliance costs and litigation risk, we search for a measure that will be directly related to the size of compliance costs irrespective of the exposure of the firm. We hypothesize that, other things equal, more complex firms should face higher compliance costs, and we measure compliance cost by the number of subsidiaries. There are two reasons why this variable can help us to evaluate the differential impact of compliance cost on the overall increase in audit firms. First the number of subsidiaries a firm has is positively related to the compliance costs. That is, the more subsidiaries a firm has, the more the anti-bribery procedures a firm must undertake regardless of the fact that there are economies of scale. Second, for a given level of

[50] We cannot perform the analysis for the sub-sample of FCPA firms due to the low number of observations.

[51] Interestingly, it is remarkable to find that Big-4 auditors expect higher litigation/reputational costs because the evidence provided by McLennan and In-Uck Park (2016) suggest an endogeneity effect, with higher quality firms developing a strong preference for hiring auditors with a greater reputation for honesty. Notice this effect reduces the possibility of finding any effect of the anti-bribery regulation on the audit fees charged by the highly reputed Big-4 auditors, since they should be paired with higher quality firms, less likely to engage in bribery.

exposure, the number of subsidiaries is unlikely to be related to litigation risk. If the increase in audit fees for the countries operating in highly corrupted environments is solely (or mainly) related to the increase in compliance costs, then we should expect firms that have a higher number of subsidiaries to pay higher audit fees compared to the ones that have a lower number of subsidiaries.

To conduct this additional analysis on the number of subsidiaries we split the sample between firms with a high and a low number of subsidiaries using the median value. Firms that have a number of subsidiaries that is above the sample median are considered as "high number of subsidiaries" firms and the rest are the "low number of subsidiaries" firms. When we compare the results for the two sub samples in Table 11 we see that high exposure firms pay more audit fees relative to low exposure firms when the number of subsidiaries is low. Further, the total effect of high exposed firms that have a low (high) number of subsidiaries is positive (negative), indicating that, at least for firms with high exposure, the increase in audit fees is not driven mainly by the increase in compliance costs. This holds for the whole sample and also for the OECD non-FCPA firms[52]. This provides robust evidence that the increase in audit fees for the high exposure firms is mainly because of the high litigation/reputation risk perceived by the auditor. The compliance costs imposed on the auditor by the UK BA are unlikely to be the main determinant of the increase the audit fees. All results hold even after we use industry interacted with year fixed effects in untabulated analysis.

5 Robustness Checks

In this section we discuss the results of the sensitivity analysis tests that we run to confirm the robustness of our results and the causal effect, ruling out alternative explanations.

5.1 Exposure using different indicators

Taking into account the possibility of measurement errors or biases in our country level measurement for exposure to corrupt practices, we re-calculate our Exposure measure using alter-

[52]For the sub-sample of FCPA firms we cannot make the comparison due to the low number of observations for firms with a low number of subsidiaries.

natively the Bribe Payers Index (BPI) and the World Governance Indicators(WGI).
The BPI, taken from Transparency International, measures the likelihood of a company paying bribes at country level. This measure is directly correlated with the bribery level of each country. The most recent indexes are published for the years 2008 and 2011. For this reason, we use the BPI of 2008 (2011) to construct the exposure measure for the years prior (after) the UK BA. The exposure measure using BPI is constructed in the same way as our main measure of exposure where we used the CPI. It takes values from 0 to 10 with 0 (10) being a country whose business' sector is most (less) likely to bribe. The results presented in Table 12 remain the same for all the three samples of firms in our study.

The WGI, taken from the World Bank, assigns a number to each country every year based on aggregate and individual governance indicators. The indicators are variables that measure the quality of the country's institutions in protecting individual freedom such as voice and accountability, political stability and absence of violence, government effectiveness, regulatory quality, rule of law and control of corruption. Therefore, we expect this aggregate measure to be highly correlated with the level of bribery of each country. Results for this indicator are presented in Table 13. The main results regarding the diff-in-diff variable and the triple interaction remain the same for the whole sample, the OECD-non-FCPA countries and the sample of FCPA firms[53].

5.2 Alternative matching procedure

We have already discussed the importance of using a matching procedure to ensure the covariate balance between the treated and control group prior to the introduction of the UK BA, which is an important requisite for our identification method. In our main results we dealt with this problem using entropy balancing. Here, as an alternative, we use a propensity score matching (PSM) procedure to match the observable characteristics prior to the treatment. We use the caliper method at 0.01, no replacement, and we require each treated observation to be

[53]In the robustness checks in this section, due to lack of observations, we cannot use industry interacted with year fixed effects for the FCPA firms sample.

matched to the closest neighbor control observation. We match the variables that relate to audit fees (controls) between the treated and control group prior to the law enforcement (2007 and 2008). We also match on industry, year and country.

Figure 3 displays the results from the PSM. The standardized bias of the covariates across the treatment and control group are close or equal to zero, which indicates that our PSM has been successful. Table 14 shows the re-estimation of the main results using PSM. After the passage of the act, firms under UK jurisdiction with low exposure environments experience a drop in audit fees compared to their counterparts, which goes in line with the idea that, to some extent, the law has been effective in reducing bribery. Interestingly this result applies to the sub-sample of OECD non-FCPA firms but not to the whole sample. However, our main result remains the same: affected firms that operate in high exposure environments pay higher audit fees after the passage of the UK BA.

5.3 Placebo Tests to the Law

In order to confirm that the cause of our results is the passage of the law and not some random effect or some specific characteristics of our sample, we perform placebo regressions. In particular, we run regressions assigning randomly the law to different countries and firms and we estimate equation (2) 2,000 times. The results of these estimations should be insignificant. Therefore, we should observe a distribution of the coefficients derived from the placebo regressions centered around zero. Moreover, the main coefficient of our results (DiD and DiDiD on audit fees) should be situated on the tail of the distribution. The placebo regressions are executed without applying any matching method. In Figure 4 we can see the histogram of the placebo estimates of the β_2 coefficient in equation (2). In Figure 4, the DiD placebo estimates have a mean of 0.0014, a standard deviation of 0.195 and a minimum and maximum value of -0.65 and 0.74 respectively. Since we perform the placebo regression on the unmatched sample analysis, we take the coefficient of the DiD variable from table IA2. The coefficient of the DiD variable is -0.585 (Table IA2 column (3)). As we can see, it is situated on the left tail of the distribution.

In Figure 5, we see the histogram of the placebo estimates of the β_5 coefficient in equation (2).

The main DiDiD placebo estimates have a mean of 0.0008, a standard deviation of 0.20 and a minimum and maximum value of -0.73 and 1.08 respectively. Our main coefficient of the DiDiD is 0.603 (table IA2 column (3)). It is situated on the right tail of the placebo distribution. This indicates that the results on both the DiD and DiDiD coefficients are not derived by pure randomness or affected by the differences between the two samples.

5.4 Alternative Earnings Quality Measures

To further corroborate that the change in audit fees after the UK BA is not due to a change in audit quality, we measure audit quality indirectly using alternative earnings quality measures, other than discretionary accruals. Specifically, following Leuz , Nanda, and Wysocki (2003)[54], we proxy earnings quality using measures that capture the actual reporting practices of a firm. This alleviates the concern that managers can exert discretion over accounting rules to distort reporting. Specifically, we use the following measures:

Smoothing reported operating earnings using accruals. The first measure, identifies the degree of earnings smoothing using accruals. It is measured as the standard deviation of the firm's operating earnings divided by the standard deviation of the firm's cash flow from operations. We then take the median value of this ratio at the industry and year level and assign each firm to its respective median value according to the industry it operates in and the year. The lower the ratio, the more the smoothing activities performed by insiders. Cash flows from operations are derived by substracting the accruals from the reported earnings[55]. We then use the following equation to calculate accruals.

$$Accruals_{i,t} = (\Delta CA_{i,1} - \Delta Cash_{i,1}) - (\Delta CL_{i,1} - \Delta STD_{i,1} - \Delta TP_{i,1}) - Depr_{i,1} \tag{8}$$

where $\Delta CA_{i,1}$ is the change in current assets, $\Delta Cash_{i,1}$ the change in cash and equivalents, $\Delta CL_{i,1}$ the change in current liabilities, $\Delta STD_{i,1}$ the change in short term debt, $\Delta TP_{i,1}$ the change

[54]Leuz et al. (2003) employ these four different measures of earnings management at country-level. However, due to the fact that our analysis is at firm level, we construct the earnings management measures at industry and year level to make them more comparable to the accruals measures of Dechow and Dichev (2002) and of the modified Jones model (1991).

[55]Leuz et al. (2003) computed cash flows indirectly because of unavailability of information on the cash flows for many countries. In an untabulated analysis, we recalculate the first measure of earnings smoothing using the direct measure of cash flows derived by the Osiris database. The results remain the same.

in income payable, $Depr_{i,1}$ the depreciation and amortization[56].

Correlation between accruals and CFO. The second measure for earnings smoothing is estimated as the contemporaneous correlation between the change in accruals and the change in operating cash flow for each industry and year. This correlation is calculated over the pooled set of firms for every industry and year. The lager the correlation, the higher the indication of earnings smoothing. In this case, the accruals are measured as in equation (8).

The magnitude of accruals. The third measure is the absolute value of the firm's accruals scaled by the absolute value of the firm's operating cash flows. We then take the median value of this measurement for every industry and year level.

Small loss avoidance. It is measured as the ratio of small profits to small losses at industry and year level, scaling it by total assets. "Small losses" is an indicator variable that takes the value of one if the firm's losses are in between the -0.01 and 0.00 range and zero otherwise. Similarly, "Small profits" is an indicator variable that takes the value of one if the firm has a profit in the range of 0.00 and 0.01 and zero otherwise. We demand at least five observations of small losses for the industry-year group to be included in the calculation.

Aggregate measure. The final measure of earnings management is the aggregate measure of the four previous measures. To obtain this aggregate measure we rank each of the four previously mentioned measures per industry and year, so that higher values of the aggregate measure indicate a higher level of earnings management. We then obtain a mean average of the four.

Table 15 shows the results, which remain the same as the ones obtained from the absolute value of discretionary accruals using the Dechow and Dichev model (2002) and the modified Jones model (1991). The statistically insignificant DiD and DiDiD coefficients in all cases indicate that the earnings quality of the high and low exposure firms remains unchanged as a result of the UK BA passage.

5.5 Alternative Sample Periods

In our primary analysis, we use a two year period pre- and post- UK BA. Specifically, we use 2007 and 2008 as the pre-period and 2011 and 2012 as the post period. In this analysis, we check

[56]Following Leuz et al. (2003) we assign a value of zero if the firm does not have reported taxes or short-term debt.

whether the UK BA caused a longer lasting effect on audit fees. We also want to ensure that our results are not sensitive to the sample period. For that, we perform the analysis for the three-year period pre- and post- UK BA and the four-year period pre- and post the law enforcement. The three-year (four-year) pre-UK BA period covers years 2006-2008 (2005-2008) and the post-UK BA covers years 2011-2013 (2011-2014). Table 16 shows the results. The main results remain robust for the whole sample of firms and for the OECD firms for the three-year pre-and post-UK BA. And, even though weakened, the results are maintained for the four-year pre- and post-BA period. In an untabulated analysis, the effect is strongly significant in the four-year period after entropy balancing of the data.

6 Conclusion

Bribery represents "power abuse" and "moral decay" (Peiffer & Rose, 2018), and it implies "individuals entrusted with authority making decisions on behalf of an organization misusing their position for personal gain" (World Bank study, 2014). Because of its important economic implications, bribery is a topic of great interest both for academics and regulators, and has spurred supranational efforts to reduce it, such as the OECD's Convention on Combating Bribery of Foreign Public Officials in International Business Transactions. Nevertheless, because of its illegal nature and the need for secrecy this implies, it is very difficult to gather wide evidence of bribery.

In this paper we use the need for secrecy as an opportunity, and employ audit fees as a measure of the costs of hiding bribery at firm level. We use a triple difference design, exploiting the enactment of the UK Bribery Act in 2010 as a shock to the costs of engaging in bribery activities for firms under UK jurisdiction, which in this case includes both UK firms and firms with a UK subsidiary (treated firms). We argue that the passage of the act causes a change in the auditing procedures, litigation and/or reputation costs of the firms affected by the act relative to other firms. Our results indicate that, when operating in low corruption exposure environments, firms affected by the UK BA experience a decrease in audit fees relative to non-affected firms. However, we also find that for firms with a high exposure to corrupt practices in their

business environments, the opposite is true, and affected firms suffer an important increase in audit fees relative to firms not affected by the new law, confirming that the costs imposed by bribery are reflected in the audit fees that firms have to pay to their gatekeepers.

We run different tests to tease out the different potential reasons that can explain this causal relationship between the passage of the law and the increase in audit fees. We are unable to find any evidence of changes in the quality of financial reporting, suggesting that it is difficult for auditors to reduce bribery at firm level through their monitoring processes. Moreover, our results indicate that the big increase in audit fees cannot be justified as a simple reflection of higher compliance costs. Our tests identify the increase in litigation/reputational costs for the auditor as the main determinant for the increase in audit fees. For firms operating in high corruption and bribery risk environments, bribes seem to be a necessary cost of doing business. When the passage of the UK BA increases this cost for the affected firms, their auditors perceive higher litigation risks from engaging with these firms and demand a premium for bearing it.

Therefore, our research design allows us to contribute to the literature on audit fees by showing a causal relationship between an increase in the litigation/reputational costs perceived by the auditor and an increase in the audit fees for the client firms. This result, unfortunately, is not surprising, but it highlights the widespread occurrence and importance of a first order social and economic problem that we find easier to ignore when we cannot measure it.

Moreover, our research design has some limitations. First, we only use companies that do not change their country of incorporation or its subsidiaries after the enactment of the UK BA, which are probably the less affected by the act. Moreover, audit firms will react more when the auditor expects more stringent enforcement, which is less likely in high risk countries, reducing the probability that our methodology captures the effect. Additionally, our sample is biased towards large firms incorporated in developed countries, which probably had better anti-bribery procedures and more control mechanisms both before and after the enactment of the UK BA. All of this implies that we are very likely to underestimate both the costs of bribery for the auditor and the impact of the UK BA. Nevertheless, even as an underestimation of the extend of bribery across firms, our results indicate that bribery is an important problem even for firms

operating in environments where the need for bribery is perceived as low. Finally, on a more positive note, the evidence in the paper also shows that regulatory attempts to reduce bribery can have a significant impact.

Appendix A: Variables Definitions

Variables	Definition	Data source
Dependent Variables:		
Log (Audit Fees)	It is the natural logarithm of audit fees.	Worldscope
ABS(DA) DD	The absolute value of discretionary accruals calculated using the Dechow and Dichev (2002) model modified further by McNichols (2002) and Francis et al. (2005).	Osiris
ABS(DA) Jones	The absolute value of discretionary accruals calculated using the modified Jones model (1991) as modified by Kothari et al. (2005).	Osiris
Abnormal OPEX	The actual operating expenses minus the normal operating expenses following Dechow et al. (1998) as it was further modified by Roychowdhury (2006).	Osiris
Exposure Measures:		
Main measure: CPI	Measure of Exposure using the Corruption Perception Index following Zeume (2017) and as it is indicated in the paper.	Orbis, Osiris, Transparency International (TI)
BPI	Measure of Exposure using the Bribery Perception Index. Calculated as the main measure of exposure substituting the BPI index instead of the CPI index and as it is indicated in the paper.	Orbis, Osiris, Transparency International (TI)

WGI	Measure of Exposure using the World Governance Indicators. Calculated as the main measure of exposure substituting the WGI instead of the CPI index and as it is indicated in the paper.	Orbis, Osiris, World Bank
Treated	Dummy variable that takes the value of one if the company is either UK-incorporated or has at least one UK subsidiary prior to the UK Bribery Act, 2010, (i.e. in 2007) and continues having the subsidiaries up until 2013, and zero otherwise.	Orbis, Osiris
Post	Dummy variable that takes the value of one if the firm-year observation is in 2011 or 2012, and zero otherwise.	Osiris
Firm Controls:		
Leverage	Total debt divided by total equity.	Osiris
Loss	Dummy variable that takes the value of one if the company had a net Loss in the particular year, and zero otherwise.	Osiris
Asset Growth	The year change of total assets.	Osiris
ROA	Net profit divided by total assets.	Osiris
Size	The natural logarithm of total assets.	Osiris
Tenure	Difference between the date an auditor was appointed in the company and the date the auditor was dismissed.	Osiris
BIG4	Dummy variable that takes the value of one if the company is audited by a Big-4 auditing company in the particular year, and zero otherwise.	Osiris

BM	Book Value of equity divided by the equity value of equity.	Osiris
Inventory Receivables	Accounts Receivables plus Inventory divided by total assets. This variable is used only in the regressions where the Log (Audit Fees) is the dependent variable.	Osiris
Quick	Total current assets minus inventory, divided by total current liabilities. This variable is used only in the regressions where the Log (Audit Fees) is the dependent variable.	Osiris
ROI	Earnings Before Interest and Taxes divided by previous year's total asets. This variable is used only in the regressions where the Log (Audit Fees) is the dependent variable.	Osiris
CFO	Cash Flow from Operations divided by the previous year's total assets. This variable is used only in the regressions where the Abnormal OPEX and Accruals measures are the dependent variable.	Osiris
Revenue Growth	The year change of total revenues. This variable is used only in the regressions where the Abnormal OPEX and Accruals measures are the dependent variable.	Osiris

Appendix B: Cases Prosecuted Under UK Bribery Act, 2010

Airbus: In January, 2020 the giant manufacturer of airplanes is fined a record £820 million for UK Bribery Act charges after admitting of bribing agents across 20 countries to achieve high-value contracts. The penalties account for almost 60% of its average net income in the last three years prior to the sanction. This has been the result of an eight-year investigation started by a British whistleblower. Airbus is a Netherlands registered company, with headquarters in France whilst having UK subsidiaries. The bribe took place outside UK (specifically in Asia) but the company was prosecuted under section 7 of the UK Bribery act, which creates an offence if organisations fail to prevent bribery. The company entered into a deferred prosecution agreement (DPA) according to which the company agreed to pay the penalties and any prosecution for the corporation will be suspended for three years.

Skansen Interiors Ltd: In March, 2018, Skansen Interiors was found guilty of violating section 7 of the UK BA. The Skansen Interiors Ltd self reported a bribery made by two of its employees. The company argued that it had all anti-corruption procedures in place but the court ruled that it had not been the case. The former managing director was sentenced to 12 months of imprisonment and disqualified from its profession for six years. The person who received the bribe was impisoned for 20 months and paid an additional £10,697 as penalties.

Rolls Royce: On January, 17th 2017 Rolls Royce was found guilty under the UK Bribery Act 2010, section 17(1) violation. For many years, Rolls Royce was using intermediaries in Malaysia, Indonesia, India, Russia and China to obtain engine and technology supply-related contracts. The company was penalised with the highest enforcement action for criminal conduct in the UK. In total, they were charged with £497 million, disgorgement of profit of around £260 million, a financial penalty of £239 million and Serious Fraud Office (SFO) costs of 13 million to settle charges with the UK BA. The average net loss of Rolls Royce for the years 2015-2017 is around 1 billion. The fine includes a 50% discount due to cooperation of Rolls Royce during

investigation.

XYZ company: The company cannot be named due to ongoing investigations. They agreed to pay over £6 million in deferred prosecution agreement (DPA) costs and disgorgement of profit, plus a financial penalty of £352,000 relating to offences between 2004 and 2012. However, the costs have not been pursued yet because of inability of the company to pay them.

Braid Group: On the 5th April, 2016, Braid group was found guilty of failing to comply with the provisions of section 7 of the UK Bribery Act. Under section 7, companies can be deemed as not guilty in the court if they can prove that they have established all adequate procedures necessary to prevent bribery. In the case of Braid group, an employee incurred unauthorized expenses under the travelling, holidays, gifts and hotels items for a client as a form of bribing him. To cover the bribing, the employee used to deflate the invoices given by the same client. The company was penalized with £2.2 million for failing to comply with section 7.

Sweett Group: On February, 19th, 2016, Sweet Group failed to comply with section 7 of the UK BA. A subsidiary of the company was making illegal payments to secure construction contracts. The costs of the prosecution reached £1.4m plus £800.000 in confiscation plus £95.000 in costs. The penalties account for around 9% of its average net income in 2015 and 2014.

Standard Bank plc (now known as ICBC Standard Bank plc): The Chinese Bank, The Standard Bank plc, was found guilty on the 30th of November, 2015, after making corrupt payments to secure contracts in Tanzania. The company failed to defend itself in the court as not adequate anti-corruption procedures were put in place (violation of section 7 of the act). The charges included a penalty of around $16.8 million to the UK SFO, disgorgement of profit on transaction of $8.4 million, compensation to the government of Tanzania of $6m plus interest in $1 million and costs of £330,000. The Standard Bank plc had a net loss in 2014 of $ 344.6 million.

Brand-Rex Limited: The company self-reported itself after it discovered it had some beneficial results from an illegal transaction by a third party. It was the first case convicted for failure to comply with section 7 of the UK BA. The penalty was 212.000 pounds.

International Tubular Services Ltd: The oil and gas company was found guilty on December, 15th 2014 after conducting illegal payments to secure contracts in Kazakhstan. The unlawful transaction came into light after the companys self-reporting. The company reported that an employee based in Kazakhstan was making all the illegal payments. The penalty was £172,000; which represents the profit the company made from securing these contracts.

Gary West, Stuart Stone, James Whale (Sustainable Growth Group/Sustainable AgroEnergy): It was the first conviction by the SFO under the BA. The three individuals were misleading investors, who were investing in jatropha oil investment, to make them believe that they had jatropha tree plantations in Cambodia. The green biofuel products were sold to UK investors primarily via self-invested pension plans (SIPPs). These individuals were deliberately misled into believing that Sustainable AgroEnergy owned land in Cambodia, that the land was planted with Jatropha trees, and that there was an insurance policy in place to protect investors if the crops failed. Mr West was sentenced to 13 years of imprisonment (4 years for bribery, concurrently); disqualified from acting as a director for 15 years. Mr Stone was sentenced to 6 years imprisonment (6 years for bribery, concurrently); disqualified from acting as a director for 10 years and Mr Whale was sentenced to 9 years' imprisonment; disqualified from acting as a director for 15 years.

Besso Limited: Failure to take additional procedures to prevent bribery under section 7 and was with a penalty of £315,000 from the Financial Conduct Authority (FCA).

Yang Li: A student at the University of Bath named Yang Li was found guilty under section 1 of the Bribery Act after offering his tutor £5,000 in order to give him a pass grade for

his dissertation. Mr Li was also in possession of a fake fire arm with him. He was eventually sentenced in April, 2013 to 12 months of imprisonment and he was charged with £4,880 in costs.

Mawia Mushtaq: Mawia Mushtaq, was found guilty in December, 2012, after violating section 1 of the Bribery Act in an attempt to offer bribes to a licensing officer of Oldham. Mr Mushtag, offered £200 or £300 in order to receive a "pass" on a taxi driving test that he previously failed. He served two months in prison (suspended for 12 months) and a two-month curfew from 6pm to 6am. (Greater Manchester Police and CPS)

Munir Patel: A court clerk, Munir Patel, was found guilty under section 2 of the UK BA after receiving bribes of £500 to affect the trial of a motoring offence. After conducting the investigation, it was found that he accepted bribes over 50 times in the past. He was charged in August, 2011 with 6 years of imprisonment for misconduct (later reduced to 4 years after a court Appeal in May 2012) and with 3 years of imprisonment for bribery.

Appendix C: Main differences between the UK BA and the US FCPA[57]

- The FCPA prohibits the payment of bribes to foreign public officials, whereas the UK BA makes an offence the act of bribing not only foreign public officials, but also any other private businessperson (commercial bribery).
- The FCPA considers a liability the offering of a bribe whereas the UK BA prohibits not only the offering, but also the acceptance of bribing.
- The FCPA considers a US company, or a company acting within the US, liable if it fails to maintain "books and records" and "internal controls" provisions. The UK BA creates a strict corporate liability if an organization, either incorporated in the UK or not (in case it has a UK subsidiary), has not implemented all the necessary anti-bribery procedures, programs and internal controls to prevent the bribe from happening. The very same offence is subject to be used as a defence if the firm can prove that it had implemented all adequate procedures for preventing the bribery, in case of prosecution.
- The FCPA allows a special form of facilitation payments, whereas the UK BA prohibits all kinds of facilitation payments.
- The penalties for bribing under the FCPA are up to $250.000 and five years of imprisonment for individuals and a maximum of $2 million fines for entities. The UK BA imposes unlimited fines for both entities and individuals. Individuals can also face prosecution of up to ten years of imprisonment.
- Under FCPA, the bribery is prosecuted if it is made with the intention to obtain or retain business, whereas the UK BA considers an offence any act of bribery regardless of the intention.
- Under the FCPA an enforcement is triggered in one of three ways: (i) all US companies, US citizens, any other foreign company that files periodic reports with the SEC or has any trans-

[57] More detailed information on the differences between the two legislations can be found in the following links of the FCPA compliance report and of the ministry of justice in the UK: http://fcpacompliancereport.com/2011/03/what-are-the-differences-in-the-fcpa-and-bribery-act/, http://www.justice.gov.uk/downloads/legislation/bribery-act-2010-guidance.pdf. It can also be found in the following website of the international law firm White Case LLP based in the US: https://www.whitecase.com

action going through the US banking system, are liable whilst acting inside or outside of the US territory; (ii) any non-US entity or person who acted illegally whilst on US territory; (iii) US subsidiaries bribing outside the US are also within the FCPA's reach. However, under the UK BA, all UK entities, UK citizens as well as any other non-UK company that is associated with the UK[58] are liable under UK jurisdiction regardless of the place where the bribe took place[59].

[58] Association with the UK can be established if the briber is the organization's agent, employee or a subsidiary. Hence, any non-UK company that performs business or part of a business in the UK through a UK subsidiary, is associated with the UK and is thus liable under the UK jurisdiction. This applies even if the bribery took place outside the UK by the non-UK company.

[59] Airbus, a registrant in Netherlands with its operational headquarters in France was found guilty under the UK Bribery Act on January, 2020. The company admitted offering bribes across 20 different countries (all outside the UK) but still the judge indicated that the entity is subject to prosecution due to the existence of two UK subsidiaries. The judgement made no reference neither to the bribery being associated to the UK subsidiaries nor to the turnover of the Group derived by the UK subsidiaries. This is a strong example as to the extraterritorial reach of section 7 of the UK BA.

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Fig. 1: Difference in trends in Audit Fees Pre- and Post-Regulation - All Sample

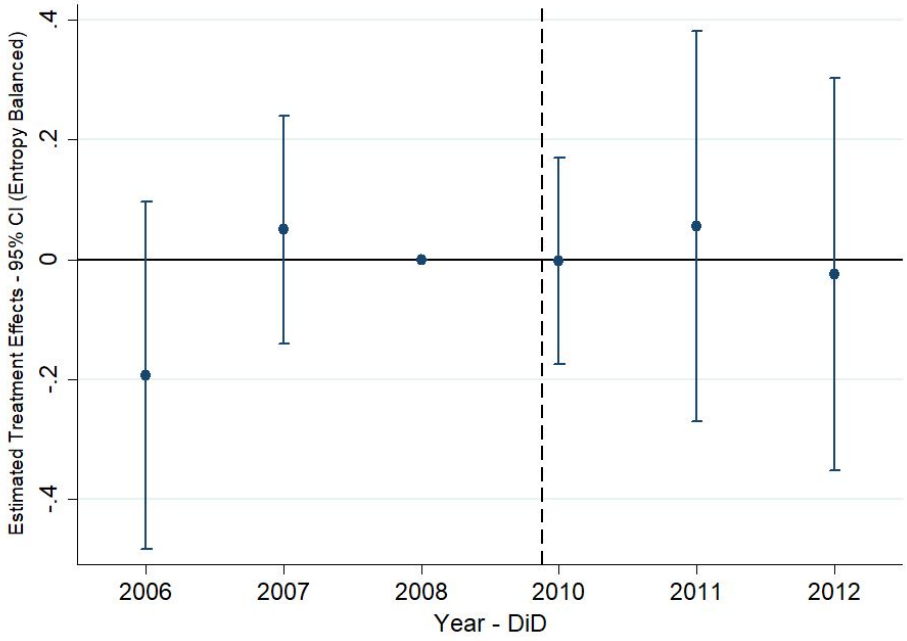

Figure 1 displays the difference in the evolution of the audit fees between the firms affected by the act (treated) and the firms not affected by it (control) in the pre- and post-UK BA period at a 95% confidence interval. We estimate Audit fees as the natural logarithm of audit fees. Treated (Control) firms are indicated by one (zero). We set the year prior to the UK BA enforcement (2008) as the base year, after deleting 2009 because it is considered of high uncertainty. The event year is set to be 2010 and we run the following regression after applying entropy balancing:

$$\text{Audit Fees}_{i,t} = \beta_{i,1} Treated \times T_{i,t-3} + \beta_{i,2} Treated \times T_{i,t-2} + ... \beta_{i,6} Treated \times T_{i,t+2} + \beta_{i,7} Controls_{i,t} + \alpha_i + \gamma_{industry,t} + \epsilon_{i,t}$$

Where $T_{i,t-n}$ equals one for firms nth year before the UK BA (i.e. before 2010) and $T_{i,t+n}$ equals one for firms nth year after the UK BA (i.e. after 2010), $Controls_{i,t}$ are firm control characteristics, α_i are firm fixed effects and γ_t year interacted with industry fixed effects. The variable "Treated" is an indicator variable that takes the value of one if the firm is a UK incorporated firm or the firm has a UK subsidiary and zero otherwise.

Fig. 2: Difference in trends in Audit Fees Pre- and Post-Regulation for high and low level of exposure groups - All Sample

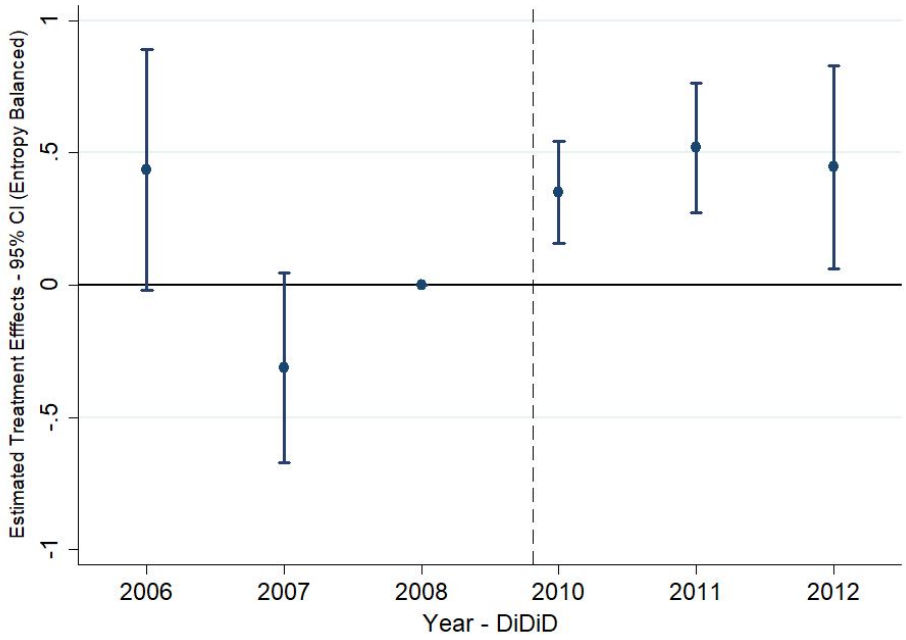

Figure 2 plots the differences in audit fees of high corruption exposure firms treated vs control group as compared to low corruption exposure firms treated vs control group in the pre- and post-UK BA period at 95% confidence interval. We estimate Audit fees as the natural logarithm of audit fees. Treated (Control) firms are indicated by one (zero). We set the year prior to the UK BA enforcement (2008) as the base year, after deleting 2009 because it is considered of high uncertainty. The event year is set to be 2010 and we run the following regression after applying entropy balancing:

$$\text{Audit fees}_{i,t} = \beta_{i,1}Exposure_{i,t} + \beta_{i,2}Treated \times Exposure_{i,t} + \beta_{i,3}Treated \times T_{i,t-3} + \beta_{i,4}Treated \times T_{i,t-2} + ...\beta_{i,8}Treated \times T_{i,t+2} + \beta_{i,9}Exposure_{i,t-3} \times T_{i,t-3} + ...\beta_{i,14}Exposure_{i,t+2} \times T_{i,t+2} + \beta_{i,15}Treated \times T_{i,t-3} \times Exposure_{i,t-3} + ...\beta_{i,20}Treated \times T_{i,t+2} \times Exposure_{i,t+2} + \beta_{i,21}Controls_{i,t} + \alpha_i + \gamma_{industry,t} + \epsilon_{i,t}$$

Where $T_{i,t-n}$ equals one for firms nth year before the UK BA (i.e. before 2010) and $T_{i,t+n}$ equals one for firms nth year after the UK BA (i.e. after 2010), $Controls_{i,t}$ are firm control characteristics, α_i are firm fixed effects and γ_t year interacted with industry fixed effects. $Exposure_{i,t}$ is an indicator variable set to one if the exposure to corrupt activities of the firm is equal or above the median and zero otherwise. The variable "Treated" is an indicator variable that takes the value of one if the firm is a UK incorporated firm or if the firm has a UK subsidiary and zero otherwise. The coefficient plot is constructed taking into account only the triple interactions in the regression.

Fig. 3: Sample Matching after Propensity Score Matching

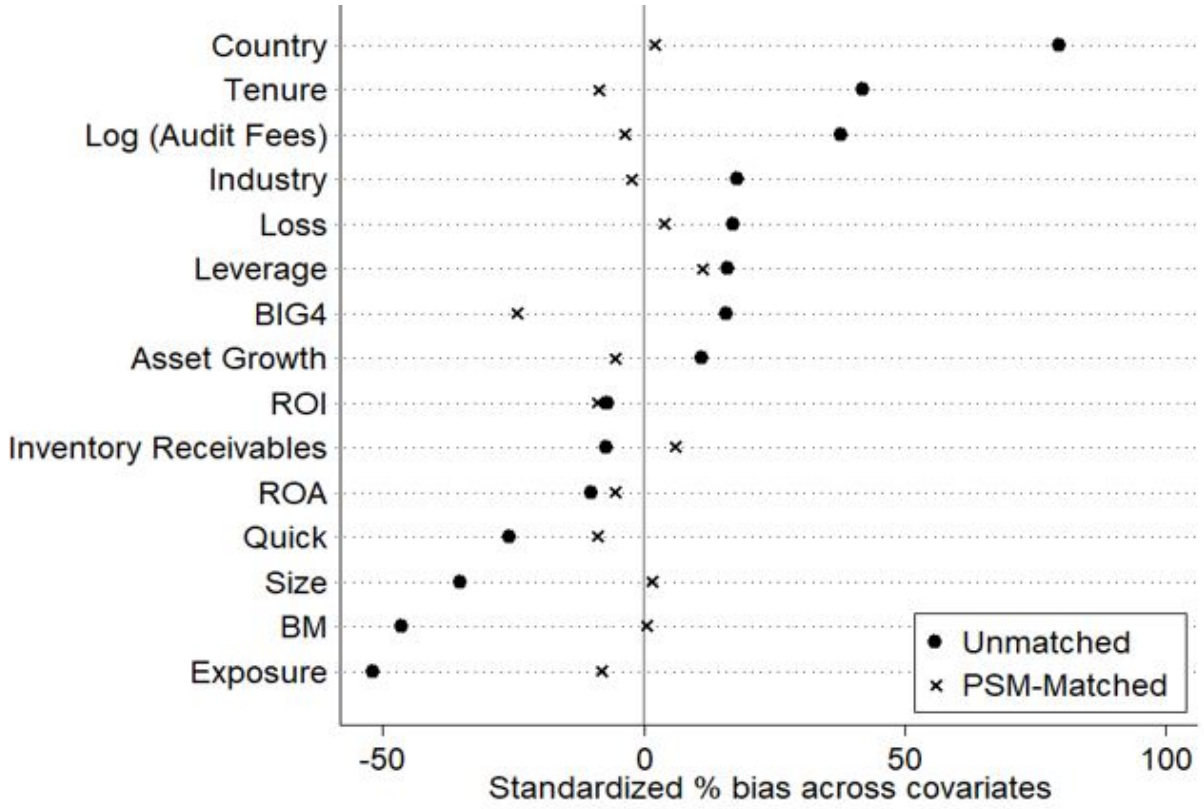

Figure 3 displays the effectiveness of the propensity score matching in the two year pre-BA period (2007 and 2008) based on all the firm control variables that could relate to audit fees and audit fees itself. Audit fees is calculated as the natural logarithm of audit fees. We match based on all the control variables as well the country and industry the firm operates in. We use the caliper method at 0.01, no replacement and we require each observation of the firms affected by the act (treated) to be matched to the closest neighbour among the firms not affected by the act (control). The variable "Treated" is an indicator variable that takes the value of one if the firm is UK incorporated or if the firm has a UK subsidiary and zero otherwise. The standardized bias between treated and control groups is close to zero achieving a similarity between the two groups before the passage of the UK BA in 2010.

Fig. 4: Placebo Estimates of the DiD

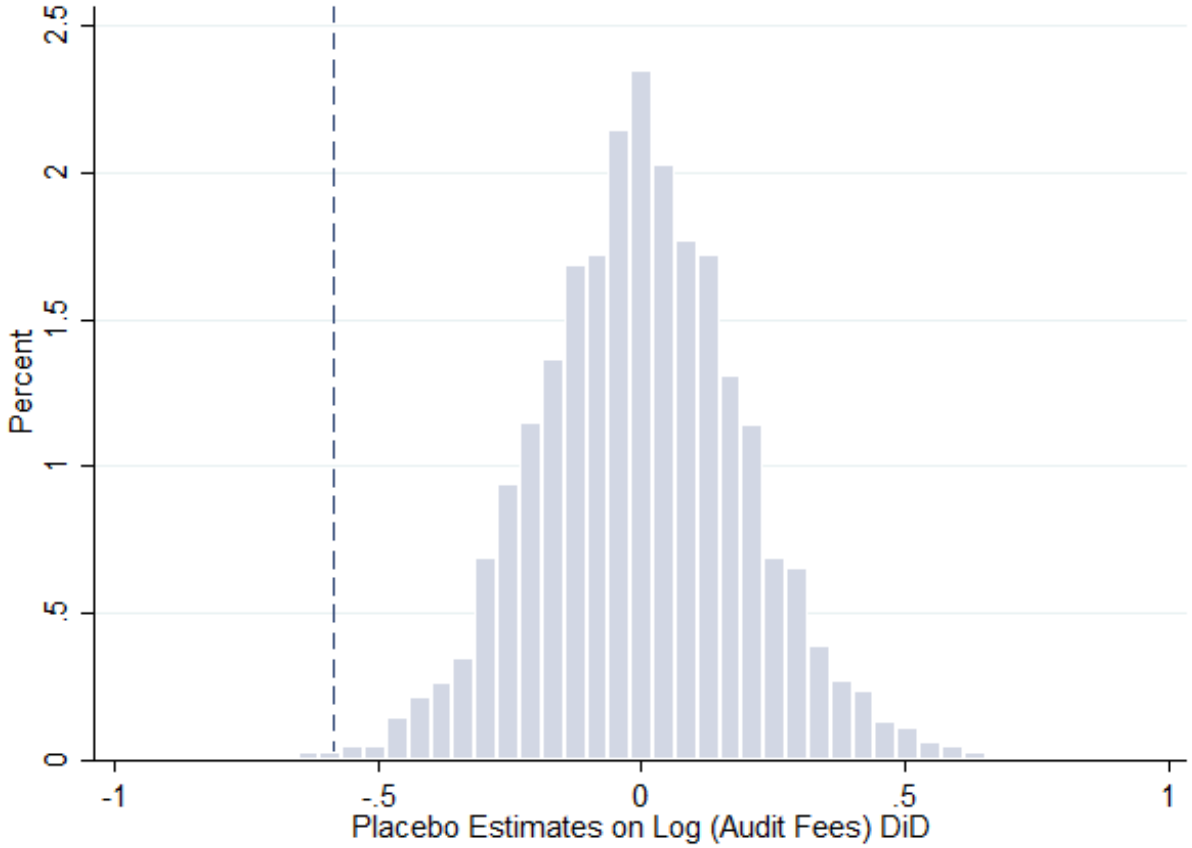

Figure 4 displays the histogram on coefficients of the placebo regressions of the difference-in-difference (Treated × Post) variable. The coefficients are derived after estimating equation (5) 2000 times assigning the law to different firms and years. The histogram displays the placebo estimates on the Treated X Post coefficient. The dash line indicates the actual coefficient of Treated × Post (-0.585) variable obtained in table IA6 column (3).

Fig. 5: Placebo Estimates of the DiDiD

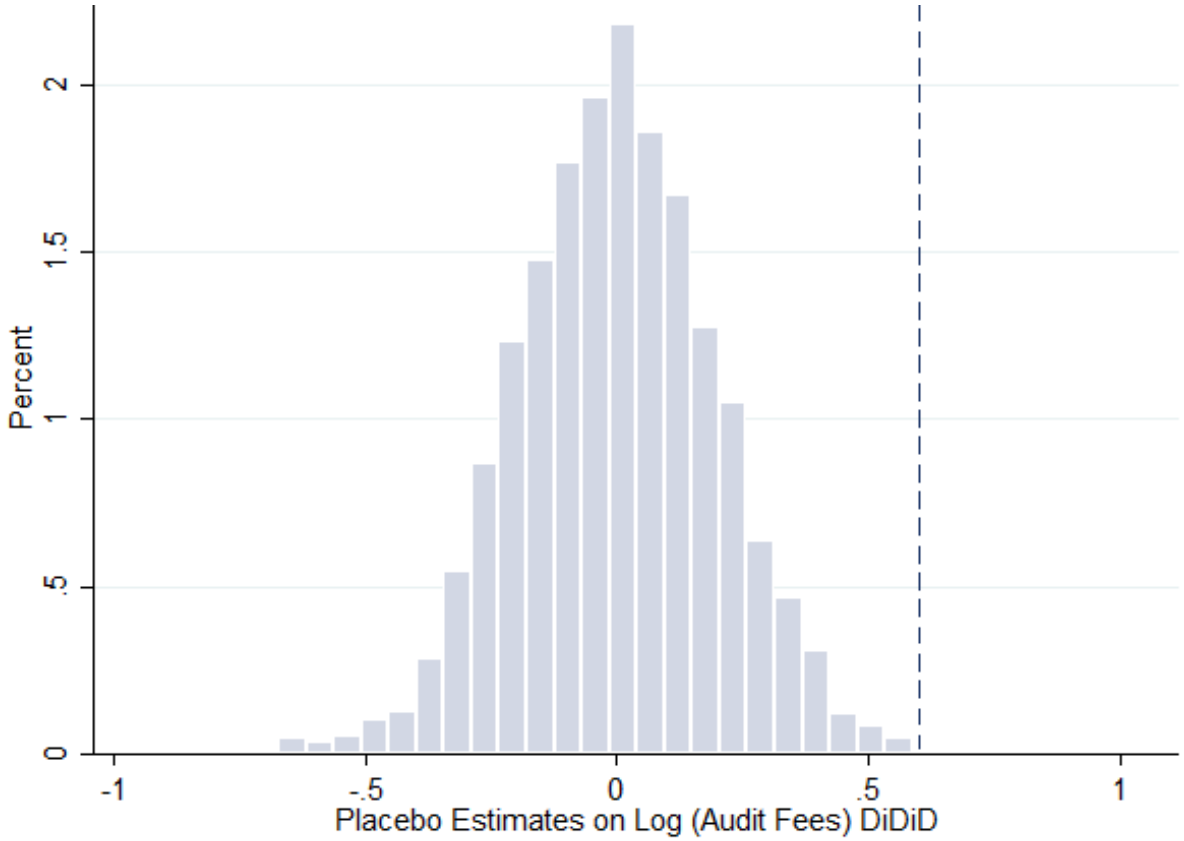

Figure 5 displays histograms on coefficients of the placebo regressions of the triple difference (Treated × Post × Exposure) variable. The coefficients are derived after estimating regression (5) 2000 times assigning the law to different firms and years. The histogram displays the placebo estimates on the triple difference coefficient. The dash line indicates the coefficient of Treated × Post × Exposure (0.603) variable obtained in table IA6 column (3). This is the actual coefficient obtained from the real UK BA event and not the one obtained randomly.

Table 1: Summary Statistics

Panel A:

	Obs	mean	sd	min	e(p25)	e(p50)	e(p75)	max
Audit Fees ($ thousands)	5195	3,698.412	8,627.676	15.17061	261.706	688.84	2771.984	54,221.18
Log(Audit Fees)	5195	13.64	1.73	9.66	12.479	13.44	14.84	17.837
Abnormal OPEX	2464	-0.014	0.166	-0.494	-0.097	-0.022	0.052	0.646
Abs(DA) Jones	2464	0.040	0.039	0.000	0.012	0.028	0.053	0.198
Abs(DA) DD	2464	0.048	0.048	0.001	0.014	0.033	0.064	0.240
Exposure	5231	0.511	0.500	0.000	0.000	1.000	1.000	1.000
Inventory Receivables	4530	0.295	0.169	0.008	0.167	0.282	0.404	0.756
BIG4	3716	0.521	0.500	0.000	0.000	1.000	1.000	1.000
Leverage	3322	0.619	0.806	0.000	0.113	0.393	0.772	5.039
CFO	4090	0.073	0.095	-0.328	0.033	0.071	0.117	0.359
Loss	5202	0.152	0.359	0.000	0.000	0.000	0.000	1.000
ROA	5202	0.038	0.103	-0.564	0.015	0.043	0.078	0.271
Asset Growth	5171	0.109	0.284	-0.374	-0.016	0.051	0.146	1.776
Revenue Growth	5108	0.122	0.283	-0.555	0.001	0.075	0.178	1.715
Tenure	5202	3.842	3.556	0.000	1.000	3.000	6.000	13.000
BM	4577	25.536	46.932	0.000	0.426	1.115	31.156	247.119
Size	5202	15.033	3.013	8.566	12.687	14.859	17.278	21.937
Quick	4678	1.457	1.117	0.275	0.828	1.120	1.677	7.347
ROI	5171	0.078	0.114	-0.422	0.032	0.073	0.128	0.427

Panel B:

	Treated			Control			
	Obs	mean	sd	Obs	mean	sd	T-test
Audit Fees ($ thousands)	690	5,310.886	11,126.4	1893	3,132.052	8,191.007	2,178.834***
Log(Audit Fees)	690	13.987	1.755	1893	13.332	1.772	0.656***
Abnormal OPEX	298	-0.022	0.177	819	-0.017	0.180	-0.004
Abs(DA) Jones	298	0.038	0.036	819	0.041	0.038	-0.003
Abs(DA) DD	298	0.042	0.041	819	0.053	0.052	-0.011***
Exposure	690	0.339	0.474	1897	0.548	0.498	-0.209***
Inventory Receivables	564	0.294	0.162	1699	0.307	0.174	-0.012
BIG4	490	0.576	0.495	1042	0.505	0.500	0.071***
Leverage	321	0.734	0.904	1324	0.608	0.821	0.125**
CFO	618	0.082	0.117	1393	0.071	0.095	0.011**
Loss	690	0.186	0.389	1897	0.132	0.339	0.053***
ROA	690	0.033	0.131	1897	0.043	0.100	-0.011**
Asset Growth	679	0.165	0.352	1882	0.138	0.326	0.027*
Revenue Growth	662	0.156	0.301	1864	0.150	0.313	0.006
Tenure	690	4.975	4.248	1897	3.434	3.180	1.542***
BM	535	11.158	27.651	1534	27.983	44.232	-16.82***
Size	690	14.140	3.388	1897	15.242	2.854	-1.102***
Quick	586	1.239	0.929	1738	1.505	1.171	-0.266***
ROI	679	0.080	0.142	1882	0.088	0.114	-0.008

This table provides summary statistics for all the variables used in this analysis. Appendix A provides detailed information on the variables used and how they were constructed. "Log (Audit Fees)" is the natural logarithm of audit fees. "ABS(DA)Jones" is the absolute value of discretionary accruals derived from the modified Jones model (1991) as it was further modified by Kothari et al. (2005) and "ABS(DA) DD" is the absolute value of discretionary accruals derived from the Dechow and Dichev (2002) model and as it was further modified by Francis et al. (2005) and McNichols (2002). "Exposure" is the measure of exposure to corrupt activities we calculated following Zeume (2017). It is an indicator variable that takes the value of one if the corruption exposure of the firm in a particular year is above or equal to the median and zero otherwise. Panel A shows the summary statistics of the whole sample for the years covering the period from 2007-2008 and 2011-2012. Panel B shows the summary statistics for the pre -UK BA period (2007-2008) of the treated and control group. The treated group includes all UK incorporated firms and also all the firms that have a UK subsidiary. The control group includes all the rest of the firms (i.e firms not incorporated in the UK which do not have a UK subsidiary). The t-test indicates whether the difference in means between the treated and control group is significant in the pre-BA period for each of the observable characteristics. An asterisk indicates significance at the 10% level; two indicate significance at the 5% level; three indicate significance at the 1% level.

Table 2: Pearson (Spearman) Correlations left (right) Corner

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
(1) Exposure	1	0.0103	0.0547	-0.0424	0.0345	**0.1594**	-0.0431	-0.009	**0.0752**	**-0.0514**	0.0024	0.0185	0.0247	-0.0361	**0.0491**	**0.163**	-0.0087	-0.0003
(2) Log(Audit Fees)	**0.1366**	1	**0.0621**	**-0.0731**	**-0.0953**	**-0.2344**	**0.1066**	**0.3084**	**0.2035**	0.0261	**0.0528**	0.0208	0.0079	**0.0715**	**-0.3152**	**0.2448**	**-0.2378**	**0.0839**
(3) Abnormal OPEX	**0.0717**	**0.0637**	1	**0.0555**	0.0184	**0.0937**	-0.0164	**0.1695**	-0.0216	**0.0499**	**-0.1332**	**0.2445**	**0.6558**	**-0.0474**	0.046	**0.0624**	**-0.1816**	**-0.1138**
(4) ABS(DA) Jones	**-0.0529**	**-0.1214**	**0.0933**	1	**0.1329**	**0.0486**	**-0.0593**	-0.0345	0.0229	**0.1483**	0.0337	0.0439	0.0316	-0.0382	**-0.0488**	**-0.1306**	0.0167	0.0357
(5) ABS (DA) DD	0.0087	**-0.116**	**0.0526**	**0.2425**	1	**0.1269**	0.0138	**-0.0601**	0.0023	0.0348	**0.0472**	**0.0369**	**0.0524**	-0.0028	-0.0224	**-0.1676**	0.0293	0.0388
(6) Inventory Receivables	**0.0913**	**-0.1652**	**0.0933**	**0.06**	**0.1771**	1	0.002	**-0.169**	**-0.208**	-0.0287	**-0.0549**	-0.0087	**0.0963**	**0.0807**	**0.267**	0.0256	-0.0304	**-0.0626**
(7) Big-4	-0.0247	**0.0457**	0.03	-0.0225	0.0109	-0.0215	1	0.0178	0.0105	-0.0351	0.0191	0.0015	0.0157	**0.1687**	-0.0305	0.027	0.0201	**0.0505**
(8) Leverage	**-0.0704**	**0.205**	**0.0407**	-0.0178	**-0.0794**	**-0.1798**	**0.0431**	1	-0.0411	**0.1245**	**-0.2234**	**0.0532**	0.0182	0.0309	**-0.2432**	**0.0658**	**-0.5748**	**-0.1308**
(9) CFO	0.0073	**0.1336**	**-0.0654**	**-0.0576**	0.0012	**-0.1378**	**0.0394**	**-0.0604**	1	**-0.2629**	**0.5843**	**0.2036**	**0.2237**	-0.0449	**-0.2987**	-0.0088	0.0156	**0.6022**
(10) Loss	**-0.0663**	**-0.0624**	**0.0563**	**0.1659**	**0.0364**	**-0.0381**	-0.0027	**0.1117**	**-0.3511**	1	**-0.5277**	**-0.263**	**-0.195**	0.0106	-0.0197	**-0.0989**	**-0.1268**	**-0.4881**
(11) ROA	**0.0512**	**0.0841**	**-0.1825**	**-0.0763**	**0.0365**	0.0058	0.0039	**-0.1385**	**0.5801**	**-0.6449**	1	**0.3571**	**0.3061**	-0.0204	**-0.3431**	**-0.1305**	**0.1933**	**0.9063**
(12) Asset Growth	**-0.0388**	**-0.0519**	**0.2746**	**0.1186**	**0.127**	**-0.059**	0.0172	**0.0464**	**0.0625**	**-0.109**	**0.1429**	1	**0.4784**	-0.0413	**-0.1875**	**-0.0724**	-0.005	**0.4486**
(13) Revenue Growth	-0.0159	**-0.0626**	**0.6352**	**0.0743**	**0.0965**	**-0.0424**	**0.0362**	0.0165	**0.0516**	**-0.0343**	**0.0364**	**0.4608**	1	-0.0157	**-0.1009**	-0.022	-0.0427	**0.3552**
(14) Tenure	**-0.0876**	**0.0387**	**-0.0519**	-0.0054	-0.0166	**0.0392**	**0.1779**	**0.0446**	0.0102	0.0148	-0.0217	0.0063	-0.0013	1	-0.0063	0.024	-0.0146	-0.0097
(15) BM	**0.0969**	**-0.1581**	**0.0412**	**-0.1584**	**-0.0572**	**0.1414**	-0.0077	**-0.1451**	**-0.1216**	**-0.0638**	**-0.0774**	**-0.1157**	**-0.0752**	**-0.068**	1	**0.523**	**0.2705**	**-0.3943**
(16) Size	**0.2628**	**0.3986**	**0.0889**	**-0.2278**	**-0.1683**	**-0.0813**	-0.0004	**0.0398**	**0.0524**	**-0.193**	**0.1139**	**-0.0889**	**-0.0798**	**-0.0747**	**0.5559**	1	-0.0155	**-0.1347**
(17) Quick	**-0.0319**	**-0.1926**	**-0.1492**	0.0253	0.0048	**-0.1449**	**-0.0635**	**-0.2831**	-0.0231	**-0.0265**	**0.1017**	**0.0423**	0.0092	**-0.0372**	**0.0746**	**-0.0738**	1	**0.1294**
(18) ROI	**0.0521**	**0.0777**	**-0.1381**	0.0216	**0.0828**	0.0192	0.0013	**-0.0732**	**0.6383**	**-0.5779**	**0.8609**	**0.2405**	**0.1495**	-0.0106	**-0.1485**	**0.0563**	**0.063**	1

This table provides the correlation coefficient for all the variables used in this analysis during the two year pre- and two year post-UK BA period. The pre-period includes years 2007 and 2008 and the post-period includes years 2011 and 2012. "Log (Audit Fees)" is the natural logarithm of audit fees. "ABS(DA)Jones" is the absolute value of discretionary accruals derived from the modified Jones model (1991) as it was further modified by Kothari et al. (2005) and "ABS(DA) DD" is the absolute value of discretionary accruals derived from the Dechow and Dichev (2002) model and as it was further modified by Francis et al. (2005) and McNichols (2002). "Exposure" is the measure of exposure to corrupt activities we calculated following Zeume (2017). It is an indicator variable that takes the value of one if the corruption exposure of the firm in a particular year is above or equal to the median and zero otherwise. The left corner shows the Pearson correlation matrix whereas the right corner shows the Spearman correlation matrix. Bold correlation coefficients represent two-tailed significance at the 0.10 level. All variables are winsorized at the top and bottom percentiles of the distribution. All variables are as defined in Appendix A. Numbers in bold indicate statistical significance of up to 10%.

Table 3: Univariate Results on the Effect of the UK BA on Audit Fees per Level of Exposure

	All - Sample		Non-FCPA sample	
Level of Exposure	**Obs**	**Mean**	**Obs**	**Mean**
Q1	1,278	13.14	1,278	13.14
Q2	501	12.9***	501	12.9***
Q3	477	13.55***	477	13.55***
Q4	2,942	13.71*	2,942	13.71*

This table indicates the summary statistics of audit fees from 2004-2008 per level of exposure. "Log (Audit fees)" is the natural logarithm of audit fees. The variable is winsorized at the top and bottom percentiles of the distribution. The pre-period includes years of 2004-2008. Exposure is the measure of exposure to corruption calculated using the measurement of Zeume (2017). It is an indicator variable that takes the value of one if the corruption exposure of the firm in a particular year is above or equal to the median and zero otherwise. "Exposure" is divided into 4 quartiles with quartile 1 being the lowest level of exposure and quartile 4 being the highest level of exposure. The t-test indicates significant difference in means between the current quartile and the previous one. For example, the t-test of quartile 2 indicates significant difference in means between quartile 2 and quartile 1. An asterisk indicates significance at the 10% level; two indicate significance at the 5% level; three indicate significance at the 1% level.

Table 4: Entropy Balancing: Descriptive Statistics

Panel A: Before Balancing

	Treated		Control	
	mean	variance	mean	variance
Log (Audit Fees)	14.69	2.46	13.48	2.65
Exposure	2.95	0.75	3.32	1.64
Leverage	0.78	0.89	0.54	0.55
Inventory Receivables	0.30	0.02	0.32	0.03
Quick	1.12	0.36	1.40	1.05
ROI	0.10	0.01	0.08	0.01
Loss	0.10	0.07	0.10	0.06
Big-4	0.57	0.23	0.49	0.25
Asset Growth	0.14	0.05	0.09	0.04
ROA	0.05	0.01	0.04	0.00
Size	16.63	9.17	16.70	8.26
Tenure	5.25	19.79	3.69	11.77
BM	22.46	11.04	45.14	25.37
Industry	38.71	132.90	37.08	104.50
Country	24.97	111.70	20.54	79.19

Panel B: After Balancing	Treated		Control	
	mean	variance	mean	variance
Log (Audit Fees)	14.69	2.46	14.69	2.46
Exposure	2.95	0.75	2.95	0.75
Leverage	0.78	0.89	0.78	0.88
Inventory Receivables	0.30	0.02	0.30	0.02
Quick	1.12	0.36	1.12	0.36
ROI	0.10	0.01	0.10	0.01
Loss	0.10	0.07	0.10	0.07
Big-4	0.57	0.23	0.57	0.23
Asset Growth	0.14	0.05	0.14	0.05
ROA	0.05	0.01	0.05	0.01
Size	16.63	9.17	16.63	9.17
Tenure	5.25	19.79	5.25	19.79
BM	22.46	11.04	22.49	11.08
Industry	38.71	132.90	38.71	132.90
Country	24.97	111.70	24.97	111.70

Panel A of this table shows the descriptive statistics for both treated and control group before the entropy balancing procedure. The entropy balancing method balances the covariates that relate to audit fees in our setting. Panel B shows the descriptive statistics for both treated and control group after the entropy balancing, where identical means and variances are achieved for all relevant characteristics relative to the treatment except from the treatment itself. The treated group includes all firms that are incorporated in the UK or have a UK subsidiary. The control group includes all the rest of the firms (i.e. firms not incorporated in the UK which do not have a UK subsidiary).

Table 5: Effect of the UK BA on Audit Fees after Entropy Balancing

Dependent Variable: Log (Audit Fees)	(1)	(2)	(3)
Treated	0.006		
	(0.046)		
Post	0.553***		
	(4.624)		
Treated × Post	-0.066	-0.167	-0.067
	(-0.368)	(-1.343)	(-0.390)
Leverage	0.209**	0.035	0.019
	(2.437)	(0.583)	(0.334)
Inventory Receivables	-1.295***	0.292	0.227
	(-3.328)	(0.555)	(0.724)
Quick	-0.082	0.032	0.033
	(-1.119)	(0.604)	(0.538)
ROI	2.230	-3.319**	-2.839**
	(1.634)	(-2.631)	(-2.344)
Loss	0.487***	-0.016	0.035
	(2.735)	(-0.140)	(0.218)
BIG4	0.169*	-0.311	-0.219
	(1.749)	(-1.618)	(-1.302)
Asset Growth	-0.415**	0.265	0.225
	(-2.192)	(1.282)	(0.901)
ROA	1.185	1.433*	0.961
	(0.865)	(1.909)	(1.392)
Size	0.261***	-0.039	-0.012
	(10.213)	(-0.107)	(-0.032)
Tenure	0.038***	0.006	-0.001
	(3.741)	(0.422)	(-0.024)
BM	-0.023***	0.012**	0.012***
	(-12.835)	(2.671)	(2.962)
Constant	10.603***		
	(22.743)		
Year FE	N	N	Y
Firm FE	N	Y	Y
Year-Industry FE	N	Y	N
Observations	1,425	1,373	1,385
Adjusted R-squared	0.412	0.895	0.893

This table shows the difference-in-difference effect of the UK Bribery Act on audit pricing in the post-BA period, 2011-2012, compared to the pre-BA period, 2007-2008. The sample is not subject to a matching method.The dependent variable is the natural logarithm of audit fees paid by the parent company. "Post" takes the value of one for the two year period after the UK BA. The variable "Treated" is an indicator variable that takes the value of one if the firm is UK incorporated or if the firm has a UK subsidiary and zero otherwise. Fixed Effects are as indicated. Clustering of standard errors is at country level. T-statistics are reported in parentheses. An asterisk indicates significance at the 10% level;two indicate significance at the 5% level; three indicate significance at the 1% level.

Table 6: Effect of Exposure to Corruption on Audit Fees after Entropy Balancing

Dependent Variable: Log (Audit Fees)	All sample		
	(1)	(2)	(3)
Treated	0.260		
	(1.400)		
Post	0.642***		
	(3.748)		
Treated × Post	-0.485*	-0.494**	-0.398
	(-1.870)	(-2.437)	(-1.613)
Treated × Post × Exposure	0.768**	0.596***	0.590***
	(2.135)	(3.866)	(3.308)
Exposure	0.443**	-0.178**	-0.215
	(2.537)	(-2.260)	(-1.692)
Treated × Exposure	-0.505*	-0.323***	-0.261**
	(-1.815)	(-4.008)	(-2.086)
Post Period × Exposure	-0.216	-0.130	-0.099
	(-0.934)	(-1.217)	(-0.939)
Leverage	0.200**	0.013	0.002
	(2.412)	(0.263)	(0.039)
Inventory Receivables	-1.491***	0.393	0.276
	(-3.806)	(0.669)	(0.631)
Quick	-0.091	0.002	-0.005
	(-1.244)	(0.035)	(-0.103)
ROI	1.760	-3.612***	-2.947**
	(1.283)	(-2.911)	(-2.439)
Loss	0.429**	-0.014	0.041
	(2.480)	(-0.152)	(0.289)
BIG4	0.174*	-0.294	-0.207
	(1.788)	(-1.704)	(-1.274)
Asset Growth	-0.387*	0.254	0.179
	(-1.925)	(1.359)	(0.779)
ROA	1.424	1.807**	1.266*
	(1.025)	(2.334)	(1.745)
Size	0.248***	-0.002	0.039
	(9.634)	(-0.005)	(0.114)
Tenure	0.038***	0.001	-0.004
	(3.649)	(0.079)	(-0.172)
BM	-0.022***	0.011**	0.011***
	(-12.659)	(2.752)	(3.006)
Year FE	N	N	Y
Firm FE	N	Y	Y
Year-Industry FE	N	Y	N
Sum of Coefficients: Treated × Post + Treated × Post × Exposure	0.283	0.102	0.192
F-test	4.72**	9.56***	5.51**
Observations	1,425	1,373	1,385
Adjusted R-squared	0.424	0.899	0.898

This table shows the effect of the UK Bribery Act on audit fees in the post-BA period, 2011-2012, compared to the pre-BA period, after performing the entropy balancing method. The dependent variable is the logarithm of audit fees paid by the parent company. "Exposure" is the measure of exposure to corrupt activities we calculated following Zeume (2017). It is an indicator variable that takes the value of one if the corruption exposure of the firm in a particular year is above or equal to the median and zero otherwise. "Post" takes the value of one for the two year period after the UK BA. The variable "Treated" is an indicator variable that takes the value of one if the firm is UK incorporated or if the firm has a UK subsidiary and zero otherwise. The first column shows the results for the simple difference-in-difference without taking corruption exposure into consideration. Columns (2) and (3) show the results of the triple difference-in-difference for the whole sample. Fixed Effects are as indicated. Clustering of standard errors is at country level. T-statistics are reported in parentheses. An asterisk indicates significance at the 10% level; two indicate significance at the 5% level; three indicate significance at the 1% level.

Table 7: Effect of Exposure to Corruption on Abnormal OPEX and Earnings Quality after Entropy Balancing

Dependent Variables	**Abnormal OPEX**		**ABS(DA) DD**		**ABS(DA) Jones**	
	(1)	(2)	(3)	(4)	(5)	(6)
Treated × Post	-0.012	-0.020	0.001	0.004	0.000	-0.007
	(-1.190)	(-0.823)	(0.207)	(0.650)	(0.115)	(-1.121)
Treated × Post × Exposure		0.010		-0.005		0.011
		(0.357)		(-0.588)		(1.344)
Controls	Y	Y	Y	Y	Y	Y
Firm FE	Y	Y	Y	Y	Y	Y
Year-Industry FE	Y	Y	Y	Y	Y	Y
Sum of Coefficients: Treated × Post + Treated × Post × Exposure		-0.01		-0.001		0.004
F-test		0.34		0.4		1.7
Observations	1,432	1,432	1,045	1,045	1,045	1,045
Adjusted R-squared	0.809	0.810	0.269	0.273	0.419	0.419

This table shows the effect of the UK Bribery Act and corruption exposure in the operating expenses component and on earnings quality. This table also shows the effects of exposure to corruption together with the passage of the UK BA on audit fees. "Exposure" is the measure of exposure to corrupt activities we calculated following Zeume (2017). It is an indicator variable that takes the value of one if the corruption exposure of the firm in a particular year is above or equal to the median and zero otherwise. "Post" takes the value of one for the two year period after the UK BA. The variable "Treated" is an indicator variable that takes the value of one if the firm is UK incorporated or if the firm has a UK subsidiary and zero otherwise. The results are calculated after perfoming entropy balancing. In columns (1)-(2), the dependent variable is the abnormal operating expenses calculated using Dechow et al. (1998) and as it was further modified by Roychowdhury (2006). In columns (3)-(4) the dependent variable is the absolute value of discretionary accruals as it is calculated by Dechow and Dichev (2002) model and as it was further modified by Francis et al. (2005) and McNichols (2002). In columns (5)-(6), the dependent variable is the absolute value of discretionary accruals as it is calculated by the modified Jones Model, 1991 as it was further modified by Kothari et al. (2005). Standard errors are clustered at country level. Fixed Effects are as indicated. Clustering of standard errors is at country level. T-statistics are reported in parentheses. An asterisk indicates significance at the 10% level; two indicate significance at the 5% level; three indicate significance at the 1% level.

Table 8: Effect of Exposure to Corruption on Audit Fees after Entropy Balancing on sub-samples

Dependent Variable: Log (Audit Fees)	OECD non-FCPA		FCPA
	(1)	(2)	(3)
Treated × Post	-0.712***	-0.557**	0.294**
	(-3.093)	(-2.205)	(2.524)
Treated × Post × Exposure	0.637***	0.569**	-0.459**
	(3.430)	(2.580)	(-2.599)
Contorls	Y	Y	Y
Year FE	N	Y	Y
Firm FE	Y	Y	Y
Year-Industry FE	Y	N	N
Sum of Coefficients: Treated × Post + Treated × Post × Exposure	-0.075	0.012	-0.165
F-test	10.80***	6.09**	7.54***
Observations	1,072	1,091	350
Adjusted R-squared	0.890	0.887	0.958

This table shows the effect of the UK Bribery Act on audit fees in the post-BA period, 2011-2012, compared to the pre-BA period, after performing the entropy balancing method on the OECD non-FCPA sub-sample of firms (columns (1) and (2)) and on the FCPA firms sub-sample (column (3)). The dependent variable is the logarithm of audit fees paid by the parent company. "Exposure" is the measure of exposure to corrupt activities we calculated following Zeume (2017). It is an indicator variable that takes the value of one if the corruption exposure of the firm in a particular year is above or equal to the median and zero otherwise. "Post" takes the value of one for the two year period after the UK BA. The variable "Treated" is an indicator variable that takes the value of one if the firm is UK incorporated or if the firm has a UK subsidiary and zero otherwise. Fixed Effects are as indicated. Clustering of standard errors is at country level. T-statistics are reported in parentheses. An asterisk indicates significance at the 10% level; two indicate significance at the 5% level; three indicate significance at the 1% level.

Table 9: Effect of Exposure to Corruption on Audit Fees after Entropy Balancing- Sample Split

Dependent Variable: Log (Audit Fees)	**All sample**				**OECD - Non FCAP**				**FCPA**	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Treated × Post	0.132**	0.251***	-0.434**	-0.325	0.020	0.094	-0.704***	-0.480*	-0.190	0.362***
	(2.275)	(3.488)	(-2.272)	(-1.388)	(0.157)	(0.701)	(-3.149)	(-1.838)	(-1.339)	(3.546)
Sample	High	High	Low	Low	High	High	Low	Low	High	Low
Controls	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Year FE	N	Y	N	Y	N	Y	N	Y	Y	Y
Firm FE	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Year-Industry FE	Y	N	Y	N	Y	N	Y	N	N	N
Observations	757	768	558	567	571	588	446	461	216	131
Adjusted R-squared	0.920	0.910	0.897	0.890	0.910	0.903	0.892	0.879	0.943	0.977

This table shows the effect of the UK Bribery Act on audit fees in the post-BA period, 2011-2012, compared to the pre-BA period, 2007-2008, after performing the entropy balancing method and after splitting the sample into high- and low-corruption exposed firms. The dependent variable is the logarithm of audit fees paid by the parent company. Post takes the value of one for the two year period after the UK BA. "Exposure" is the measure of exposure to corrupt activities we calculated following Zeume (2017). It is an indicator variable that takes the value of one if the corruption exposure of the firm in a particular year is above or equal to the median and zero otherwise. "Post" takes the value of one for the two year period after the UK BA. The variable "Treated" is an indicator variable that takes the value of one if the firm is UK incorporated or if the firm has a UK subsidiary and zero otherwise. The "sample" variable indicates "High" or "Low" corruption exposure. Columns (1)-(4) show the results for the whole sample. Columns (5) and (8) show the results for only the OECD non-FCPA sub-sample of firms and columns (9) and (10) show the effect of the UK BA on the FCPA firms sub-sample. Fixed Effects are as indicated. Clustering of standard errors is at country level. T-statistics are reported in parentheses. An asterisk indicates significance at the 10% level; two indicate significance at the 5% level; three indicate significance at the 1% level.

Table 10: Effect of Exposure to Corruption on Audit Fees for Big-4 and Non-Big-4 auditors

Dependent variable: Log (Audit Fees)	**All sample**				**OECD Non-FCPA**			
	Big-4		Non- Big4		Big-4		Non- Big4	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Treated × Post	-0.686**	-0.717**	-0.285	-0.299	-0.727**	-0.795**	-0.574**	-0.378
	(-2.558)	(-2.247)	(-1.213)	(-1.512)	(-2.607)	(-2.439)	(-2.641)	(-1.739)
Treated × Post × Exposure	0.636**	0.714**	0.415	0.433**	0.631**	0.757**	0.779***	0.487***
	(2.702)	(2.488)	(1.403)	(2.589)	(2.479)	(2.612)	(4.803)	(3.399)
Controls	Y	Y	Y	Y	Y	Y	Y	Y
Year FE	N	Y	N	Y	N	Y	N	Y
Firm FE	Y	Y	Y	Y	Y	Y	Y	Y
Year-Industry FE	Y	N	Y	N	Y	N	Y	N
Sum of Coefficients: Treated × Post + Treated × Post × Exposure	-0.05	-0.003	0.13	0.134	-0.096	-0.038	0.195	0.109
F-test	7.12**	5.66**	1.92	5.00**	6.67**	6.48**	13.85***	6.95**
Observations	899	915	843	843	692	712	541	554
Adjusted R-squared	0.925	0.928	0.941	0.941	0.911	0.913	0.939	0.941

This table shows the effect of the UK Bribery Act and corruption exposure on audit fees in the post-BA period, 2011-2012, compared to the pre-BA period,2007-2008, separating the Big-4 and Non-Big-4 auditors. The dependent variable is the logarithm of audit fees paid by the parent company. "Exposure" is the measure of exposure to corrupt activities we calculated following Zeume (2017). It is an indicator variable that takes the value of one if the corruption exposure of the firm in a particular year is above or equal to the median and zero otherwise. "Post" takes the value of one for the two year period after the UK BA. The variable "Treated" is an indicator variable that takes the value of one if the firm is UK incorporated or if the firm has a UK subsidiary and zero otherwise. The sample is divided into companies audited by a Big-4 auditor and companies that are audited by a Non-Big-4 auditor. Columns (1) and (2) show the results for the whole sample of firms that are audited by a Big-4 audit company. Columns (3) and (4) show the results for the whole sample for the companies that are not audited by a Big-4 auditor. Columns (5)-(6) show the results for the OECD non-FCPA firms that are audited by a Big-4 auditor and columns (7)-(8) show the results for the sub-sample of firms that is audited by a non-Big-4 auditor. Clustering of standard errors is at country level. T-statistics are reported in parentheses. An asterisk indicates significance at the 10% level; two indicate significance at the 5% level; three indicate significance at the 1% level.

Table 11: Effect of Exposure to Corruption on Audit Fees Depending on Firm Complexity

Dependent variable: Log (Audit Fees)	**All sample**		**OECD Non-FCPA**	
	(1)	(2)	(3)	(4)
Treated × Post	-0.661**	-0.157	-0.762***	-0.353
	(-2.677)	(-0.636)	(-2.951)	(-1.506)
Treated × Post × Exposure	0.594**	0.814***	0.656***	0.945***
	(2.714)	(3.769)	(2.949)	(6.199)
Controls	Y	Y	Y	Y
Year FE	Y	Y	Y	Y
Firm FE	Y	Y	Y	Y
Sample	High #	Low #	High #	Low#
Sum of Coefficients: Treated × Post + Treated × Post × Exposure	-0.067	0.657	-0.106	0.592
F-test	7.35**	4.74**	8.83***	11.72***
Observations	1,033	762	792	497
Adjusted R-squared	0.936	0.898	0.912	0.866

This table shows the effect of the UK Bribery Act and corruption exposure on audit fees on alternative samples according to firm complexity. The dependent variable is the natural logarithm of audit fees paid by the parent company. "Exposure" is the measure of exposure to corrupt activities we calculated following Zeume (2017). It is an indicator variable that takes the value of one if the corruption exposure of the firm in a particular year is above or equal to the median and zero otherwise. "Post" takes the value of one for the two year period after the UK BA. The variable "Treated" is an indicator variable that takes the value of one if the firm is UK incorporated or if the firm has a UK subsidiary and zero otherwise. The table shows the effects on audit fees after splitting the sample between those firms that have a high- or low- number of subsidiaries for the international sample (columns (1) and (2)), for the OECD non-FCPA firms (columns (3) and (4)). "High" means that the rms in this sample have a number of subsidiaries that is above the sample median and "Low" means that the rms in this sample have a number of subsidiaries that is below or equal the sample median. Fixed Effects are as indicated. Clustering of standard errors is at country level. T-statistics are reported in parentheses. An asterisk indicates significance at the 10% level; two indicate significance at the 5% level; three indicate significance at the 1% level.

Table 12: Alternative measurement of Exposure to Corruption - Bribe Payers Index

Dependent variable: Log (Audit Fees)	All sample		OECD Non-FCPA		FCPA
	(1)	(2)	(3)	(4)	(5)
Treated × Post	-0.602***	-0.574**	-0.673***	-0.651**	0.205
	(-2.965)	(-2.626)	(-3.274)	(-2.824)	(1.621)
Treated × Post × Exposure	0.794***	0.778***	0.796***	0.798***	-0.366**
	(3.808)	(3.782)	(4.816)	(4.044)	(-2.269)
Control	Y	Y	Y	Y	Y
Year FE	N	Y	N	Y	Y
Firm FE	Y	Y	Y	Y	Y
Year-Industry FE	Y	N	Y	N	N
Sum of Coefficients: Treated × Post + Treated × Post × Exposure	0.192	0.204	0.123	0.147	-0.161
F-test	12.03***	10.38***	16.24***	11.64***	4.31**
Observations	1,849	1,857	1,317	1,330	272
Adjusted R-squared	0.937	0.938	0.925	0.927	0.982

This table shows the effect of the UK Bribery Act and corruption exposure on audit fees in the post-BA period, 2011-2012, compared to the pre-BA period, 2007-2008, using the Bribe Payers Index (BPI) as an alternative measure for capturing corruption exposure. The dependent variable is the logarithm of audit fees paid by the parent company. "Exposure" is calculated as our main measure of exposure to corruption using, instead of the CPI, the BPI. It is an indicator variable that takes the value of one if the corruption exposure of the firm in a particular year is above or equal to the median and zero otherwise. "Post" takes the value of one for the two year period after the UK BA. The variable "Treated" is an indicator variable that takes the value of one if the firm is UK incorporated or if the firm has a UK subsidiary and zero otherwise. Columns (1)-(2) show the effect on audit fees for the whole sample of firms. Columns (3)-(4) show the same results for the OECD non-FCPA. Column (5) shows the results for the sub-sample of FCPA firms. Fixed Effects are as indicated. Clustering of standard errors is at country level. T-statistics are reported in parentheses. An asterisk indicates significance at the 10% level; two indicate significance at the 5% level; three indicate significance at the 1% level.

Table 13: Alternative measurement of Exposure to Corruption - World Governance Indicators

Dependent variable: Log (Audit Fees)	**All sample**		**OECD Non-FCPA**		**FCPA**
	(1)	(2)	(3)	(4)	(5)
Treated × Post	-0.537**	-0.515**	-0.620**	-0.603**	0.110
	(-2.491)	(-2.310)	(-2.722)	(-2.587)	(1.255)
Treated × Post × Exposure	0.590***	0.575***	0.587***	0.585***	-0.357***
	(3.389)	(3.195)	(2.959)	(2.952)	(-2.775)
Controls	Y	Y	Y	Y	Y
Year FE	N	Y	N	Y	Y
Firm FE	Y	Y	Y	Y	Y
Year-Industry FE	Y	N	Y	N	N
Sum of Coefficients: Treated × Post + Treated × Post × Exposure	0.053	0.06	-0.033	-0.018	-0.247
F-test	9.05***	7.65***	9.02***	8.12**	5.33**
Observations	2,146	2,154	1,513	1,526	373
Adjusted R-squared	0.957	0.958	0.952	0.953	0.989

This table shows the effect of the UK Bribery Act and corruption exposure on audit fees in the post-BA period, 2011-2012, compared to the pre-BA period, 2007-2008, using the World Governance Indicators (WGI) as an alternative measure for capturing corruption. The dependent variable is the logarithm of audit fees paid by the parent company. "Exposure" is calculated as our main measure of exposure to corruption using, instead of the CPI, the BPI. It is an indicator variable that takes the value of one if the corruption exposure of the firm in a particular year is above or equal to the median and zero otherwise. "Post" takes the value of one for the two year period after the UK BA. The variable "Treated" is an indicator variable that takes the value of one if the firm is UK incorporated or if the firm has a UK subsidiary and zero otherwise. Columns (1)-(2) show the effect on audit fees for the whole sample of firms. Columns (3)-(4) show the same results for the OECD non-FCPA. Column (5) shows the results for the sub-sample of FCPA firms. Fixed Effects are as indicated. Clustering of standard errors is at country level. T-statistics are reported in parentheses. An asterisk indicates significance at the 10% level; two indicate significance at the 5% level; three indicate significance at the 1% level.

Table 14: Effects of Exposure to Corruption on Audit Fees after Propensity Score Matching

Dependent Variable: Log (Audit Fees)	**All sample**			**OECD non-FCPA**		**FCPA**
	(1)	(2)	(3)	(4)	(5)	(6)
Treated × Post	0.005	-0.249	-0.284	-0.431***	-0.389**	0.331**
	(0.054)	(-1.636)	(-1.564)	(-3.966)	(-2.229)	(2.242)
Treated × Post × Exposure		0.439**	0.492**	0.464**	0.473**	-0.677***
		(2.543)	(2.693)	(2.854)	(2.406)	(-4.548)
Controls	Y	Y	Y	Y	Y	Y
Year FE	N	N	Y	N	Y	Y
Firm FE	Y	Y	Y	Y	Y	Y
Year-Industry FE	Y	Y	N	Y	N	N
Sum of Coefficients: Treated × Post + Treated × Post × Exposure		0.19	0.208	0.033	0.084	-0.336
F-test		4.94**	4.75**	12.92***	6.89**	14.88***
Observations	468	468	482	365	377	67
Adjusted R-squared	0.917	0.920	0.923	0.925	0.929	0.977

This table shows the effect of the UK Bribery Act on audit pricing in the post-BA period, 2011-2012, compared to the pre-BA period, 2007-2008, after performing propensity score matching on the variables that relate to audit fees and on audit fees itself. We use the caliper method at 0.01, no replacement and we require each treated observation to be matched to the closest neighbour control observation. The dependent variable is the natural logarithm of audit fees paid by the parent company. "Exposure" is the measure of exposure to corrupt activities we calculated following Zeume (2017). It is an indicator variable that takes the value of one if the corruption exposure of the firm in a particular year is above or equal to the median and zero otherwise. "Post" takes the value of one for the two year period after the UK BA. The variable "Treated" is an indicator variable that takes the value of one if the firm is UK incorporated or if the firm has a UK subsidiary and zero otherwise. The first column shows the effect of the UK BA on audit fees without taking corruption exposure into consideration. In columns (2) and (3) we see the effects of both the UK BA and exposure level on audit fees for the whole sample of firms. Columns (4) and (5) relate to OECD non-FCPA firms and column (6) shows the results only for the FCPA firms. Fixed Effects are as indicated. Clustering of standard errors is at country level. T-statistics are reported in parentheses. An asterisk indicates significance at the 10% level; two indicate significance at the 5% level; three indicate significance at the 1% level.

Table 15: Effect of Exposure to Corruption on Earnings Management

Dependent Variables:	**Smoothing**	**Correlation**	**Discretion**	**Small-Loss Avoidance**	**Aggregate Measure**
	(1)	(2)	(3)	(4)	(5)
Treated × Post	0.044	0.000	7.711	-0.010	-5.625
	(1.612)	(0.028)	(1.604)	(-0.183)	(-0.474)
Treated × Post × Exposure	-0.077**	0.022*	-7.439	-0.071	-18.411
	(-2.104)	(1.850)	(-1.612)	(-1.553)	(-1.411)
Controls	Y	Y	Y	Y	Y
Year-Industry FE	Y	Y	Y	Y	Y
Sum of Coefficients: Treated × Post + Treated × Post × Exposure	-0.033	0.022	0.272	-0.081	-24.036
F-test	7.60**	1.58	2.62	0.42	0.3
Observations	4,491	4,454	4,480	4,491	4,491
Adjusted R-squared	0.565	0.758	0.103	0.889	0.684

This table shows the effect of the UK Bribery Act and corruption exposure on earnings quality in the post-BA period, 2011-2012, compared to the pre-BA, 2007-2008, period. The dependent variables are constructed based on the earnings management measures used by Leuz et al. (2003). "Exposure" is the measure of exposure to corrupt activities we calculated following Zeume (2017). It is an indicator variable that takes the value of one if the corruption exposure of the firm in a particular year is above or equal to the median and zero otherwise. "Post" takes the value of one for the two year period after the UK BA. The variable "Treated" is an indicator variable that takes the value of one if the firm is UK incorporated or if the firm has a UK subsidiary and zero otherwise. Columns (1)-(4) show the results based on each earnings management measures. Column (5) presents the results after aggregating all the four earnings management measures together. Fixed Effects are as indicated. Clustering of standard errors is at country level. T-statistics are reported in parentheses. An asterisk indicates significance at the 10% level; two indicate significance at the 5% level; three indicate significance at the 1% level.

Table 16: Effect of Exposure to Corruption on Audit Fees for Alternative Sample Periods

Dependent variable: Log (Audit Fees)	**All sample**	**OECD Non-FCPA**	**FCPA**	**All sample**	**OECD Non-FCPA**	**FCPA**
	(1)	(2)	(3)	(4)	(5)	(6)
Treated × Post	-0.291	-0.345*	0.087	-0.282	-0.334*	0.088
	(-1.600)	(-1.836)	(0.639)	(-1.562)	(-1.787)	(0.857)
Treated × Post × Exposure	0.329*	0.350*	-0.294*	0.316*	0.330*	-0.256*
	(1.753)	(1.946)	(-1.734)	(1.700)	(1.782)	(-1.844)
Controls	Y	Y	Y	Y	Y	Y
Year FE	N	N	Y	N	N	Y
Firm FE	Y	Y	Y	Y	Y	Y
Year-Industry FE	Y	Y	N	Y	Y	N
Sample	+/-3	+/-3	+/-3	+/-4	+/-4	+/-4
Sum of Coefficients: Treated × Post + Treated × Post × Exposure	0.038	0.005	-0.207	0.034	-0.004	-0.168
F-test	2.97*	3.85*	1.68	2.84	3.47*	2.28
Observations	2,509	1,747	374	2,662	1,818	454
Adjusted R-squared	0.925	0.901	0.960	0.929	0.906	0.962

This table shows the effect of the UK Bribery Act and corruption exposure on audit fees on alternative sample periods. The dependent variable is the natural logarithm of audit fees paid by the parent company. "Exposure" is the measure of exposure to corrupt activities we calculated following Zeume (2017). It is an indicator variable that takes the value of one if the corruption exposure of the firm in a particular year is above or equal to the median and zero otherwise. The variable "Treated" is an indicator variable that takes the value of one if the firm is UK incorporated or if the firm has a UK subsidiary and zero otherwise. Columns (1)-(3) show the results of a three year post-BA period compared to three year pre-BA period. "Post" in these columns takes the value of one for the three year period after the UK BA (2011-2013) and zero otherwise (2006-2008). Columns (4)-(6) show the results of a four year post-BA period compared to four year pre-BA period. "Post" in these columns takes the value of one for the four year period after the UK BA (2011-2014) and zero otherwise (2005-2008). Fixed Effects are as indicated. Clustering of standard errors is at country level. T-statistics are reported in parentheses. An asterisk indicates significance at the 10% level; two indicate significance at the 5% level; three indicate significance at the 1% level.

Internet Appendix

Bribes and Audit Fees

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IA1 Data Collection and Processing

All the analysis was conducted using STATA software. We started downloading the data from Osiris database (Bureau Van Dijk group) aiming at constructing a primary sample of all the publicly listed firms operating at the international environment that have at least one subsidiary[60]. Osiris gives information on listed and major unlisted/delisted industrial firms globally. Specifically, we were interested in the accounting information at the consolidated level as well as the number of subsidiaries that each firm owned. Because of the international nature of the dataset, we download all information in United States dollars (USD). It was also crucial for our analysis to know the country of incorporation of each firm and of their subsidiaries.

Table IA1 shows the distribution of firms per country of incorporation that we use in the final analysis for the two year pre- and post-BA period. Furthermore, it was essential to obtain information on the incorporation date of each subsidiary to be able to start constructing our dataset. As a first step, we start by asking Osiris to download all the firms around the globe that had at least one subsidiary together with their accounting information from 2004 until 2014. The data were downloaded during October 2018 from Osiris database. Osiris database downloads the data directly into an excel file. Because of the very limited amount of observations excel accepts, we downloaded 29 separate excel files that included information on all the publicly listed and major listed/unlisted firms around the globe that had at least one subsidiary. We then had to import all this information into different Stata files and finally we had to combine all these different files together into one big Stata file. We deleted accounting information that was consolidated as we were not interested in unconsolidated data. We also deleted firms that were incorporated after 2007, because year 2007 was the first year of the two-year pre-UK BA period. We also deleted subsidiary companies that had less than -or equal to- 50% of direct ownership on the subsidiaries. This is because, the UK Bribery Act, 2010 (UK BA) states that "the offence can be committed in the UK or Overseas and is a strict liability offence even if im-

[60] This requirement is necessary because, according to the UK BA, an organization (wherever incorporated) that carries on a business in any part of the United kingdom, is guilty of an offence if a person A, associated with the organization, bribes another person. Association can be established in the case that A is a subsidiary of the organization. Thus in our analysis, to determine which firms are affected by the UK BA and which firms are not affected by the act, we had to collect information based on firms that have at least one subsidiary.

proper payment has no connection of any kind to the UK"[61] .. and "failure to prevent bribery in the course of business applies to any overseas entity that carries on a business or part of a business in the United Kingdom". "Part of a business" might also refer to subsidiary. Therefore for ownership to be established it must be the case that the parent company has more than 50% of shares in the subsidiary. We also delete observations when we did not have information on the direct ownership of the subsidiary.

At the same time, for the construction of the treated and control group, it was necessary to have information on the incorporation date of each subsidiary [62]. Unfortunately, Osiris does not provide information on the subsidiaries' incorporation date. To obtain this information, we had to gather all the subsidiaries' identification code that was already provided to us when we downloaded the firms in the first step and use them to download information at the subsidiary lever rather than at the consolidated level. However, many subsidiaries were not publicly traded companies and thus Osiris is not the appropriate database to look for this information as it does not include private companies.

Bureau Van Dijk provides information on private companies through Orbis database. However, the license of Orbis that we had access to only included large and very large companies. For that reason, the subsidiary incorporation dates downloaded from Orbis included information only on large or very large subsidiaries. In an attempt to collect as much information as possible on the incorporation date of the subsidiaries, we also used Osiris to download the incorporation dates of listed and mayor unlisted/delisted subsidiaries. Further, Bureau Van Dijk offers a third database called Amadeus that contains only European companies. We thus used this database to download the incorporation dates of the European subsidiaries. Since all the information comes from the same group of databases, we matched Osiris, Orbis and Amadeus information on the subsidiaries' incorporation date based on bvdaccnr which is a common identification code for all companies in the Bureau Van Dijk group. After merging the three databases

[61] It can be found in Transparency International UK in the following link: https://www.transparency.org.uk/our-work/business-integrity/bribery-act/

[62] The UK Bribery Act, 2010 received its royal assent in 2010 and started its enforcement in 2011. We exclude from our analysis year 2009 as it contains high uncertainty regarding the enforcement of the act and we consider 2010 as the event year. That the two years prior to the event are the 2007-2008 and the two year after the event are the 2011-2012. We then had to determine the firms that had subsidiaries in each of the years of the analysis to include them in our study.

there was overlapping information. We deleted duplicates, as well as missing observations on the subsidiary incorporation date and the subsidiary identification code. After that, we had to merge the dataset that included information on the incorporation date of each subsidiary around the globe with the dataset that had information on each parent company (previously downloaded from Osiris). We matched on subsidiaries' common identification code (subsb-vdnr). After the merging, we required subsidiaries to be incorporated on or before 2007 so as to be able to construct a correct treated and control group. It was also important to keep in our analysis subsidiaries that survived up until 2013 at least. We wanted to avoid constructing a sample of firms and subsidiaries that were shut down in the post-UK BA as this would bias our results. After that, we constructed the treated and control group. The treated group is an indicator variable for the firms that were affected by the UK BA. This means that the treated variable takes the value of one (zero) for all the firms that were either incorporated in the UK or had a subsidiary in the UK (for the rest of the firms). For example, a Colombian parent firm with one UK subsidiary and one French subsidiary will still get the value of one and be included in the treated sample.

Table IA2 shows the number of firms per country of incorporation that have a UK subsidiary (i.e. the parent owns more than 50% of the subsidiary) incorporated before or in year 2007 and continuing its operations at least up to 2013. The table shows the raw data as they were downloaded from the Bureau Van Dijk databases. At this point we had all the accounting information necessary as well as our treated and control variables. We further had to construct our Corruption exposure measure. Using the Zeume's (2017) measure, we had to collect the Corruption Perception Index of each country (CPI) (from Transparency International) for each year in our analysis (i.e 2004-2014) and then we used this measure to construct the "Exposure" variable. At this point, we were able to construct three of our four dependent variables. Specifically, we have the information necessary to calculate abnormal operating expenses and the absolute value of discretionary accruals using two different approaches. The only dependent variable missing was the natural logarithm of audit fees.

Below, we explain the steps followed to calculate the natural logarithm of audit fees.

In a different dataset, we downloaded the audit fees the companies paid during the period 2004-2014 from Thompson Reuters Worldscope. However, due to the fact that Thompson Reuters Worldscope and Bureau Van Dijk had different identification codes for companies we had to merge the two databases based on company name. We required a 97% similarity between the company name in Thompson Reuters Worldscope and Bureau Van Dijk in order to allow a match. After doing this, we hand crossed the merging and we deleted 155 observations that were wrongly matched resulting in 1,796 unique company observations matched from the two databases. As a final step, and since we deal with an international dataset, audit fees from Thompson Reuters Worldscope were presented at the country's currency. We used the exchange rates from the World Bank to adjust all audit fees to USD. Not all exchange rates were available and thus we are left with 1,667 unique firm year observations. However, after deleting further missing information, we are left with 1,309 firm-year observations.

Ultimately, we had a complete panel of all the firms that had subsidiaries globally in the pre- and post-BA period together with the audit fees they paid.

We further calculated the corruption Exposure measure at the consolidated level using the CPI. The variable is continuous and is increasing in the level of corruption exposure of the firm. We then construct a dummy Exposure variable that takes the value of one if the firms' corruption exposure is at or above the median level and zero otherwise.

Table IA3 shows the unique number of firms per country of incorporation that have high and low exposure to corruption.

After constructing our main measurements, we were ready to run the regressions necessary for the main analysis.

IA2 Sample Composition

In this section we show the sample composition. In Table IA1 we report the number of firms used in our analysis per country of incorporation. Most of the firms used in our analysis come from Japan, the United Kingdom and the USA. The next biggest sample of firms comes from Malaysia. The total sample leaves us with 1,309 firms per year to be used in our analysis.

In Table IA2 we report the composition of firms per corruption exposure level and country of incorporation. The firms are assigned to the high- or low-corruption exposure group based on the sample median. Firms that have a corruption exposure equal or greater (lower) than the sample median are included in the high (low) exposure group. The corruption exposure is calculated using the Corruption Perception Index from Transparency International as described in the main text. Japan has a greater proportion of firms assigned to the high-exposure group whereas the United Kingdom and the USA have a greater proportion of firms in the low corruption group. In general, the proportion of firms that belong to the high and low exposure group is similar as 47% (53%) belong to the high (low) corruption exposure group.

Table IA3 shows the number of subsidiaries incorporated in the different countries. By identifying the subsidiaries incorporated in each country, we can check which countries are mainly driving the results. This is because, the subsidiary country of incorporation is the one that determines the corruption exposure at firm level, which is one of our main explanatory variables. We see that most of the subsidiaries in our sample are incorporated in the United Kingdom, the Netherlands, the USA, Germany and Japan. These countries are generally perceived as having lower corruption levels and this is what explains a relatively low mean (median) corruption exposure of 3.13 (2.9) for our sample period.

IA3 Supplementary Tests for the effect of the UK BA

In this section we test the effect of the UK BA on audit fees and financial reporting quality without proceeding to any matching method.

Before moving on to the test, we calculate the first stage regressions of the abnormal operating expenses and discretionary accruals equations. Table IA4 shows the results. The first column presents the results of equation (3). The second columns shows the regressors of equation (4) and the third column those of equation (5).

Table IA5 presents the impact of the UK BA on audit fees after running equation (1). Before including any additional controls or fixed effects, we find that the UK BA caused a downward decrease in audit fees in column (1). The result is statistically significant at 10%. In column (2) we include fixed effects but we ignore the control variables. We see that the result remains the same. In columns (3) and (4) we include both controls and fixed effects and we see that the result ceases to exist. This shows that the significant effect of the UK BA on audit fees mainly comes from firm characteristics and not from the UK BA itself.

Next, we run regression (2) before doing any matching procedure. Table IA6 reports the results of the effect of the UK BA on the audit fees of the firms that have high and low corruption exposure. The firms that have low corruption exposure experience a decrease in their audit fees compared to the low corrupt exposed firms that are not liable under the UK BA. This is consistent with the deterrent effect of the law. However, the firms that have high corruption exposure suffer an increase in their audit fees, consistent with the idea that these firms are perceived as riskier for the auditors. The same results are reported for the OECD non-FCPA firms. In the case of the FCPA firms the signs are reverted as discussed in the main text. In summary, results are in accordance to the results found after entropy and propensity score matching.

In order to confirm the idea that the increase in audit fees is caused by the auditor's perception of an increase in business risk and not because of an increase in audit quality, we check the earnings quality of the firms. Table IA7 reports the results. The dependent variables are abnormal operating expenses (column (1)) and discretionary accruals as measured by Dechow and Dichev (2002) model and as it was further modified by Francis et al. (2005) and McNichols (2002) (column (2)) and by the modified Jones model 1991, further modified by Kothari et al. (2005) (column (3)). The results for the low exposure firms are slightly different as compared to the results after entropy matching (Table 7). In particular we observe that the low corruption exposure firms who are liable under the UK BA experience an increase in the earnings management as compared to their counterparts who are not liable under the UK legislation. The results though holds only when we use the modified Jones model (1991). Further, in column (2) we see that high exposure firms have better financial reporting quality after the UK BA. However, we believe that the correct interpretation should be given after applying a matching method since the high- and low-corruption exposure firms differ in many observable characteristics before the introduction of the UK BA (see Table 1, panel B).

IA4 Validity of difference-in-difference-in-difference

Figure IA1 shows the counterfactual effects on audit fees, at a 95% confidence interval, for the triple interaction (DiDiD) after dropping from our sample the firms that are both liable under the UK BA and under the US FCPA. Before running the regression, we apply entropy balancing. The counterfactual effects prior to the UK BA are insignificant which indicates that there is no significant difference in audit fees' changes between the two groups of firms prior to the UK BA enforcement. Results are similar to the counterfactual effects estimated after including all the sample of firms in Figure 2.

Figure IA2 shows the counterfactual effects on the earnings quality measures, at a 95% confidence interval, for the triple interaction (DiDiD). Before running the regression, we apply entropy balancing. In the left panel we estimate discretionary accruals as calculated by the modified Jones Model (1991) and further modified by Kothari et al. (2005). In the right panel we estimate discretionary accruals as it is calculated by Dechow and Dichev (2002) model and as it was further modified by Francis et al. (2005) and McNichols (2002). The counterfactual effects prior to the UK BA are insignificant for the modified Jones model, but not for the Dechow and Dichev model, which might introduce some bias in our results. We try to tackle the problem using firm fixed effects.

Figure IA3 shows the counterfactual effects on the anormal operating expenses, at a 95% confidence interval, for the triple interaction (DiDiD). Before running the regression, we apply entropy balancing. Abnormal OPEX are calculated after following Dechow et al. (1998) further modified by Roychowdhury (2006). We observe that prior to the UK BA, there is not a statistically significant difference in the abnormal OPEX of the high- and low-corruption exposure firms.

Table IA1: Distribution of firms per country of incorporation

Country	Frequency	Percent
Australia	60	4.58%
Austria	2	0.15%
Belgium	5	0.38%
Bermuda	11	0.84%
Canada	16	1.22%
Cayman Islands	7	0.53%
China	11	0.84%
Cyprus	1	0.08%
Denmark	12	0.92%
Finland	17	1.30%
France	45	3.44%
Germany	48	3.67%
Hong Kong	15	1.15%
India	34	2.60%
Ireland	6	0.46%
Israel	2	0.15%
Italy	19	1.45%
Japan	290	22.15%
Kenya	1	0.08%
Luxembourg	1	0.08%
Malaysia	69	5.27%
Marshall Islands	1	0.08%
Netherlands	14	1.07%
New Zealand	5	0.38%
Nigeria	1	0.08%
Norway	15	1.15%
Peru	1	0.08%
Poland	2	0.15%
Singapore	56	4.28%
South Africa	22	1.68%
Spain	18	1.38%
Sri Lanka	1	0.08%
Sweden	48	3.67%
Switzerland	30	2.29%
Taiwan	2	0.15%
United Kingdom	200	15.28%
United States of America	220	16.81%
Zimbabwe	1	0.08%
Total	1309	100.00%

This table shows the distribution of firms by country of incorporation. The data include only the firms used in our main analysis which is a two year pre-UK BA period (2007-2008) and a two year post-UK BA period (2011-2012). Thus in our main analysis we test 1,309 firms per year.

Table IA2: Distribution of High- and Low-Exposure to Corruption firms per country of incorporation

Country	High-Level	Low-Level
Australia	14	46
Austria	2	0
Belgium	2	3
Bermuda	3	8
Canada	6	10
Cayman Islands	4	3
China	11	0
Cyprus	0	1
Denmark	4	8
Finland	5	12
France	19	26
Germany	22	26
Hong Kong	3	12
India	26	8
Ireland	5	1
Israel	2	0
Italy	17	2
Japan	178	112
Kenya	1	0
Luxembourg	1	0
Malaysia	66	3
Marshall Islands	0	1
Netherlands	6	8
New Zealand	0	5
Norway	0	15
Peru	0	1
Nigeria	1	0
Poland	2	0
Singapore	14	42
South Africa	21	1
Spain	15	3
Sri Lanka	1	0
Sweden	5	43
Switzerland	16	14
Taiwan	2	0
United Kingdom	30	170
United States of America	106	114
Zimbabwe	1	0
Total	611	698

This table shows the distribution of firms by the country of incorporation after dividing the sample into firms with high- and low-exposure to corruption. "High-Freq" ("Low-Freq") refers to the unique number of firms per year that have high (low) corruption exposure as determined by the median corruption exposure. High (Low) corruption exposure indicates a firm's corruption is above (below) the median corruption exposure level. The data include only the firms used in our main analysis which is a two year pre-UK BA period (2007-2008) and a two year post-UK BA period (2011-2012). Thus, in our main analysis we test 1,309 firms per year.

Table IA3: Number of subsidiaries per country of incorporation

Country	Frequency	Percent
Australia	88	1.05%
Austria	42	0.50%
Bahrain	2	0.02%
Belgium	87	1.04%
Bermuda	38	0.45%
Brazil	5	0.06%
Canada	30	0.36%
Cayman Islands	12	0.14%
China	18	0.21%
Cyprus	14	0.17%
Czech Republic	4	0.05%
Denmark	94	1.12%
Egypt	4	0.05%
Finland	33	0.39%
France	318	3.80%
Germany	281	3.35%
Ghana	1	0.01%
Greece	13	0.16%
Guernsey (United Kingdom)	1	0.01%
Hong Kong	30	0.36%
Iceland	2	0.02%
India	31	0.37%
Ireland	124	1.48%
Islamic Republic of Iran	2	0.02%
Isle Of Man (United Kingdom)	4	0.05%
Israel	21	0.25%
Italy	139	1.66%
Japan	257	3.07%
Jersey (United Kingdom)	7	0.08%
Jordan	3	0.04%
Latvia	2	0.02%
Lebanon	1	0.01%
Liberia	1	0.01%
Liechtenstein	2	0.02%
Lithuania	1	0.01%
Luxembourg	137	1.64%
Malaysia	17	0.20%
Malta	15	0.18%
Mauritius	4	0.05%
Mexico	4	0.05%
Netherlands	432	5.16%
New Zealand	2	0.02%
Nigeria	4	0.05%
Norway	50	0.60%
Philippines	2	0.02%
Poland	8	0.10%
Portugal	11	0.13%
Republic of Korea	12	0.14%
Russian Federation	9	0.11%
Singapore	37	0.44%
Slovakia	1	0.01%
South Africa	26	0.31%
Spain	66	0.79%
Sri Lanka	2	0.02%
Sweden	129	1.54%
Switzerland	145	1.73%
Trinidad and Tobago	2	0.02%
Turkey	3	0.04%
United Arab Emirates	1	0.01%
United Kingdom	5,135	61.30%
United States of America	409	4.88%
Uzbekistan	1	0.01%
Virgin Islands (British)	1	0.01%
Total	8,377	100.00%

This table shows the number of UK subsidiaries (i.e. companies where the parent company owns more than 50% of the shares). This is based on the raw data downloaded from Bureau Van Dijk databases before starting the analysis. The data here include the subsidiaries incorporated in the UK up until 2007 which were continuing their operations at least up to 2013.

Table IA4: First Stage Regressors for Abnormal OPEX and Accruals Measures

Dependent Variables:	OPEX		TCA - DD		TA - Jones
	(1)		(2)		(3)
Inverse assets	2863.637***	CFO_{t-1}	-9,654.723***	Inverse assets	-76.113
	(26.780)		(-4.002)		(-0.674)
$Sales_{t-1}$	0.990***	CFO	0.150***	Δ Sales	0.000**
	(264.275)		(7.765)		(2.43)
Constant	0.034	CFO_{t+1}	687.433	PPE	-0.036***
	(7.435)		(0.298)		(-7.932)
Observations	12,318	Δ Sales	-0.298***	Constant	-0.016***
Adjusted R-squared	0.856		(-42.082)		(-6.048)
		PPE	0.032***	Observations	4,401
			(4.979)	Adjusted R-squared	0.015
		Constant	-0.051***		
			(-14.269)		
		Observations	4,401		
		Adjusted R-squared	0.296		

This table shows the first stage regressions of the abnormal operating expenses and discretionary accruals measures. We run equation (3) in column (1) following Roychowdhury (2006). The dependent variable is operating expenses scaled by lagged total assets. In column (2) we run equation (4). The dependent variable is total accruals as defined by the Dechow and Dichev (2002) and as it was further modified by Nichols (2002) and Francis et al. (2005). In column (3) we run equation (5). The dependent variable is total accruals as defined by the modified Jones Model (1991) and as it was further modified by Kothari et al. (2005). T-statistics are reported in parentheses. An asterisk indicates significance at the 10% level; two indicate significance at the 5% level; three indicate significance at the 1% level.

Table IA5: Effect of the UK BA on Audit Fees

Dependent Variable: Log (Audit Fees)	(1)	(2)	(3)	(4)
Treated	0.656***			
	(8.615)			
Post	0.359***			
	(6.475)			
Treated × Post	-0.374***	-0.368***	-0.247	-0.239
	(-3.484)	(-2.58)	(-1.38)	(-1.20)
Leverage			0.073	0.073
			(1.28)	(1.28)
Inventory Receivables			-0.217	-0.264
			(-0.34)	(-0.47)
Quick			0.03	0.017
			(0.86)	(0.51)
ROI			-1.017*	-1.112*
			(-1.92)	(-1.95)
Loss			0.033	0.040
			(0.544)	(0.61)
BIG4			-0.026	-0.001
			(-0.216)	(-0.006)
Asset Growth			0.107	0.133
			(1.16)	(1.44)
ROA			0.291	0.407
			(0.64)	(0.88)
Size			0.101	0.040
			(0.57)	(0.22)
Tenure			0.013	0.013
			(1.11)	(1.90)
BM			0.003**	0.003***
			(2.00)	(1.96)
Year FE	N	N	N	Y
Firm FE	N	Y	Y	Y
Year-Industry FE	N	Y	Y	N
Observations	5,195	5,192	1,787	1,795
Adjusted R-squared	0.022	0.915	0.926	0.928

This table shows the difference-in-difference effect of the UK Bribery Act on audit pricing in the post-BA period, 2011-2012, compared to the pre-BA period, 2007-2008. The dependent variable is the natural logarithm of audit fees paid by the parent company. "Post" takes the value of one for the two year period after the UK BA. The sample is not subject to a matching method. The variable "Treated" is an indicator variable that takes the value of one if the firm is UK incorporated or if the firm has a UK subsidiary and zero otherwise. Fixed Effects are as indicated. Clustering of standard errors is at country level. T-statistics are reported in parentheses. An asterisk indicates significance at the 10% level; two indicate significance at the 5% level; three indicate significance at the 1% level.

Table IA6: Effect of Exposure to Corruption on Audit Fees

Dependent Variable: Log (Audit Fees)	**All sample**				**OECD non-FCPA**		**FCPA**
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Treated	0.453***						
	(4.666)						
Post	0.301***						
	(3.677)						
Treated × Post	-0.583***	-0.502***	-0.585***	-0.567***	-0.684**	-0.678**	0.265***
	(-4.171)	(-6.709)	(-3.107)	(-2.824)	(-2.813)	(-2.746)	(2.800)
Exposure	0.258***	-0.078	0.029	-0.022	0.016	-0.047	0.025
	(3.336)	(-1.478)	(0.355)	(-0.288)	(0.228)	(-0.501)	(0.194)
Treated × Exposure	0.756***	-0.238**	-0.588***	-0.585***	-0.615***	-0.618***	0.123
	(4.867)	(-2.005)	(-4.137)	(-4.219)	(-4.607)	(-6.193)	(0.734)
Post Period × Exposure	0.089	-0.007	-0.132	-0.07	-0.140	-0.07	0.259**
	(0.815)	(-0.125)	(-1.629)	(-0.841)	(-1.720)	(-0.818)	(2.580)
Treated × Post × Exposure	0.457**	0.407***	0.603***	0.594**	0.626***	0.636***	-0.519***
	(2.103)	(3.003)	(2.691)	(2.595)	(3.195)	(3.404)	(-4.052)
Leverage	13.190***	13.747***	0.055	0.052	0.074	0.072	-0.030
	(230.21)	(535.842)	(0.92)	(0.855)	(1.534)	(1.697)	(-0.899)
Inventory Receivables			-0.257	-0.293	0.560	0.552	-0.090
			(-0.506)	(-0.619)	(1.038)	(1.118)	(-0.222)
Quick			0.023	0.011	0.032	0.019	0.053
			(0.573)	(0.255)	(0.619)	(0.323)	(1.260)
ROI			-1.077*	-1.129*	-1.239	-1.487*	-0.287
			(-1.784)	(-1.858)	(-1.637)	(-2.070)	(-0.312)
Loss			0.029	0.036	-0.013	-0.001	0.135
			(-0.496)	(-0.674)	(-0.264)	(-0.024)	(1.134)
BIG4			-0.019	0.002	-0.094	-0.094	0.010
			(-0.159)	(0.017)	(-0.697)	(-0.896)	(0.117)
Asset Growth			0.082	0.103	0.067	0.114	-0.018
			(1.045)	(1.231)	(0.782)	(1.500)	(-0.168)
ROA			0.365	0.46	0.359	0.648	-0.045
			(0.635)	(0.879)	(0.568)	(1.142)	(-0.074)
Size			0.11	0.059	0.117	0.056	0.551***
			(0.858)	(0.442)	(1.089)	(0.355)	(5.338)
Tenure			0.012	0.012	0.008	0.009	-0.015
			(1.086)	(1.043)	(0.573)	(0.601)	(-1.005)
BM			0.003**	0.003***	0.003	0.003	-0.065
			(2.285)	(2.764)	(1.360)	(1.237)	(-0.955)
Year FE	N	N	N	Y	N	Y	Y
Firm FE	N	Y	Y	Y	Y	Y	Y
Year-Industry FE	N	Y	Y	N	Y	N	N
Sum of Coefficients: Treated × Post + Treated × Post × Exposure	-0.126	-0.095	0.018	-0.171	-0.058	-0.042	-0.254
F-test	10.22***	23.66***	7.19***	7.87***	9.58***	9.61***	13.88***
Observations	5,195	5,188	1,787	1,795	1,276	1,289	251
Adjusted R-squared	0.063	0.915	0.927	0.929	0.912	0.915	0.980

This table shows the effect of the UK Bribery Act and corruption exposure on audit pricing in the post-BA period, 2011-2012, compared to the pre-BA period, 2007-2008. The sample is not subject to a matching method. The dependent variable is the natural logarithm of audit fees paid by the parent company. "Exposure" is the measure of exposure to corrupt activities we calculated following Zeume (2017). It is an indicator variable that takes the value of one if the corruption exposure of the firm in a particular year is above or equal to the median and zero otherwise. "Post" takes the value of one for the two year period after the UK BA. The variable "Treated" is an indicator variable that takes the value of one if the firm is UK incorporated or if the firm has a UK subsidiary and zero otherwise. Columns (1)-(4) show the results of the whole sample. Columns (5) and (6) show the effect of the UK BA on OECD non-FCPA firms and column (7) shows the effect of the act on the FCPA firms only. Fixed Effects are as indicated. Clustering of standard errors is at country level. T-statistics are reported in parentheses. An asterisk indicates significance at the 10% level; two indicate significance at the 5% level; three indicate significance at the 1% level.

Table IA7: Effect of Exposure to Corruption on Abnormal OPEX and Earnings Quality

Dependent Variables	Abnormal OPEX	ABS(DA) DD	ABS(DA) Jones
	(1)	(2)	(3)
Treated × Post	-0.015	0.001	0.012*
	(-0.617)	(0.294)	(2.026)
Exposure	-0.018**	-0.009**	-0.010***
	(-2.150)	(-2.117)	(-3.940)
Treated × Exposure	0.074***	-0.002	0.013
	(6.469)	(-0.224)	(1.601)
Post × Exposure	-0.020	0.001	0.012***
	(-1.176)	(0.535)	(5.328)
Treated × Post × Exposure	0.001	0.011**	-0.005
	(0.039)	(2.171)	(-0.679)
Leverage	-0.031**	-0.003	0.004
	(-2.514)	(-0.821)	(1.140)
CFO	0.025	-0.042	0.015
	(0.303)	(-0.945)	(0.641)
Loss	0.002	0.010	0.008**
	(0.196)	(1.136)	(2.088)
ROA	-0.919***	-0.081	0.131*
	(-6.951)	(-0.744)	(2.056)
Asset Growth	0.123***	0.014	0.003
	(7.271)	(1.132)	(0.179)
Revenue Growth	0.462***	0.012	0.009
	(6.981)	(1.315)	(0.871)
Size	0.006	-0.008	0.001
	(0.420)	(-1.535)	(0.133)
Tenure	0.003	0.000	-0.002
	(0.855)	(0.018)	(-0.786)
BM	0.000	-0.000*	-0.000
	(0.772)	(-1.807)	(-0.414)
BIG4	-0.005	-0.003	-0.009
	(-0.790)	(-0.824)	(-0.995)
Firm FE	Y	Y	Y
Year-Industry FE	Y	Y	Y
Sum of Coefficients: Treated × Post + Treated × Post × Exposure	-0.014	0.012	0.007
F-test	0.12	1.38	2.31
Observations	1,754	1,597	1,597
Adjusted R-squared	0.405	0.277	0.276

This table shows the effect of the UK Bribery Act and corruption exposure in the operating expenses component and on earnings quality. The results are not subject to any matching method. In column (1), the dependent variable is the abnormal operating expenses calculated using Dechow et al. (1998) and as it was further modified by Roychowdhury (2006). In column (2) the dependent variable is the absolute value of discretionary accruals as it is calculated by Dechow and Dichev (2002) and as it was further modified by Francis et al. (2005) and McNichols (2002). In column (3), the dependent variable is the absolute value of discretionary accruals as it is calculated in the modified Jones Model (1991) as it was further modified by Kothari et al. (2005). "Exposure" is the measure of exposure to corrupt activities we calculated following Zeume (2017). It is an indicator variable that takes the value of one if the corruption exposure of the firm in a particular year is above or equal to the median and zero otherwise. "Post" takes the value of one for the two year period after the UK BA. The variable "Treated" is an indicator variable that takes the value of one if the firm is UK incorporated or if the firm has a UK subsidiary and zero otherwise. Fixed Effects are as indicated. Clustering of standard errors is at country level. T-statistics are reported in parentheses. An asterisk indicates significance at the 10% level; two indicate significance at the 5% level; three indicate significance at the 1% level.

Fig. IA1: Difference in trends in Audit Fees Pre- and Post-Regulation for high and low level of exposure groups - Non FCPA Sample

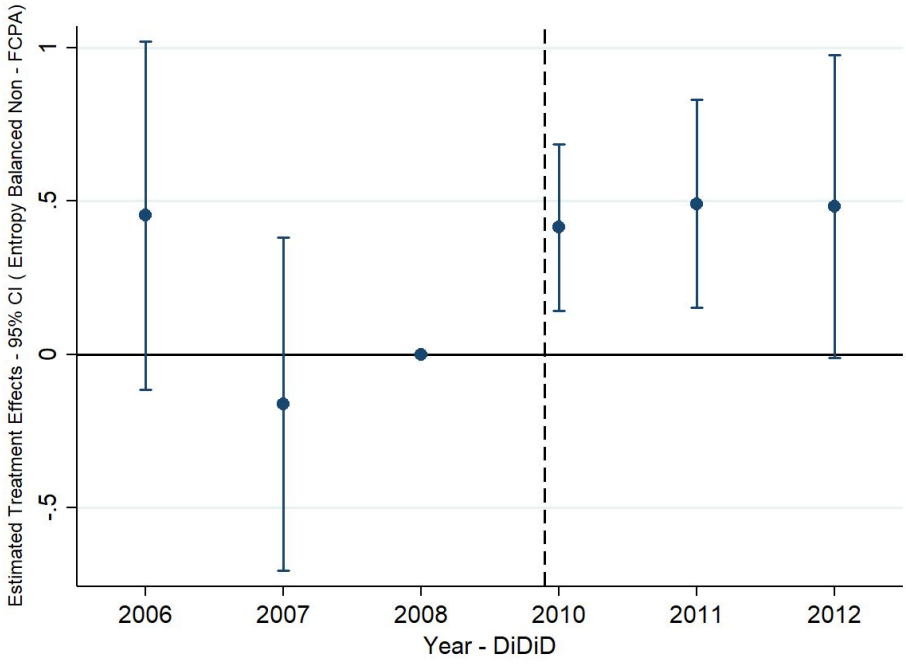

Figure IA1 plots the differences in audit fees of high corruption exposure firms, treated vs control group, compared to low corruption exposure, treated vs control group, in the pre- and post-UK BA period at a 95% confidence interval. We only include firms that are not liable under the FCPA. We estimate Audit fees as the natural logarithm of audit fees. Treated (Control) firms are indicated by one (zero) otherwise. We set the year prior to the UK BA enforcement (2008) as the base year, after deleting 2009 because it is considered of high uncertainty. The event year is set to be 2010 and we run the following regression after applying entropy balancing:

$$\text{Audit fees}_{i,t} = \beta_{i,1}Exposure_{i,t} + \beta_{i,2}Treated \times Exposure_{i,t} + \beta_{i,3}Treated \times T_{i,t-3} + \beta_{i,4}Treated \times T_{i,t-2} + ...\beta_{i,8}Treated \times T_{i,t+2} + \beta_{i,9}Exposure_{i,t-3} \times T_{i,t-3} + ...\beta_{i,14}Exposure_{i,t+2} \times T_{i,t+2} + \beta_{i,15}Treated \times T_{i,t-3} \times Exposure_{i,t-3} + ...\beta_{i,20}Treated \times T_{i,t+2} \times Exposure_{i,t+2} + \beta_{i,21}Controls_{i,t} + \alpha_i + \gamma_{industry,t} + \epsilon_{i,t}$$

Where $T_{i,t-n}$ equals one for firms nth year before the UK BA (i.e. before 2010) and $T_{i,t+n}$ equals one for firms nth year after the UK BA (i.e. after 2010), $Controls_{i,t}$ are firm control characteristics, α_i are firm fixed effects and γ_t year interacted with industry fixed effects. $Exposure_{i,t}$ is the measure of exposure to corrupt activities we calculated following Zeume (2017). It is an indicator variable that takes the value of one if the corruption exposure of the firm in a particular year is above or equal to the median and zero otherwise. The variable "Treated" is an indicator variable that takes the value of one if the firm is UK incorporated or if the firm has a UK subsidiary and zero otherwise. The coefficient plot is constructed taking into account only the triple interactions in the regression.

Fig. IA2: Difference in trends in Earnings Quality Pre- and Post-Regulation for for high and low level of exposure groups

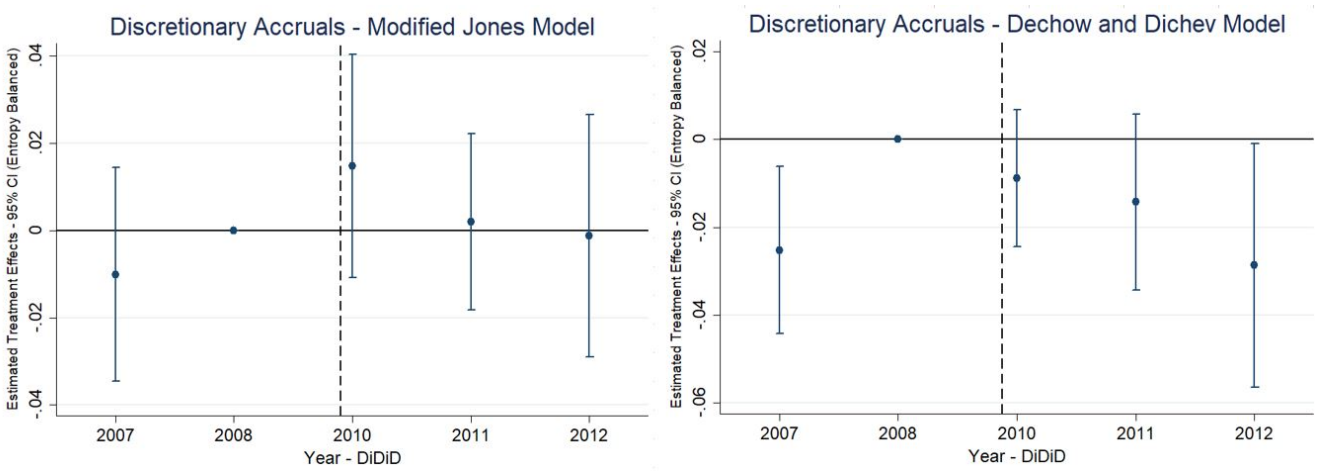

Figure IA2plots the differences in audit fees of high corruption exposure firms, treated vs control group, as compared to low corruption exposure exposed firms, treated vs control group, in the pre- and post-UK BA period at a 95% confidence interval. In the left panel we estimate discretionary accruals as it is calculated by the modified Jones Model (1991) as it was further modified by Kothari et al. (2005). In the right panel we estimate discretionary accruals as it is calculated by Dechow and Dichev (2002) model and as it was further modified by Francis et al. (2005) and McNichols (2002). Treated (control) firms are indicated by one (zero). We set the year prior to the UK BA enforcement (2008) as the base year, after deleting 2009 because it is considered of high uncertainty. The event year is set to be 2010 and we run the following regression after applying entropy balancing:

$$\text{Audit fees}_{i,t} = \beta_{i,1}Exposure_{i,t} + \beta_{i,2}Treated \times Exposure_{i,t} + \beta_{i,3}Treated \times T_{i,t-3} + \beta_{i,4}Treated \times T_{i,t-2} + ...\beta_{i,8}Treated \times T_{i,t+2} + \beta_{i,9}Exposure_{i,t-3} \times T_{i,t-3} + ...\beta_{i,14}Exposure_{i,t+2} \times T_{i,t+2} + \beta_{i,15}Treated \times T_{i,t-3} \times Exposure_{i,t-3} + ...\beta_{i,20}Treated \times T_{i,t+2} \times Exposure_{i,t+2} + \beta_{i,21}Controls_{i,t} + \alpha_i + \gamma_{industry,t} + \epsilon_{i,t}$$

Where $T_{i,t-n}$ equals one for firms nth year before the UK BA (i.e. before 2010) and $T_{i,t+n}$ equals one for firms nth year after the UK BA (i.e. after 2010), $Controls_{i,t}$ are firm control characteristics, α_i are firm fixed effects and γ_t year interacted with industry fixed effects. $Exposure_{i,t}$ is the measure of exposure to corrupt activities we calculated following Zeume (2017). It is an indicator variable that takes the value of one if the corruption exposure of the firm in a particular year is above or equal to the median and zero otherwise. The variable "Treated" is an indicator variable that takes the value of one if the firm is UK incorporated or if the firm has a UK subsidiary and zero otherwise. The coefficient plot is constructed taking into account only the triple interactions in the regression.

Fig. IA3: Difference in trends in Abnormal OPEX Pre- and Post-Regulation for for high and low level of exposure groups

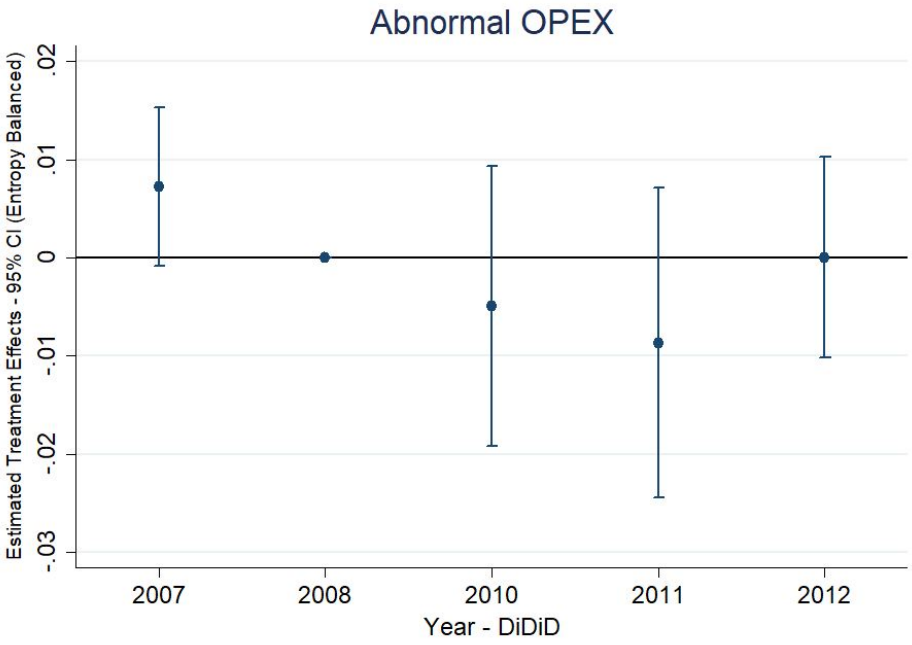

Figure IA3 plots the differences in audit fees of high corruption exposure firms, treated vs control group, as compared to low corruption exposure firms, treated vs control group, in the pre- and post-UK BA period at a 95% confidence interval. We estimate abnormal operating expenses using Dechow et al. (1998) and as it was further modified by Roychowdhury (2006). Treated (control) firms are indicated by one (zero). We set the year prior to the UK BA enforcement (2008) as the base year, after deleting 2009 because it is considered of high uncertainty. The event year is set to be 2010 and we run the following regression after applying entropy balancing:

$$\text{Audit fees}_{i,t} = \beta_{i,1}Exposure_{i,t} + \beta_{i,2}Treated \times Exposure_{i,t} + \beta_{i,3}Treated \times T_{i,t-3} + \beta_{i,4}Treated \times T_{i,t-2} + ...\beta_{i,8}Treated \times T_{i,t+2} + \beta_{i,9}Exposure_{i,t-3} \times T_{i,t-3} + ...\beta_{i,14}Exposure_{i,t+2} \times T_{i,t+2} + \beta_{i,15}Treated \times T_{i,t-3} \times Exposure_{i,t-3} + ...\beta_{i,20}Treated \times T_{i,t+2} \times Exposure_{i,t+2} + \beta_{i,21}Controls_{i,t} + \alpha_i + \gamma_{industry,t} + \epsilon_{i,t}$$

Where $T_{i,t-n}$ equals one for firms nth year before the UK BA (i.e. before 2010) and $T_{i,t+n}$ equals one for firms nth year after the UK BA (i.e. after 2010), $Controls_{i,t}$ are firm control characteristics, α_i are firm fixed effects and γ_t year interacted with industry fixed effects. $Exposure_{i,t}$ is an indicator variable set to one if the corruption exposure of the firm is equal or above the median and zero otherwise. The variable "Treated" is an indicator variable that takes the value of one if the firm is UK incorporated or if the firm has a UK subsidiary and zero otherwise. The coefficient plot is constructed taking into account only the triple interactions in the regression.

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