

# What is the Effect of Corruption on the Accounting Practice?

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**Abstract.** We exploit the UK Bribery Act, 2010 as a shock to the litigation and reputation risk of the firms that are exposed to high-perceived corrupted environments. Using a difference-in-difference design, we show that law enforcement induces firms that operate in high-corrupted environments to change their accounting practices in order to avoid future possible litigation and reputational costs. In particular, our evidence suggests that firms that fall under the UK jurisdiction and are perceived as being exposed to higher corruption, enjoy better auditing and financial reporting quality after the UK Bribery Act. Results remain robust to a number of sensitivity tests.

**Keywords:** Audit Quality; Financial Reporting Quality; UK Bribery Act 2010; corruption; bribes.

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# 1 Introduction

Multiple academic definitions of corruption coexist, ranging from those referring to it simply as “public power” or “moral decay”, to those specifically defining it as an act of bribery (Rose, 2018). Bribery implies incurring a direct monetary cost to gain access to the economic benefits provided by corruption (Emerson, 2006). In an organization, the meaning of bribery extends from payments to public officers to “how individuals entrusted with authority to make decisions on behalf of the organization misuse their position for personal gain” (World Bank study, 2014). International dataset studies suggest that, on average, 20 percent of the firms anticipate that they should offer this type of bribes in order to achieve a construction permit. Remarkably, Souzan and Kaufmann (2013), after surveying 11000 companies in over 125 countries, show that one third of managers are willing pay bribes to obtain public contracts. Even though bribes in particular, and corruption in general, are positively associated with developing countries (World Bank study, 2014), evidence conveys that bribes in international business transactions of OECD countries account for 5% to 25% of the total value of the contract (Bribery in Public Procurement, 2007). However, these figures are just the tip of the iceberg of bribe-related activities as, for instance, firms operating within less corrupt legal environments are more likely to deny their involvement in bribery (Gago et al. 2018). Therefore, the statement that legal institutions play a central role in combating corruption according to which countries with higher judicial systems are better in discouraging illegal activities relating to bribes (Treisman, 2000; Brunetti and Weder, 2003; Bond, 2008; Wu, 2009) deserves further attention.<sup>1</sup>

Additionally, and despite its tremendous importance though in both the corporate and social environment, little is known about the effects of corruption in the accounting and auditing domain (e.g., Bushman et al. 2004; Healy et al. 2012). Remarkably, auditing is responsible to monitor the potential effects of illegal payments in financial statements and express a qualified opinion or an adverse opinion, depending on the materiality of the bribery effect on the financial statements (e.g., contingent liability or loss of revenue) (SAS 54).

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<sup>1</sup> This notion is consistent with the economic theory of crime (e.g., Becker, 1974; Cooter and Ulen, 2011; Harcourt et al., 2013).

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In this study, we investigate the effects of corruption in the accounting practice. Specifically, we analyze the impact of the United Kingdom (UK) Bribery Act (BA) in 2010 on the audit- and earnings- quality in a set of firms that faced a rise in their litigation costs if they hide their bribery and are being caught (as stated by Bond, 2008), whilst they carry out a high reputational risk for disclosing it. We focus on whether their proxies: audit fees for audit quality (e.g., Bills et al., 2016, 2017), and bribe-modified accruals for earnings quality vary with the litigation risk audit-client firms face together with the client-firm's corruption exposure. Bribe related payments may take different forms in 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. All of them, typified as illegal by SAS 54, are usually book-recorded as operating expenses. For this reason, we adopt the Dechow and Dichev (2002)'s proxy to earnings quality, as modified by Francis et al (2005), adding the changes in operating expenses to determine the impact of bribes on modified accruals.

Combating, or even observing corruption is challenging. For that, we exploit the UK Bribery Act, 2010 as a shock to the litigation and reputation risk of the UK and UK-associated firms that have high propensity in engaging to corrupted activities. The peculiarity of this Act is that it does not only affect British based companies but also those companies that establish an association with the UK (for e.g. any UK subsidiary).

Using a difference-in-difference design we show that firms that fall under the jurisdiction of UK courts and are also exposed to environments with high-perceived corruption, experience a boost in their audit fees. Further, these firms seem to adjust their accounting decisions in order to circumvent probable litigation costs. Results shows that bribe-related activities, through the bribe-modified accruals of highly corruption-exposed firms decline after the Act. Evidence also suggests that these firms show a decrease in the abnormal operating expenses after the passage of the law, which goes in line with the argument of an increase in the audit quality. Results

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remain robust to a series of sensitivity tests.

To the best of our knowledge, this is the second study that analyses the effects of the UK Bribery Act in the business environment and the first one to examine its implications in the audit literature. We contribute to the literature of auditing, providing firm-level evidence as to how firms that operate in high-perceived corrupted environments reduce corrupted-related activities as a consequence of the increase in the audit quality and litigation risk. Our results are particular important to regulators showing that anticorruption laws should constrain, not only firms headquartered in that particular country but also all the firms that are doing business within the country domain.

In the next section, first, we discuss the main differences between the UK BA, 2010 and previous anti-corruption legislations, some key points of the act, the auditors' obligations as well as the connection between litigation risk and audit quality as measured by audit fees and discretionary accruals. After analyzing the background of the UK Bribery Act, 2010 and developing our hypothesis, we use a quasi-experimental design to identify changes in the audit quality and financial reporting quality after the law, using a difference-in-difference approach. Finally, we present our findings and proceed into some further robustness checks before concluding.

## **2 UK BRIBERY ACT BACKGROUND AND DEVELOPMENT OF HYPOTHESES**

### **2.1 Background to the UK Bribery Act, 2010**

Fighting corruption has been the main concern of many nations, with most of them applying anti-corruption laws to discourage fraud activities (World Bank)<sup>2</sup>. However, companies that are subject to anti-corruption regulations seem to object against it as they place them in an unfavorable position compared to their unregulated competitors. This builds on the opinion that

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<sup>2</sup> <http://www.worldbank.org/en/topic/governance/brief/anticorruption>

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bribery encourages companies performance (Zeume, 2017)<sup>3</sup> . In an attempt to address the issue, the UK parliament established the UK Bribery Act, 2010 as the main governing body for prosecuting corruption and bribery. Combating, or even observing corruption is challenging. For that, we exploit the UK BA as a shock to the litigation risk (and thus reputation risk) and audit quality of those UK- and UK-associated firms that have high propensity in engaging to corrupted activities.

The Bribery Act (BA), unlike any previous anticorruption legislation, imposes strict liabilities upon UK and non-UK firms 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 could be applied to any UK-associated person, regardless of the place the bribery was taken place. “Associated person” could be the company’s employees, agents, joint venture partners or subsidiaries established in the UK.

Its main purpose is to combat corruption at a time where corruption and bribery rates were constantly rising repealing all the previous anti-corruption laws that were applied in the UK up to that point<sup>4</sup> .

The Bribery Act (BA) has some notable differences compared to previous anti-corruption laws that were effective in the pre-BA period in the UK. These differences are enough to consider that the BA generates increasing liability and higher litigation risks and costs faced by the firms, if they are caught engaging in bribe-related activities, compared to previous American and OECD legislations (Bribery Act, 2010)<sup>5</sup> . If we define litigation risk as a function of the probability of being caught of bribing and the amount of costs entailed in this, we can conclude that the BA increases litigation risk for two reasons. First, we can deduce that the probability of being caught of bribing under the UK BA will at least remain the same as before. Even though prior anti-corruptive laws applied in the UK, such as the Organization for Economic Co-operation and Development (OECD) anti-bribery convention (1997), the UK’s anti-corruption procedures

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<sup>3</sup> Zeume (2017) shows that in the period of the passage of the UK Bribery Act, regulated firms that were exposed to higher corruption environments faced a decrease in their share price whereas their unregulated counterparts operating in higher corruption environments, faced an increase in their share price.

<sup>4</sup> Prior to the UK BA, 2010, the main anti-corruption country law were the US Foreign Corrupt Practices Act (1977) (Tomasic, 2018) and the OECD Anti-Bribery Convention (1997).

<sup>5</sup> <https://www.legislation.gov.uk/ukpga/2010/23/contents>

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were highly criticized and they were rendered as inadequate for encountering Bribery of foreign officials in international business transactions. In its report, the OECD working group specified that “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)” calling for a more effective anti-corruption legislation. Despite the fact that it is not clearly stated in the UK BA that the probability of being caught will be more efficient, it is certain that the prosecution will at least remain as efficient as before.

Second, the amount of litigation costs increases: Unlike any previous anticorruption legislation, it imposes rigorous liabilities upon UK and non-UK firms for failing to impede bribes relating to public officials, something that is not in the scope of previous anti-corruption legislations. Liabilities include up to 10 years of imprisonment and unlimited fines<sup>6</sup>. The act makes also an offence “facilitation payments” used to encourage non-discretionary actions, a stance that was not covered neither by the OECD Anti-Bribery Convention 1997 nor by the U.S. Foreign Corrupt Practices Act. Its scope goes beyond the territory the bribery is taking place. For an offence to arise it is sufficient for the briber to be associated with the organization. Association is established if the briber is the organization’s agent, employee or a subsidiary. Thus, a foreign corporation that performs business or part of a business in the UK could be liable under the UK jurisdiction even if the bribery took place outside the UK by the corporation’s agents. Similarly, a non-UK parent with a UK subsidiary can be prosecuted by the UK jurisdiction if the bribery is associated with its subsidiary. Liabilities include suspension or debarment of the business, unlimited fines and/or even imprisonment constituting it as one of the harshest anticorruption laws internationally. Thus, the probability of being caught engaging in bribing remains at least the same as before, and the litigation costs increase, we can presume that the BA generates higher litigation risk compared to any other previous anticorruption law.

We also argue that the passage of the act links to audit quality as under Section 7 of the legislation, auditors are required to undertake all necessary procedures to monitor the anti-

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<sup>6</sup> The FCPA Act, 1977 involves up to 5 years of imprisonment and a fine up to \$50 000

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corruption implementation of their client. Section 7 of the BA considers a defense to the briber charges if corporations bring forward in court that they have implemented all the adequate procedures and internal compliance controls to combat bribery. The primary audience of the UK BA relates to agents that are responsible for ensuring that all adequate procedures are exerted to counter bribery. Some of the most important agents involved are auditors, board of directors and corporate responsibility or ethics department of a company. 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. Auditors therefore are facing higher exposure to loss of reputation if their clients are caught for bribing under the BA as they are also responsible for undertaking the necessary measures to tackle corruption. It is thus expected that auditors who audit firms that do not have sufficient anticorruption practices to be highly motivated in exerting effort for preparing and performing all the controls necessary to prevent bribe-relating behavior and thus evading reputational concerns. It is important to note though that foreign corporations who own a UK subsidiary are not required to apply costly anti-bribery procedures. Criminal offences under the UK BA are not many, indicating the strictness of the law together with the cost and time requirements necessary for starting and pursuing a case<sup>7</sup>. It further signals a thorough prosecution process constituting it “an exemplary piece of legislation” (House of Lords report, 2018)<sup>8</sup>.

## **2.2 Litigation Risk, Reputation Risk and Audit Quality**

Audit quality could be defined as “greater assurance that the financial statements faithfully reflect the firm’s underlying economics, conditioned on its financial reporting system and innate characteristics” (DeFond and Zhang, 2014, p. 277). We extend the DeFond and Zhang (2014) definition adjusting it to the anti-bribery domain, by adding the term “greater assurance that auditors would offer independent assurance on the quality of the anti-corruption procedures implemented by the firms”.

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<sup>7</sup> Examples of cases prosecuted under the UK BA can be found in Appendix B.

<sup>8</sup> <https://www.gtlaw.com/en/insights/2019/3/uk-review-of-the-bribery-act-2010-committee-concludes-new-guidance-needed>

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**2.2.1 Auditors Reputation Risk and Audit Quality** 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) and it emerges from litigation risk, regulation and/or reputational risk. The three variables though are not mutually exclusive as litigation and regulation fines and penalties will most probably harm auditors reputation. In the above section we established that the BA has caused an upward shift in the litigation and regulation costs firms face if they are caught for bribing. It is intuitive therefore to assume that auditors would be inclined to provide better quality audits when they face a threat on their reputation via increasing client litigation risk.

Chaney and Philipich (2002), analyze the three days after which Arthur Andersen admitted shredding important documents. They find that market reaction caused a decrease on the share price of other Andersens clients indicating the negative impact of the loss or reputation. Auditors reputation impairment due to loss of independence seems to be penalized by the market, as the audit quality is perceived to be declining (Krishnamurthy et al, 2010). In a similar manner, Cahan et al (2009) identify a loss in the share price spilling to nonUS Andersen clients with the market conceiving a decrease in the audit quality via decreases in the auditors reputation. The literature that uses the Enron scandal as a shock to auditors reputation suggests that the market presumes a loss in the audit quality resulting from the loss of reputation. While it identifies a link between reputation risk and audit quality it fails to disentangle the indirect effects of litigation risk in audit quality. Two other studies investigate the effect of audit reputation loss on audit quality in lowlitigation jurisdictions. Weber et al (2008) identify a failure in the reputation of KPMGs German affiliate after a scandal in a German public company. Germany is considered to offer auditors protection against shareholders litigation risk and costs. Evidence shows that KPMG clients not only experienced a decline in their share price but they were also inclined in changing their auditors. Similarly, in Japan (an almost zero litigation risk environment), a PWCs affiliate experienced a massive failure in its reputation after being discovered that one of its clients was involved in accounting fraud. Results show that PWCs affiliate clients, and in particular those with greater growth opportunities, were more likely to drop PWC after the



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event (Skinner and Srinivasan, 2012). These two studies indicate that a threat on auditors reputation provides incentives for auditors to offer higher audit quality regardless of the litigation risk.

**2.2.2 Audit Quality and Audit Fees** Auditors can diminish future losses arising from reputational damage through stronger audit commitment. This implies that auditors should exert more effort which in turn increases the hours of work and ultimately audit fees. Literature on audit fees and audit quality identifies this link.

Most of the literature focuses on the relationship between litigation risk and audit fees. Wiltenborg (1999) identify a positive association between audit fees of companies that had higher IPO proceeds indicating that higher engagement risk causes an increase in audit quality. Auditors operating in riskier environments would be encouraged to reduce litigation by providing higher quality audits as shown by higher audit fees (Venkataraman et al., 2008) which is consistent with the view that higher audit effort could lead to better audit quality.

Seetharaman et al (2002) using UK firms that sell securities to the US show that auditors respond to a threat in the litigation risk by charging higher fees. We recognize that these studies suffer from not establishing a clear link between audit fees and audit quality as they fail to disentangle whether the increase in audit fees results from higher audit effort (to eliminate the risk) or simply risk premia to shift the litigation costs to the audit-firm clients.

However, Hope and Langli (2010) looking at the association between audit fees and quality of audits at a low-litigation and low-reputation environment (Norway) find evidence that audit fees do not undermine audit independence consistent with the view that higher audit fees are due to higher audit effort. Further studies analyzing the relationship between audit fees and restatements identify that higher audit fees result to lower restatements providing further support to the opinion that higher audit fees show higher audit effort and just risk premia (Kinney Jr. et al., 2004; Blankley et al, 2012). This actually indicates that audit fees indicate audit-firm commitment to provide better quality audits which eventually decreases the probability of proceeding to material misstatements (Keune and Johnstone, 2012). Aobdia (2018) analyses a unique dataset of PCAOBs inspections and audit firms internal controls. The auditor shows

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that audit fees used in the academia to proxy audit quality are positively associated with the measures of audit process of both PCAOB and audit firms internal inspections. Results indicate that higher audit quality proxied by higher audit fees in the academic literature is coherent with what audit firms and practitioners (regulators) consider as higher quality of audits. Overall, there is a consensus as to the positive association between audit fees and audit quality. Given therefore, that firms will experience better audit quality in the post-BA period, we expect auditors to indicate higher effort through higher audit fees.

**2.2.3 Audit Quality and its association with financial Reporting Quality** Academic literature has also shed light on the relationship between audit quality and financial reporting quality making it an appealing proxy of audit quality. Financial reporting quality could be considered as a function of audit quality, the quality of the firm's financial reporting systems and the firm's innate characteristics (DeFond and Zhang, 2014). Previous literature has, in its majority, proxied financial reporting quality using earnings quality proxies and in particular, abnormal accruals either signed (Owens et al., 2017; Cohen et al., 2008; Klein, 2003; Dechow and Dichev, 2002) or unsigned (Peterson et al., 2015; Cohen et al., 2008; Hribar and Craig Nichols, 2007; Kim and Yi, 2006) While financial reporting quality is quite extensive, academic literature usually links audit quality with the quality of earnings as better audit quality could discourage managers from engaging in opportunistic earnings management.

Theoretical auditing literature advocates that the preparation of the financial statements should be seen as a conjoint work of both the auditor and the manager (Antle and Nalebuff, 1991). It is also demonstrated that audit independence is facilitated in environments whereby discretion on accounting standards is restricted and disagreement between auditors is limited (Magee and Tseng, 1990). Financial reporting quality measures identify malpractices associated with GAAP or IFRS manipulations (Levitt, 1998). Auditors' main responsibility is to ensure that all financial statements present a fair and true view of the company according to the GAAP and IFRS and are thus expected to identify any deviation of managers from the accounting standards (PCAOB 2010).

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Conforming with this view, Bill et al. (2016) identify that higher audit quality, proxied by the number of PCAOBs inspections, is positively related to audit fees and fewer absolute discretionary accruals. Caramanis and Lennox (2007), using a database of audit working hours in Greece show that higher audit hours lead to better audit quality as shown by improvements in the quality of earnings. Bills et al (2017) in a study looking how the CEO succession affects financial reporting agents, they show that auditors respond to the perceived risk and uncertainty about future earnings manipulation by demanding higher compensation through audit fees without finding evidence of a decrease in the audit quality.

Following the definition of audit quality by DeFond and Zhang (2014), we could induce that financial reporting measures are a good proxy to audit quality.

**2.2.4 Corruption and accounting** The quality of an organization's pre-audited financial statements would also be affected by the financial reporting systems quality and the innate characteristics embedded in the company. It is prudent to assume though, that corruption-related culture of a firm is likely to affect both of these components. Mauro (1995) identifies that corruption negatively affects investment and is a determinant for a country's negative growth rates. Wu (2009), using World Business Environment Survey data, shows that weak legislation environments make room for illegal activities leading to higher bribe-related actions at firm-level. Treisman (2000) identifies that higher quality governments and governments that had influences of British rule lead to lower corrupting activities. Prior theoretical literature also shows that firms operating in corrupt legal environments are more likely to engage in bribe-relating activities as they face lower probability of being prosecuted and thus lower litigation costs (Bond, 2008; Brunetti and Weder, 2003). In a similar vein, Souza and Kaufmann (2013) study the impact of various factors, among them the institutional environment, to bribing. They indicate that strong legal institutions are associated with lower bribery. Shleifer and Vishny (1993) explain that less developed countries are more likely to engage in corrupt-related activities because they lack of strong institutional and legal environments. Firms operating in weak institutional environments do not have only higher incentives to bribe according to prior research but are

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also reluctant in disclosing their actions in firm level surveys (Gago et al, 2018). A legal environment though, can also be seen as the image of the ethical and moral standards of a society (Rodriguez et al., 2018). Under this rationale, we assume that the firms innate characteristics depend on the legal environment. Hence, firms operating in highly corrupted environments face lower financial reporting systems and a culture that is directly related to corruption leading to an overall low financial reporting quality.

We expect therefore, an overall increase in the audit and financial reporting quality in the post-BA period for two particular reasons. First, the passage of the UK BA would cause auditors to exert higher effort to protect their reputation. This decrease in the reputation could firstly be the consequence of an increase in the audit-firm client litigation risk: previous literature indicates that a decline in the auditors reputation could be detrimental for the auditor and its clients and that its negative consequences are not necessarily a function of litigation risk. Thus, it is expected that a probable auditor reputational damage would incline auditors to offer better quality of audits in order to avoid the negative consequences that may arise from a loss of reputation. Further, auditors need to comply with the necessary anticorruption procedures disclosed in the act (implementation costs) when auditing firms that have high perceived corruption exposure. Failure to fulfil with the anti-corruption requirements would further trigger a negative reputation. Second, firms would be driven towards a non-corruption culture. The BA imposes limits on the bribe-related activities firms can engage in. Under the BA all firms that have UK subsidiaries and operate in countries with weak institutional and legal environments will now be under a stronger legal system, which is the UK legal institution (Treisman, 200). This would cause a decline in corruption, based on the literature, which in turn increase financial reporting quality through better financial reporting systems and a firm-culture driving away from corruption.

However, we anticipate that audit- and financial reporting- quality improvements after the BA will only be observed in firms that operate in highly perceived corrupted environments.

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These firms will be more likely to be affected by the increased litigation reputation risk entailed in the UK BA.

This leads us to state our hypotheses:

*H1: The passage of the law positively affects the quality of audits via threats in audit reputation causing auditors to exert higher effort to meet regulators demands. H2: Assuming higher audit quality after the UK BA through higher effort, we expect auditors who audit firms that have higher perceived exposure to corruption to charge higher fees in the post-BA period. H3: Assuming higher audit quality after the UK BA, we expect firms that have higher perceived exposure to corruption to face better earnings quality in the post-BA period.*

### 3 Data and Variables Section

#### 3.1 Sample

As a first step, we had to construct our treated sample necessary for the analysis. Our treated sample consists of firms that are regulated under the UK BA (i.e firms that have either their headquarters or subsidiaries in the UK) and our control sample comprises of their unregulated competitors. To identify the impact of corruption on audit quality, we use audit fees and the absolute value of discretionary accruals to proxy the quality of the audited financial statements. The absolute value of discretionary accruals is measured using the Dechow and Dichev model as it was further modified by Francis et al. (2005) adding the Operating Expenses item.

For the construction of the treated sample firms, we collect subsidiary information from the Orbis database. We commence with 18207 unique listed and major unlisted/delisted companies around the world that have at least one subsidiary owned to more than 50%<sup>9</sup> worldwide in 2018. We remove insurance and financial firms. Orbis only offers information about firm subsidiaries-year for the last available year, which was 2018 at the time the data was collected. Hence, to complete our dataset and attain the correct incorporation date of the subsidiaries, it

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<sup>9</sup> The UK Bribery Act, 2010 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”. For ownership to be established it must be the case that the company has more than 50% of shares in the subsidiary

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was necessary the subsidiary to be incorporated as a legally separate entity. Considering the fact that not all the subsidiaries are incorporated, after obtaining the incorporation date of the subsidiaries, our final sample comprises of 6363 publicly listed firms that had their subsidiaries incorporated before and including 2007<sup>10</sup>.

As a second step, we collect accounting information regarding the consolidated financial statements from Osiris database, and information on audit fees is derived from Thompson Reuters Worldscope. After merging it with the Osiris database to obtain accounting information regarding these firms, we are left with 1800 unique company observations<sup>11</sup>.

We also obtain exchange rates for each of the years of interest from the World Bank Database. Exchange rates are required to convert all audit fees in United States dollar (USD) as the accounting information on the firms is directly downloaded in USD.

## 3.2 Methodology

**3.2.1 Measures of audit quality:** The first measure used to proxy audit quality is the natural logarithmic of audit fees<sup>12</sup>.

As a second proxy, we use the accruals quality measures. The first accruals measure is based on the Dechow and Dichev (2002) residuals model as it is modified by Francis et al (2005)<sup>13</sup>. Anecdotal evidence suggests that bribes could be hidden in the operating expenses part of the income statement. Subject to that, and in attempt to capture bribe-hidden related activities, we

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<sup>10</sup> The license for the Orbis and Osiris database only included 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.

<sup>11</sup> We had to merge the information from the Thompson Reuters Worldscope with the one in Osiris database by name since there was not a common firm identification code. We merge 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 1951 unique company observations. Then we hand crossed the merging and we deleted observations that were not correctly matched ending in 1800 unique firm observations.

<sup>12</sup> We use the natural logarithm of audit fees as it provides a convenient (elasticity based) interpretation (Venktaraman, 2008)

<sup>13</sup> In their study, Dechow and Dichev (2002) suggest that accounting quality could be proxied by the absolute value of the residuals or by the standard deviation of the residuals. In this study we use the absolute value of the residuals since the standard deviation of the residuals fails to capture the effect of a particular audit, identifying the impact of a series of audits over the estimation period (Aobdia, 2008)

extend the Dechow and Dichev(2002) model as it was further modified by Francis et al. (2005) with the Operating Expenses component<sup>14</sup>. We thus follow the following model.

$$TCA_{i,t} = \beta_{i,0} + \beta_{i,1}CFO_{i,t-1} + \beta_{i,2}CFO_{i,t} + \beta_{i,3}CFO_{i,t+1} + \beta_{i,4}\Delta Rev_{i,t} + \beta_{i,5}PPE_{i,t} + \beta_{i,6}\Delta OPEX_{i,t} + \epsilon_{i,t} \quad (1)$$

where  $TCA = (\Delta CA - \Delta Cash) - (\Delta CL - \Delta STDEBT)$ ;  $\Delta CA$ = change in current assets;  $\Delta Cash$ = Change in cash and cash equivalents;  $\Delta CL$ = change in current liabilities;  $\Delta STDEBT$ = change in short-term debt.

$CFO$  =Cash Flows from Operations;  $\Delta Rev$  = change in revenue;  $PPE$ = gross Property, Plant and Equipment;  $\Delta OPEX$ = Change in operating Expenses.

All variables are scaled by average total assets. Equation (1) is estimated per industry and year and we require at least 10 observations in a given industry-year group. The proxy for audit quality is the absolute value of the residuals derived from equation (1),  $\epsilon_{i,t}$ .

**3.2.2 Research Design: The impact of Corruption on the audit quality** We use a difference-in-difference design exploiting the UK Bribery Act, 2010 as a shock to the UK and UK-associated high-corruption exposed firms litigation risk and audit quality.

The UK BA, 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 will be enacted and the law enforcement started on the 1st July, 2011. To the extent that in 2009 it was not certain that the law would have been enacted, we delete it from our regression analysis and we consider 2010 as our event year. We thus determine a two-year pre-and post-BA period considering the years of 2007 and 2008 as our pre-period and the years of 2011 and 2012 as our post-period. Hence,

<sup>14</sup> In the fraud magazine (<https://www.fraud-magazine.com/article.aspx?id=4294989479>), there are some examples on how bribed officials tried to classify/hide bribes in the financial statements. The most common approach is to account for the bribes as entertainment, business trips, commissions, advertising fees, training fees. We also run the regressions using the model as estimated by Francis et al (2005) in its original form, excluding Operating Expenses. Results remain the same.

our post-period variable is a dummy that takes the value of one if the firm-year accounting information is in 2011 or 2012 and zero otherwise. We conduct alternative tests considering the years from 2006-2008 as our pre-period and the years from 2011-2013 as our post-period. Results remain the same. Our “Treated” variable is a dummy that takes the value of one if the company has either a UK headquarter or 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 highly perceived corrupt countries. To eliminate such concern, our treated sample consists of firms that continue possessing either a UK headquarter or a UK subsidiary after the act as well. Our diff-in-diff variable is the interaction between the treated variable and the post period variable. Our variable of interest is a triple difference between the treated variable, the post-period and the continuous variable of corruption exposure. Since we cannot directly obtain the amount of bribes paid, we use the Zeume (2017) measure of Corruption Exposure at firm-level. For the calculation of the measure, we use the Corruption Perceptions Index of the Transparency International to obtain the corruption level of each country and the Orbis database to derive subsidiary information.

$$CorruptionExposure_i = \sum_{c \in C} \left( (10 - CPI_c) X \frac{\#Subsidiaries_{i,c}}{\#Subsidiaries_i} \right)$$

where  $CPI_c$  is the Corruption Perception Index from the Transparency International of country  $c$  in each of the years that are relevant for our analysis. The  $\#Subsidiaries_{i,c}$  is the number of subsidiaries headquartered in country  $c$  and owned by firm  $i$  in the relevant year,  $\#Subsidiaries_i$  is the total number of subsidiaries owned by  $i$ . The total corruption exposure of a firm is the summation of all of its exposure coming from its subsidiaries.<sup>15</sup> By construction, an increase in the corruption exposure measure indicates higher exposure to corrupt countries. We capture the effects of corruption in audit quality using the UK BA as a quasi-experimental design. The

<sup>15</sup> This measure assumes that each subsidiary is equally important to the firm. Another way would have been to take into account the revenues generated by each subsidiary. Untabulated analysis give similar results.



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UK BA offers a shock to the litigation risk (and thus reputation risk) and audit quality of firms that have more propensity to engage in bribe-related activities. This, in turn, forces auditors and firms to adjust decision in order to avoid probable litigation and reputational costs. The BA makes compulsory all firms that have either UK headquarters or UK subsidiaries to fall under the UK jurisdiction.

At the beginning we study the impact of the act on audit quality through audit fees and financial reporting quality on the treated sample firms who operate in highly perceived corrupted settings using the following DID regression model:

$$\begin{aligned}
 \text{AuditQualityMeasure}_{i,t} = & \beta_{i,0} + \beta_{i,1} \text{TreatedXPost}_{i,t} + \beta_{i,2} \text{TreatedXPostXCORRUPTIONEXPOSURE}_{i,t} + \\
 & \beta_{i,3} \text{Controls}_i + \gamma_{i,4} + \epsilon_{i,t}
 \end{aligned}
 \tag{2}$$

where the Audit quality measure is either audit fees or earnings quality measured, discussed above. The interaction term Treated X Post is the difference-in-differences estimate of the effect of the act on the firms that have their headquarters or subsidiaries in the UK. The interaction term Treated X Post X Corruption Exposure is the triple difference-in-difference estimate of the effect of the act on the firms that have their headquarters or subsidiaries in the UK taking into account the level of corruption exposure. Higher numbers of the triple DID estimate indicate the effect of treated firms after the act that have high perceived corruption exposure. Corruption Exposure is obtained using the Corruption Exposure measure of Zeume (2017).

Our difference-in-difference design is appropriate, if our exogenous shock is valid and approaches as close as possible a fully random assignment (Atanasov and Black, 2016). We have reasons to believe that the assumptions for an almost fully random assignment are satisfied. The shock was exogenous and was not anticipated by the firms as it was not covered by the media up until the day of the draft announcement (Zeume, 2017). It is also expected to be permanent as the main purpose of the BA was to annul previous anti-corruption acts <sup>16</sup>.

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<sup>16</sup> We recognize that a condition that limits full random assignment is the fact that the assignment to the treated group might be influenced by firm unobservable characteristics. This is because firms decisions to have either their headquarters or

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Regarding the covariate balance between the treated and control group, in further tests, we perform the regressions using both Propensity Score Matching and Entropy Balancing. Results are similar to the one in the unmatched sample. Further, the law must 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 that were falling under the act.

Further, the provisions on the act were not anticipated. It introduced unlimited fines and/or imprisonment and the penalties were a lot stricter than any other anti-corruption law applied previously in the UK and OECD countries. It also applied to foreign firms with UK operations/businesses.

The last condition that should apply in our exogenous shock is the fact that there are no other confounding effects at the same time affecting the results. There were some huge changes in the UK Generally Accepted Accounting Practice in 2012 but it was estimated that 96.7% of the UK firms were not affected which cannot introduce a material noise to our results. Further, the EU made mandatory the audit rotation in 2012. The effects of audit rotation on audit quality are still an ongoing debate. Studies that show that audit rotation affects negatively audit quality would go against us finding a positive impact on audit quality after the BA. In addition, in a period covering from 2011 until 2014, there were 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 a positive association between audit quality (through audit fees) after the UK Bribery Act. Another concern would be that firms could start decreasing subsidiary activities in high perceived corrupt countries. We also account for that allowing the treated group of firms to be only the ones that have the subsidiaries before and after the act.

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subsidiaries in the UK is endogenous to firm unobservable characteristics. Nevertheless, the assignment between treated and control groups is close to random.

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## 4 Results

### 4.1 Summary Statistics

Summary Statistics are presented in table 1. Panel A shows the summary statistics of both Treated and Control group for the pre- and post-BA period. It relates to all the variables used in our study for the 2007, 2008 and 2011 and 2012 period based on 29831 observations. In general, our sample consists of large firms that on average have good growth prospects and an a relatively acceptable corruption exposure. The summary statistics of the treated group compared to our control group are presented in panel B. It is shown that the two groups are quite different. For this reason, in our analysis we perform both entropy balancing method and propensity score matching as a robustness check. The treated group has less corruption exposure, more leverage, higher asset turnover, higher litigation risk, higher return on assets and also lower book to market value. This goes in line with the idea that the treated firms (i.e. those that have UK operations) are good quality firms with better growth prospects.

### 4.2 Difference-in-Difference Analysis and Results

In this section we test our hypotheses using a diff-in-diff design.

**4.2.1 Audit Quality using Audit fees. An unmatched sample analysis** Our first test examines whether audit fees have increased after the UK BA for those firms that are held liable for bribing under the UK jurisdiction. Due to the fact that our shock is not staggered, we cannot test for parallel trends from before to after the event date (Atanasov and Black, 2016). What we can test though is whether pre-treatment trend are parallel using a “leads and lags model” (named after Atanasov and Black, 2016). Using a graphical interpretation of the coefficients plot using dummy years, we expect to see an insignificant effect of the dummy years in the pre-treatment period and significant coefficients for our dummy variables in the post-treatment period.

Figure 1 shows the coefficient plots of the how the year variables and corruption affect audit fees. Specifically, we construct dummy variables for each year. We then interact each dummy year variable with the Treated variable. Further, we have a triple interaction between the dummy

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years, the treated variable and the Corruption dummy. The corruption dummy takes the value of 1 if the company has above, or equal to the median corruption exposure and 0, otherwise. We perform a regression analysis including firm and year fixed effects and we adjust for clustering at the firm level. The dependent variable is the logarithm of audit fees. Figure 1 shows the effect of corruption on the treated group in the pre- and post-BA period. The coefficients shown related to the triple interaction between the year dummies, the treated group and the corruption dummy. The y-axis represents the logarithm of audit fees and the x-axis shows the number of years. Looking at the figure, we can have a first prediction regarding our regressions. We observe that in the high-corruption group, the pre-treatment coefficients are statistically not significant but in the post-treatment group the coefficients increase and become statistically significant. As it was expected though, we observe that in the low corruption group, the law had caused no effect since the coefficients remain statistically insignificant.

Figure 2 displays the coefficient plot of the same regression as described above. The difference is that this figure represents the coefficient of the interaction between the year dummies and the treated variable. It is seen that in the pre-period the coefficients are not significant. In the post period though the coefficients decrease and become statistically significant.

Table 2 presents a detailed analysis of the graphical representation discussed. In column (1) we observe that in the post- BA period, firms with higher corruption exposure face higher audit fees compared to the pre-treatment period. This concedes with our hypothesis that firms with higher exposure to high-perceived corrupt countries would lack the necessary internal procedures to tackle bribe activities and thus auditors would have to exert more effort. What we see though is that in general, without taking into account corruption; firms that fall below the UK jurisdiction demand lower audit fees on average compared to other firms. This could be explained by the fact that treated firms could be strong firms with good growth prospects that already had an anti-corruption culture. Column (2) shows that firms that are now under the UK jurisdiction are charged higher fees as well. The result changes because we include industry fixed effects. Audit fees are constructed at firm level and we thus expect the first column to provide us with more robust results.

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**4.2.2 Audit Quality using Earnings Quality: An unmatched sample analysis** As a second proxy for audit quality, we use the quality of earnings. Earnings quality is calculated as the absolute value of discretionary accruals as indicated by Dechow and Dichev (2002) and then modified by Francis et al (2005).

Figure 3 shows the coefficient plots of the how each year combined with corruption affect the quality of earnings. We follow the same process as in figure 1 discussed before. The only difference now is that dependent variable is the absolute value of discretionary accruals. The y-axis represents the dependent variable and the x-axis shows the number of years. It is displayed that there is a statistical decline in the coefficients of high-exposed firms that are under the UK law after the passage of the act. Even though the coefficients are statistically significant in 2008 the coefficients decrease in the post-BA period indicating that firms that are under the UK BA and have higher exposure to corrupt countries do less earnings management which comes in line with the increase in audit fees.

Figure 4 displays the coefficient plot of the interaction between the year dummies and the treated variable. The coefficients are not statistically significant in neither period groups. This means that the passage of the UK BA caused no effect on the firms that are under fall under the law. Since we observe that audit fees decrease, it must be the case that those firms with already-established anti-corruption culture, have their earnings quality unchanged after the law.

Table 3 presents the results. Firms that are under the UK jurisdiction and have higher corruption exposure seem to do less earnings management activities. In the contrary, in the post-BA period, firms that are fall under the act, and without taking into account their corruption exposure, seem to be unaffected by the passage of the law.

**4.2.3 Estimation using entropy Balancing method** We acknowledge the presence of bias in our results relating to the possibility the treated and control groups to be different prior to shock. To moderate the bias, we perform Entropy Balancing to create a similar treated and control group prior to the passage of the law (Quinn, 2018; Hainmueller 2012). The entropy balancing method is closely related to the Propensity Score matching (PSM) method<sup>17</sup>. The

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<sup>17</sup> We also perform Propensity Score Matching as a robustness check. The results remain the same.

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advantage though of entropy balancing, over PSM, is that it designates weights to 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, 2017). We apply the entropy balancing in the years prior to the law enactment, excluding 2009. We thus take the years of 2007 and 2008 and we assign weights to the treatment and control group in such a way so that to achieve perfect equality with regard to the first, second and possibly higher moments (Hainmueller, 2011).

To implement the entropy balancing method, we identify a set of observable characteristics that could cause changes in the audit quality proxies. Essentially these covariates constitute our control variables in the regressions. We thus perform two different entropy balancing regressions for both audit fees and absolute discretionary accruals.

Table 4 and 5 show the covariate adjustments of the control variables that affect audit fees and absolute discretionary accruals before and after the entropy balancing process respectively. Panel A of both tables provides descriptive statistics of the companies that fall under the UK jurisdiction in the pre-BA period and of the companies that do not fall under the UK BA in the pre-adoption period. In particular, panel A represents some notable differences in the observable characteristics between these two groups prior to the UK BA adoption. Panel B of both tables indicates the results and the differences in the observable characteristics between the two groups after performing the entropy balancing method. The matching method is successful as it creates not only identical means between the two groups but also similar variances. We then perform our analysis on the sample created from the entropy balancing method. Table 6 shows the effect of the firms that are under the UK BA after the law adoption that are exposed to higher corrupted countries on audit quality, and after performing the matching procedure. Results remain the same as before. Firms with higher corruption exposure seem to face an increase in the audit fees paid to the auditors as they now face greater litigation risk which in turn causes them to demand better audit quality. Also auditors experience greater reputational threats which forces them to increase their audit quality by exerting higher effort.

In table 7 we perform the same analysis as in table 6 with the only difference that now we ana-

lyze the effects on audit quality using the earnings quality proxy. Results remain the same as in table 3.

Overall, we observe that the passage of the law causes a discipline effect on firms that fall under the act and have higher exposure to corruption. The law causes firms to demand higher audit quality due to the fact that they face higher litigation risk. This is observed through lower earnings management activities. Further, the passage of the act motivates auditors to offer higher audit quality because they now face higher probability of reputation loss. This is shown by the increase in the effort exerted by the auditors.

## 5 Robustness Checks

In this section we perform some robustness analysis to reassure us that our results remain the same under different proxies and econometric procedures.

### 5.1 Modelling the Abnormal Expenses Component

Anecdotal evidence indicates that bribes are usually hidden in the Operating Expenses component of the income statement. Apart from using the Dechow and Dichev (2002) model modifying it with the Operating Expenses component (section 3.2.1) we follow the Dechow et al., (1998) and model Operating expenses component as a function of sales. In particular we run the following regression for every industry and year.

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

Where, OPEX= 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. Following Roychowdhury (2006), we use the lagged sales and not the 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

though operating expenses are not reduced. If sales at the current year increase, then “normal” operating expenses which would then cause a decrease in the abnormal operating expenses. The decrease though would not be due to an actual decrease in the expenses component but due to managing sales upwards. To solve the problem we use the lagged sales component to estimate normal operating expenses. Results shown in table 8 indicate that abnormal operating expenses diminish after the UK BA for firms that fall under the UK jurisdiction and tend to have high perceived corruption exposure. This goes in line with the argument that firms will be less inclined to do bribes after the passage of the act indicating a probable shift towards a more ethical culture.

## 5.2 Absolute Discretionary Accruals Measure using Modified Jones Model (1991)

We further use the modified Jones Model (1991) as our second accruals measure. We use the extension made to the modified Jones model by Kothari et al (2005)<sup>18</sup>. We extend the model by adding the change in the Operating expenses variable<sup>19</sup>

$$TA_{i,t} = \beta_{i,0} + \beta_{i,1} \frac{1}{Assets_t - 1} + \beta_{i,2}(\Delta Rev - \Delta Rec)_{i,t} + \beta_{i,3}PPE_{i,t} + \beta_{i,4}\Delta OPEX_{i,t} + \epsilon_{i,t} \quad (4)$$

where TA = Income before extraordinary items - Cash Flows from operating Activities

$\Delta Rev$  = change in revenue;  $\Delta Rec$  = change in receivables; PPE= gross Property, Plant and Equipment;  $\Delta OPEX$ = Change in operating Expenses.

All variables are scaled by total assets at (t-1). Equation (2) is estimated per industry and year and we require at least 10 observations in a given industry-year group. The proxy for audit quality is the absolute value of the residuals derived from equation (1),  $\epsilon_{i,t}$ . Table 9 shows the results. As it is observed, firms that follow the UK common law system and have higher

<sup>18</sup> The financial reporting quality measures (accrual quality) used to proxy audit quality are subject to high measurement error (DeFond and Zhang, 2014). In an attempt to reduce the bias we use both Dechow and Dichev (2002) as modified by Francis et al (2015) and the modified Jones model (1991) as it is extended in Kothari et al (2005).

<sup>19</sup> The modified Jones model (1991) was also estimated excluding the change in the operating expenses.



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corruption exposure tend to diminish the absolute value of discretionary accruals indicating an increase in their financial reporting quality.

### **5.3 Performance Measure**

Since we find after the Act, firms tend to improve audit and financial reporting quality after a shock in the litigation and reputation risk of firms that are involved in bribe-relating activities, it must be the case that these firms do bribes because it helps doing business and improves performance. In table 10 we run the regressions using ROA as a dependent variable and as a proxy for performance. Results show that those firms that fall under the UK BA and operate in high-perceived corrupt environments exhibit a decline in their performance, as measured by ROA, compared to firms that operate in low-perceived corrupted environments.

### **5.4 Corruption exposure using World Governance Indicators**

We recalculate our Corruption Exposure measure using the World Governance Indicators (WGI) instead of the Transparency International Index. The WGI taken from the World Bank assign a number to each country every year based on aggregate and individual governance indicators. The indicators are variables that are directly related to the corruption of each country such as voice and accountability, political stability and absence of violence, government effectiveness, regulatory quality, rule of law and control of corruption. We perform the same analysis using the corruption exposure measure adjusted to the WGI (aggregated). Table 11 shows the results. The main results remain the same in all specifications.

### **5.5 Alternative matching procedures.**

We run the regressions using a propensity score matching procedure to match the observable characteristics prior to the treatment. We use a caliper method at 0.01, no replacement and we require each treated observation to be matched to the closest neighbor control observation. We perform the matching so that to diminish the differences in the average covariate values between the firms that are under the UK jurisdiction compared to the firms that do not fall under the UK law.

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Figure 5 displays the results from matching the covariates that relate to audit fees and figure 6 shows the PSM of the covariates that relate absolute discretionary accruals. As we see, after the matching 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 12 and 13 show the results using the PSM instead of the entropy balancing method. The main results remain the same. After the act, firms that operate in high perceived corrupted environments and fall under the UK jurisdictions experience an increase in their audit quality through increased audit fees and decreased earnings management activities.

## 5.6 Alternative Treated and Control Group

**5.6.1 UK firms with- and without foreign subsidiaries** We perform the same analysis using now as a treated group UK firms with foreign subsidiaries and as our control group we use UK firms without foreign subsidiaries. This is because, UK firms without foreign subsidiaries would not have been affected by the UK BA since they would not have been able to bribe foreign officials. Our division of treated and control group relies on an attempt to create a more homogeneous treated and control sample diminishing the concerns relating to our results being biased by the heterogeneity in the sample. UK firms have the same characteristics regarding the institutional environment, political stability, corruption combating laws and so many others. Table 14 presents the results. It is observed that results remain the same as in the main analysis. Firms that are under the UK legislation and have higher exposure to corruption seem to bear higher audit fees after the passage of the law compared to their counterparts. Unfortunately we could not run the same analysis using the abnormal accruals as the dependent variable due to unavailability of observations when running the abnormal accruals model per industry and year.

**5.6.2 Firms with high-perceived corruption exposure only** Further, another way to create a homogenous sample was to perform the analysis using only firms with high perceived exposure to corruption. Firms that lean towards a corrupt culture share more or less the same innate and observable characteristics. Table 15 shows the results based on audit fees and absolute dis-

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cretionary accruals based on both Dechow and Dichev and Modified Jones model. Once again, results remain the same as in our main analysis.

## 5.7 Random Law Assignment

As a last test of sensitivity, we perform a random simulation of the law of 2000 times in order to reassure that the beta coefficients we obtain from our main explanatory variable (triple-DID) are not because of random law assignment. In figures 7 and 8 we see the histograms of the beta coefficients of the main DID and DID\_Corruption variables respectively. The histograms are based on 2000 random simulations applied using the natural logarithm of audit fees as a dependent variable. Figures 9 and 10 again show the histograms of the beta coefficients of the main DID and DID\_Corruption variables respectively. The only difference is that the dependent variable used now is the Absolute value of the abnormal accruals derived by Dechow and Dichev (2002). In general, we observe that the beta coefficients are placed in the tails of the histograms indicating that our results are not due to random assignment of the law to the treated firms.

## 6 Conclusion

Corruption has been a topic of enduring interest and importance by regulators and corporations with very few studies focusing on its real effects at firm level. The main reason being its unobservable nature.

We use a difference-in-difference design exploiting the UK Bribery Act, 2010 as a shock to the litigation risk and audit quality of the firms that have high corruption exposure. We argue that the passage of the act causes a change on the auditing procedures and the litigation costs of the companies that now fall under the UK jurisdiction and have higher exposure to corrupt-perceived countries. Results indicate that after the passage of the UK BA firms that have high-perceived corruption exposure experience an increase in their audit quality. In particular, they face higher audit fees and better financial reporting quality, as proxied by earnings quality, compared to their unregulated competitors.

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Results comply with the notion that restrictions on the bribe-related activities cause an increase in the audit quality and financial reporting quality. We also show that anti-corruption laws can have positive implications on the accounting domain. Further, results go in line with the literature of audit quality and reputation risk. We show that when the reputational risk of auditor is threatened, auditors attempt to eliminate future possible losses by exerting more effort to provide audited financial statements of better quality.

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## Appendix A: Variable Definitions

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<u>Variable</u>	<u>Description</u>
Audit Fees	It is the natural logarithm of the audit fees demanded by the auditors of the parent company
ABS (DA)	it is the absolute value of the discretionary accruals calculated using the Dechow and Dichev (2002) model
<u>Corruption exposure measures</u>	
Main measure	As it is measured by Zeume (2017) and as it is indicated in the paper
Equally weighted using World Governance Indicators (WGI)	Similar to our main measure. The only difference is that we use the controp of corruption using the Wolrd Governance Indicators instead of the TI, and 0 otherwise
Treated	Dummy variable that takes the value of 1 if the company has either UK headquarters or UK subsidiaries prior to the UK Bribery Act, i.e. in 2007, and 0 otherwise
Post-Period	Dummy variable that takes the value of 1 if the firm-year observation is in 2011 or 2012.
<u>Control Variables</u>	
Book to Market Value	Book Value of equity divided by the equity value of equity
Leverage	It is equivalent to total debt divided by total equity
CFO	It is the Cash Flow from Operations divided by the previous year total assets
Loss	Dummy variable that takes the value of 1 if the company had a net Loss in the particular year, and 0 otherwise
Asset Growth	It is the year change of total assets
Revenue Growth	It is the year change of total revenues
Inventory Receivables	Equals to Accounts Receivables plus Inventory, divided by total assets
Quick	Equals to total current assets minus inventory, and divided by total current liabilities
ROI	Equals to Earnings Before Interest and Taxes divided by previous years total assets
BIG4	Dummy variable that takes the value of 1 if the company is audited by a BIG4 auditing company in the particular year, and 0 otherwise
ROA	It is the year change of Earnings before interest taxes divided by total assets
Tenure	It is the difference between the date the auditor was appointed in the company and the date the auditor was dismissed
Size	It is the natural logarithm of total assets plus 1
Return	It is the yearly return on the stock price
Goodwill	It is the goodwill scaled by total assets
CAPEX	It is the net assets scaled by total assets
CFO	Cash flows from Operations scaled by total assets
Book <sub>Market</sub>	It is the Book Value of the equity divided by the market value of the equity
Litigation	Dummy variable that takes the value of 1 if the company belongs in one of the following industries with the 4-digit NAICS Code of: 3254,3333,3341,3344,3346,5112,5182,5417, and 0 otherwise
Complex Industries	Dummy variable that takes the value of 1 if the company belongs in one of the following industries with the 2-digit NAICS Code of: 11,21,22,23,51,53,54, 62,71, and 0 otherwise

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## Appendix B

### Prosecution Cases Under UK Bribery Act, 2010

#### **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. The fine includes a 50% 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.

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**Sweet 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.

**Standard Bank plc (now known as ICBC Standard Bank plc):**

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. The charges included a penalty of around \$6.8 million, disgorgement of profit on transaction of \$.4 million, compensation to the government of Tanzania of \$m plus interest in \$ million and costs of £330,000

**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 company self-reporting during the UK-BA initiative of self-reporting in 2011. 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 buying jatropha oil investment, that they had jatropha tree plantations in

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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 the 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 they were charged 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 Mushtaq, offer £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



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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.

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Table 1: Summary Statistics

Panel A														
	Obs	Mean	Sd	Median	Min	Max		Obs	Mean	Sd	Median	Min	Max	T-Tests
Corruption Exposure	29716	12.29	17.01	6.40	0.25	112.63		24150	12.40	16.84	6.50	0.25	112.63	-0.59**
Leverage	17325	0.63	1.00	0.35	-1.97	7.22		14144	0.60	0.98	0.32	-1.97	7.22	0.13***
CFO	24726	0.06	0.13	0.06	-0.71	0.50		20595	0.05	0.13	0.06	-0.71	0.50	0.02***
Asset_Turnover	29160	0.93	0.64	0.83	0.01	3.68		23725	0.91	0.64	0.81	0.01	3.68	0.11***
Litigation	29831	0.18	0.38	0.00	0.00	1.00		24260	0.17	0.38	0.00	0.00	1.00	0.02***
Loss	29831	0.21	0.41	0.00	0.00	1.00		24260	0.22	0.41	0.00	0.00	1.00	-0.03***
ROA	28864	-0.13	2.72	-0.08	-15.40	16.88		23408	-0.15	2.78	-0.10	-15.40	16.88	0.13***
Asset_growth	28888	0.17	0.50	0.06	-0.50	5.57		23427	0.17	0.51	0.06	-0.50	5.57	-0.01*
Revenue_growth	28061	0.17	0.50	0.08	-0.72	4.50		22769	0.17	0.51	0.08	-0.72	4.50	-0.004
Complex_Industries	29831	0.30	0.46	0.00	0.00	1.00		24260	0.30	0.46	0.00	0.00	1.00	0.03***
Tenure	27481	3.80	3.66	3.00	0.00	15.00		22241	3.72	3.62	3.00	0.00	15.00	0.42***
Book_Market	20633	38.51	99.52	3.46	-0.18	1037.26		16270	44.74	109.26	6.29	-0.18	1037.26	-29.47***
Size	29831	14.57	2.72	14.54	8.19	21.51		24260	14.58	2.60	14.55	8.19	21.51	-0.04***
CATA	29830	0.51	0.22	0.52	0.04	0.98		24259	0.52	0.23	0.53	0.04	0.98	-0.05***
Quick	26463	1.64	1.65	1.16	0.18	13.43		21851	1.68	1.71	1.18	0.18	13.43	-0.25***
ROI	28882	0.06	0.15	0.06	-0.86	0.59		23422	0.06	0.15	0.06	-0.86	0.59	0.02***
Fees	7110	461304.90	508814.80	259778.40	42.46	2237022.00		4523	333655.60	395637.80	141757.30	42.46	1722376.00	18.18**
N	29831													
Panel B														
Treated Group														
Corruption Exposure	5566	11.82	17.72	5.90	0.65	112.63		24150	12.40	16.84	6.50	0.25	112.63	-0.59**
Leverage	3181	0.73	1.09	0.47	-1.97	7.22		14144	0.60	0.98	0.32	-1.97	7.22	0.13***
CFO	4131	0.07	0.13	0.08	-0.71	0.50		20595	0.05	0.13	0.06	-0.71	0.50	0.02***
Asset_Turnover	5435	1.02	0.64	0.91	0.01	3.68		23725	0.91	0.64	0.81	0.01	3.68	0.11***
Litigation	5571	0.19	0.39	0.00	0.00	1.00		24260	0.17	0.38	0.00	0.00	1.00	0.02***
Loss	5571	0.19	0.39	0.00	0.00	1.00		24260	0.22	0.41	0.00	0.00	1.00	-0.03***
ROA	5456	-0.02	2.42	-0.02	-15.40	16.88		23408	-0.15	2.78	-0.10	-15.40	16.88	0.13***
Asset_growth	5461	0.16	0.45	0.06	-0.50	5.57		23427	0.17	0.51	0.06	-0.50	5.57	-0.01*
Revenue_growth	5292	0.17	0.43	0.09	-0.72	4.50		22769	0.17	0.51	0.08	-0.72	4.50	-0.004
Complex_Industries	5571	0.33	0.47	0.00	0.00	1.00		24260	0.30	0.46	0.00	0.00	1.00	0.03***
Tenure	5240	4.14	3.81	3.00	0.00	15.00		22241	3.72	3.62	3.00	0.00	15.00	0.42***
Book_Market	4363	15.27	40.50	0.59	-0.18	1037.26		16270	44.74	109.26	6.29	-0.18	1037.26	-29.47***
Size	5571	14.54	3.19	14.49	8.19	21.51		24260	14.58	2.60	14.55	8.19	21.51	-0.04***
CATA	5571	0.47	0.21	0.47	0.04	0.98		24259	0.52	0.23	0.53	0.04	0.98	-0.05***
Quick	4612	1.43	1.31	1.08	0.18	13.43		21851	1.68	1.71	1.18	0.18	13.43	-0.25***
ROI	5460	0.08	0.15	0.08	-0.86	0.59		23422	0.06	0.15	0.06	-0.86	0.59	0.02***
Fees	2587	684481.40	599719.40	575190.70	62.65	2237022		4523	333655.60	395637.80	141757.30	42.46	1722376.00	18.18**
Control Group														
Corruption Exposure	24150	12.40	16.84	6.50	0.25	112.63		24150	12.40	16.84	6.50	0.25	112.63	-0.59**
Leverage	14144	0.60	0.98	0.32	-1.97	7.22		14144	0.60	0.98	0.32	-1.97	7.22	0.13***
CFO	20595	0.05	0.13	0.06	-0.71	0.50		20595	0.05	0.13	0.06	-0.71	0.50	0.02***
Asset_Turnover	23725	0.91	0.64	0.81	0.01	3.68		23725	0.91	0.64	0.81	0.01	3.68	0.11***
Litigation	24260	0.17	0.38	0.00	0.00	1.00		24260	0.17	0.38	0.00	0.00	1.00	0.02***
Loss	24260	0.22	0.41	0.00	0.00	1.00		24260	0.22	0.41	0.00	0.00	1.00	-0.03***
ROA	23408	-0.15	2.78	-0.10	-15.40	16.88		23408	-0.15	2.78	-0.10	-15.40	16.88	0.13***
Asset_growth	23427	0.17	0.51	0.06	-0.50	5.57		23427	0.17	0.51	0.06	-0.50	5.57	-0.01*
Revenue_growth	22769	0.17	0.51	0.08	-0.72	4.50		22769	0.17	0.51	0.08	-0.72	4.50	-0.004
Complex_Industries	24260	0.30	0.46	0.00	0.00	1.00		24260	0.30	0.46	0.00	0.00	1.00	0.03***
Tenure	22241	3.72	3.62	3.00	0.00	15.00		22241	3.72	3.62	3.00	0.00	15.00	0.42***
Book_Market	16270	44.74	109.26	6.29	-0.18	1037.26		16270	44.74	109.26	6.29	-0.18	1037.26	-29.47***
Size	24260	14.58	2.60	14.55	8.19	21.51		24260	14.58	2.60	14.55	8.19	21.51	-0.04***
CATA	24259	0.52	0.23	0.53	0.04	0.98		24259	0.52	0.23	0.53	0.04	0.98	-0.05***
Quick	21851	1.68	1.71	1.18	0.18	13.43		21851	1.68	1.71	1.18	0.18	13.43	-0.25***
ROI	23422	0.06	0.15	0.06	-0.86	0.59		23422	0.06	0.15	0.06	-0.86	0.59	0.02***
Fees	4523	333655.60	395637.80	141757.30	42.46	1722376.00		4523	333655.60	395637.80	141757.30	42.46	1722376.00	18.18**

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. 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 2007-2008 and 2011-2012 separating the sample between Treated and Control group. An asterisk indicates significance at the 10% level; two indicate significance at the 5% level; three indicate significance at the 1% level.

Table 2: Effects of Corruption on Audit Quality

Unmatched Sample			
	(1)	(2)	(3)
Dependent Variable:	LN(Audit Fees)	LN(Audit Fees)	LN(Audit Fees)
DID	-0.370** (-2.681)	0.376** (2.475)	0.411*** (4.195)
DID X Corruption	0.008** (2.611)	0.010*** (3.569)	-0.010 (-1.477)
Corruption X Treated			0.022*** (3.373)
Corruption X Post			0.012** (2.091)
Leverage	-0.086*** (-2.551)	-0.000 (-1.212)	-0.000*** (-5.682)
Inventory_Receivables	0.301 (0.444)	-0.621 (-1.083)	-0.470** (-2.253)
Litigation			-0.177* (-1.960)
Complex Industries			0.353*** (4.810)
Quick	-0.008 (-0.181)	-0.070 (-0.989)	-0.080** (-2.004)
ROI	-0.305 (-0.645)	-0.167 (-0.188)	-0.216 (-0.442)
Loss	-0.027 (-0.257)	-0.124 (-0.885)	-0.118 (-1.067)
BIG4	-0.163 (-1.149)	0.264*** (3.007)	0.262*** (4.268)
Asset_growth	-0.159 (-1.272)	0.082 (0.403)	0.088 (0.641)
ROA	-0.008 (-0.559)	-0.028 (-1.520)	-0.031** (-2.546)
Size	0.062 (0.489)	-0.292*** (-2.317)	-0.289*** (-18.813)
Tenure	0.016 (0.805)	0.000 (0.043)	-0.001 (-0.186)
Book	0.005** (4.376)	-0.021*** (-3.307)	-0.021*** (-25.664)
Corruption_Exposure	0.005 (0.719)	0.003 (0.969)	-0.010* (-1.783)
Constant	10.078*** (4.623)	16.748*** (9.702)	16.630*** (62.582)
Firm FE	Y	N	N
Year FE	Y	Y	N
Industry FE	N	Y	N
Observations	2,157	2,303	2,303
Adjusted R-squared	0.876	0.614	0.616

This table shows the effect of the UK Bribery Act on audit quality in the post-BA period, 2011-2012. The sample is not subject to a matching method. The dependent variable is the logarithm of audit fees demanded by the auditors who audit the parent company. In the first two columns, regressions are clustered at country level and in the third column we control for heteroskedasticity. We have also used different combinations of clustering and results remain the same. Fixed Effects are as indicated. An asterisk indicates significance at the 10% level; two indicate significance at the 5% level; three indicate significance at the 1% level.

Table 3: Effects of Corruption on the Audit Quality through Earnings Quality

Unmatched Sample			
Dependent Variable:	(1)	(2)	(3)
	ABS_TCA	ABS_TCA	ABS_TCA
DID	0.003 (2.470)	-0.002 (-0.453)	-0.003 (-1.803)
DID X Corruption	-0.000102*** (-3.138)	-0.0001286** (-2.427)	-0.000 (-0.570)
Corruption X Treated			-0.000 (-1.039)
Corruption X post			-0.000 (-1.485)
Leverage	0.002 (1.152)	0.001 (1.258)	0.001 (1.369)
ComplexIndustries			0.002 (1.234)
Litigation			0.006 (3.905)
CFO	0.008 (0.591)	-0.021* (-1.929)	-0.028 (-2.764)
Loss	0.006*** (2.851)	0.015*** (6.137)	0.014*** (7.986)
ROA	-0.000 (-0.492)	-0.000 (-0.554)	-0.000*** (-0.523)
Asset_growth	0.028*** (5.479)	0.029*** (5.995)	0.030*** (6.541)
Revenue_growth	0.000 (0.015)	0.005 (1.243)	0.006* (1.701)
Size	-0.013*** (-3.554)	-0.003*** (-6.991)	-0.003*** (-12.713)
Tenure	0.000 (0.039)	0.000* (1.847)	0.000** (2.283)
Book_Market	-0.000 (-1.846)	0.000 (0.978)	0.000* (1.804)
Corruption_Exposure	-0.000 (-0.608)	0.000 (1.162)	0.000** (2.552)
Constant	0.255*** (4.046)	0.081*** (11.283)	0.080*** (22.370)
Firm FE	Y	N	N
Year FE	Y	Y	N
Industry FE	N	Y	N
Observations	7,776	8,096	8,096
Adjusted R-squared	0.244	0.072	0.070

This table shows the effect of the UK Bribery Act on audit quality (through earnings quality) in the post-BA period, 2011-2012. The sample is not subject to a matching method. The dependent variable is the absolute discretionary accruals as calculated using the Dechow and Dichev (2002) model. In the first two columns, regressions are clustered at country level and in the third column we control for heteroskedasticity. We have also used different combinations of clustering and results remain the same. Fixed Effects are as indicated. 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- Audit Fees

**Covariate adjustment**

Treated units: 321 total of weights: 321

Control units: 512 total of weights: 321

**Panel A: Before Entropy Balancing**

	Treated Group			Control Group		
	mean	variance	skewness	mean	variance	skewness
Leverage	1.02E+07	1.11E+15	4.475	4761061	3.18E+14	6.539
Inventory	0.2838	0.02168	0.4887	0.3308	0.02681	0.3028
Quick	1.188	0.7871	3.98	1.351	0.7928	2.49
ROI	0.09715	0.008403	-0.6421	0.0861	0.008722	0.4522
Loss	0.1059	0.095	2.561	0.1191	0.1052	2.351
BIG4	0.5607	0.2471	-0.2448	0.4297	0.2455	0.2841
Size	16.28	7.987	0.05978	15.82	8.215	-0.1122
Tenure	5.215	18.6	0.5375	4.217	15.58	0.8096
Book_Market	17.21	1111	2.142	39.15	2524	1.113
Corruption	17.26	659	3.503	10.8	239.7	4.768
Year	2008	0.2481	-0.2067	2008	0.2461	-0.268
COU_IND	218.2	9010	-0.551	180.6	7761	-0.1235
industrycode	36.63	103.9	1.15	37.5	120.3	1.173

**Panel B: After Entropy Balancing**

	Treated Group			Control Group		
	mean	variance	skewness	mean	variance	skewness
Leverage	1.02E+07	1.11E+15	4.475	1.02E+07	1.03E+15	4.262
Inventory	0.2838	0.02168	0.4887	0.2838	0.02103	0.3606
Quick	1.188	0.7871	3.98	1.188	0.595	2.532
ROI	0.09715	0.008403	-0.6421	0.09714	0.0095	-0.3673
Loss	0.1059	0.095	2.561	0.1059	0.09488	2.561
BIG4	0.5607	0.2471	-0.2448	0.5607	0.2468	-0.2447
Size	16.28	7.987	0.05978	16.28	7.523	0.1631
Tenure	5.215	18.6	0.5375	5.215	18.26	0.4709
Book_Market	17.21	1111	2.142	17.23	816.9	1.703
Corruption	17.26	659	3.503	17.26	874.4	3.202
Year	2008	0.2481	-0.2067	2008	0.2478	-0.2067
COU_IND	218.2	9010	-0.551	218.1	7357	-0.6593
industrycode	36.63	103.9	1.15	36.63	112.9	0.6772

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 related to audit fees in our setting of perceived corruption. Panel B shows the descriptive statistics for again both treated and control group after the entropy balancing where identical means and similar variances are achieved.



Table 5: Entropy Balancing Descriptive Statistics-Absolute Discretionary Accruals

Covariate Adjustment

Treatment Units: 633 total of weights: 633

Control Units:2703 total of weights: 633

**Panel A: Before Entropy Balancing**

	Treated Group			Control Group		
	mean	variance	skewness	mean	variance	skewness
Leverage	0.7205	0.7709	2.865	0.5409	0.6744	3.65
CFO	0.09087	0.004898	0.08638	0.06467	0.006462	-0.03022
Loss	0.08373	0.07684	3.006	0.1406	0.1209	2.068
ROA	-0.05299	3.066	-1.597	-0.1554	4.904	-0.967
Asset_growth	0.1124	0.0622	3.774	0.07708	0.04534	2.697
Revenue_growth	0.1304	0.05406	4.459	0.1049	0.05849	3.074
Size	17.48	8.694	-0.3027	16.23	7.052	-0.2502
Tenure	3.828	13.51	1.019	3.595	11.63	1.128
Book_Market	31.96	1605	1.103	57.5	4068	1.479
Corruption	20.11	764.2	2.57	14.16	312.1	3.391
year	2008	0.2498	-0.0981	2008	0.2493	-0.115
COU_IND	304.1	24515	0.344	302.5	17503	-0.036
industrycode	36.42	95.55	1.154	36.81	112	1.167

**Panel B: After Entropy Balancing**

	Treated Group			Control Group		
	mean	variance	skewness	mean	variance	skewness
Leverage	0.7205	0.7709	2.865	0.7204	0.9798	2.903
CFO	0.09087	0.004898	0.08638	0.09086	0.006539	0.1589
Loss	0.08373	0.07684	3.006	0.08373	0.07675	3.006
ROA	-0.05299	3.066	-1.597	-0.05299	3.627	-0.9062
Asset_growth	0.1124	0.0622	3.774	0.1124	0.05477	2.657
Revenue_growth	0.1304	0.05406	4.459	0.1304	0.05892	3.083
Size	17.48	8.694	-0.3027	17.48	7.147	-0.314
Tenure	3.828	13.51	1.019	3.828	12.43	0.999
Book_Market	31.96	1605	1.103	31.97	1023	1.19
Corruption	20.11	764.2	2.57	20.11	619.1	2.517
year	2008	0.2498	-0.098	2008	0.2495	-0.098
COU_IND	304.1	24515	0.34	304.1	20431	-0.03
industrycode	36.42	95.55	1.15	36.42	115	0.92

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 related to discretionary accruals in our setting of perceived corruption. Panel B shows the descriptive statistics for again both treated and control group after the entropy balancing where identical means and similar variances are achieved.

Table 6: Effects of corruption on Audit Quality

Entropy Balancing Method: Audit Fees			
	(1)	(2)	(3)
Dependent Variable	LN(Audit Fees)	LN(Audit Fees)	LN(Audit Fees)
DID	-0.376*** (-2.816)	0.178 (1.548)	0.442*** (3.762)
DID X Corruption	0.008** (2.623)	0.007** (2.065)	-0.016** (-2.065)
Corruption X Treated			0.022*** (3.340)
Corruption X Post			0.017*** (2.612)
Leverage	0.000*** (3.971)	-0.000 (-1.000)	-0.000*** (-4.418)
Inventory_Receivables	0.003	-1.033	-0.716*** (-2.833)
Litigation			-0.183* (-1.751)
Complex Industries			0.260*** (2.981)
Quick	0.004 (0.080)	-0.066 (-1.201)	-0.077* (-1.856)
ROI	-0.068 (-0.111)	0.307 (0.318)	0.192 (0.341)
Loss	-0.085 (-0.744)	-0.124 (-0.734)	-0.107 (-0.774)
BIG4	-0.221 (-1.440)	0.216 (2.405)	0.205*** (2.909)
Asset_growth	-0.220 (-1.482)	0.149 (0.741)	0.133 (0.762)
ROA	0.004 (0.303)	-0.031 (-1.704)	-0.035** (-2.544)
Size	0.052 (0.357)	-0.307** (-2.188)	-0.304*** (-16.863)
Tenure	0.015 (0.759)	0.001 (0.080)	0.001 (0.059)
Book_Market	0.004*** (4.144)	-0.022 (-3.386)	-0.021*** (-22.599)
Corruption_Exposure	0.006 (0.659)	0.004 (1.069)	-0.012* (-1.940)
Constant	10.303*** (4.147)	17.245*** (8.843)	17.063*** (53.686)
Firm FE	Y	N	N
Year FE	Y	Y	N
Industry FE	N	Y	N
Observations	1,627	1,661	1,661
Adjusted R-squared	0.874	0.655	0.650

This table shows the effect of the UK Bribery Act on audit quality in the post-BA period, 2011-2012 after performing the entropy balancing method. The dependent variable is the logarithm of audit fees demanded by the auditors who audit the parent company. In the first two columns, regressions are clustered at country level and in the third column we control for heteroskedasticity. We have also used different combinations of clustering and results remain the same. Fixed Effects are as indicated. An asterisk indicates significance at the 10 % level; two indicate significance at the 5% level; three indicate significance at the 1% level.

Table 7: Effects of Corruption on the Audit Quality through Earnings Quality

Entropy Balancing Method: Abnormal Accruals			
	(1)	(2)	(3)
Dependent Variable:	ABS_TCA	ABS_TCA	ABS_TCA
DID	0.004** (2.509)	-0.000 (-0.139)	-0.004** (-2.233)
DID X Corruption	-0.000*** (-3.229)	-0.000 (-1.569)	0.000 (1.077)
Corruption X Treated			-0.000*** (-1.214)
Corruption X Post			-0.000 (-3.402)
Leverage	0.002 (0.946)	0.001 (1.096)	0.001 (1.394)
Complex Industries			0.001 (0.933)
Litigation			0.004*** (2.719)
CFO	0.005 (0.298)	-0.022* (-1.862)	-0.027** (-2.376)
ROA	-0.000 (-0.926)	-0.000 (-0.902)	-0.0000 (-0.708)
Loss	0.007*** (3.030)	0.014*** (5.195)	0.013*** (6.594)
Asset_growth	0.026*** (5.022)	0.026*** (5.265)	0.027*** (5.334)
Revenue_growth	-0.001 (-0.230)	0.002 (0.430)	0.003 (0.781)
Size	-0.012*** (-3.253)	-0.002*** (-5.813)	-0.002*** (-10.522)
Tenure	-0.000 (-0.090)	0.000 (1.221)	0.000* (1.820)
Book_Market	-0.000 (-0.930)	-0.000 (-0.502)	-0.000 (-1.590)
Corruption Exposure	-0.000 (-1.445)	0.000 (0.327)	0.000** (2.361)
Constant	0.247*** (3.807)	0.078*** (9.201)	0.077*** (19.378)
Firm FE	Y	N	N
Year FE	Y	Y	N
Industry FE	N	Y	N
Observations	6,336	6,419	6,419
Adjusted R-squared	0.211	0.074	0.069

This table shows the effect of the UK Bribery Act on audit quality in the post-BA period, 2011-2012 after performing the entropy balancing method. The dependent variable is the absolute value of discretionary accruals calculated using the Dechow and Dichev (2002) model. In the first two columns, regressions are clustered at country level and in the third column we control for heteroskedasticity. We have also used different combinations of clustering and results remain the same. Fixed Effects are as indicated. 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 Bribes-hidden activities in the Operating Expenses Component

Abnormal Operating Expenses	
Dependent Variable	Abnormal_OPEX
DID	0.019 (1.351)
DID_Corruption	-0.0005** (-2.447)
Leverage	0.013** (2.178)
CFO	-0.105 (-1.311)
Loss	0.043*** (4.820)
ROA	0.001* (1.850)
Asset_growth	0.076*** (3.306)
Revenue_growth	0.439*** (10.230)
Size	0.048*** (-2.712)
Tenure	0.003 (1.091)
Book_Market	0.000 (1.089)
Corruption_Exposure	-0.000 (-0.379)
Constant	-0.852 (-2.989)
Firm FE	Y
Year FE	Y
Observations	9,514
Adjusted R-squared	0.589

This table shows the effect of the UK Bribery Act in the operating expenses component which is the main channel companies use to hide bribes. The dependent variable is the abnormal operating expenses calculated using Dechow et al. (1998) and as it was further modified by Roychowdhury (2006). The regression is clustered at country level. We have also used different combinations of clustering and results remain the same. Fixed Effects are as indicated. An asterisk indicates significance at the 10% level; two indicate significance at the 5% level; three indicate significance at the 1% level.

Table 9: Financial Reporting quality proxied by the Modified Jones Model Absolute Value of Discretionary Accruals

Modified Jones Model	
	(1)
Dependent Variable	Modified Jones
DID	0.003
	-1.39
DID_Corruption	-0.000073**
	(-2.09)
Controls	Y
Firm FE	Y
Year FE	Y
Observations	9,361
Adjusted R-squared	0.322

This table shows the effect of the UK Bribery Act in audit quality through financial reporting quality. The dependent variable is the abnormal operating expenses calculated using the modified Jones model (1991). The regression is clustered at country level. We have also used different combinations of clustering and results remain the same. Fixed Effects are as indicated. 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 Bribes-hidden activities in the performance of a company

Performance Measure			
	(1)	(2)	(3)
Dependent Variable	ROA	ROA	ROA
DID	0.485*** (2.750)	0.216** -2.206	0.275*** -2.819***
DID_Corruption	-0.008*** (-4.735)	-0.003* (-1.729)	-0.005 (-3.572)
Capex	-0.343 (-0.454)	-0.141 (-0.612)	-0.092 (-0.357)
goodwill	0.789 (0.436)	-0.324 (-0.777)	-0.407 (-0.849)
Return	0.019 (0.409)	-0.02 (-0.632)	-0.001 (-0.027)
Leverage	0.066 (0.547)	0.021 -0.405	0.012 -0.202
CFO	0.094 (0.159)	-1.564*** (-2.899)	-1.46*** (-2.629)
ATURN	0.385 (0.716)	-0.125* (-1.865)	-0.011 (-0.141)
Quick	0.032 (0.265)	0.002 -0.039	0.024 -0.317
ROI	3.427** (2.161)	2.655*** -3.12	2.669*** -2.819
Loss	-0.841*** (-5.975)	-0.732*** (-6.365)	-0.749*** (-6.780)
Asset_growth	-0.311 (-0.755)	-0.356 (-1.168)	-0.292 (-1.000)
Revenue_growth	0.092 (0.321)	0.115 -0.538	0.091 -0.401
Size	-0.061 (-0.213)	-0.002 (-0.089)	0.015 -0.39
Book_Market	0.002 (1.225)	0 -1.341	0.001 -1.975
Corruption_Exposure	0.004 (0.390)	-0.001 (-0.527)	0 (-0.533)
Constant	0.148 (0.032)	0.132 -0.272	-0.324 (-0.438)
Firm FE	Y	N	N
Year FE	Y	Y	Y
Industry FE	N	Y	N
Country-Industry FE	N	N	Y
Observations	5,269	5,746	5,681
Adjusted R-squared	0.070	0.022	0.03

This table shows the effect of the UK Bribery Act in the performance of the companies proxied by the Return on Assets (ROA). The dependent variable is the ROA. The regressions are clustered at country level. We have also used different combinations of clustering and results remain the same. Fixed Effects are as indicated. 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 Corruption on Audit- and Financial Reporting Quality using WGI indicators

WGI Indicators			
	(1)	(2)	(3)
Dependent Variables	LN(Audit Fees)	Dechow and Dichev	Modified Jones
DID	-0.276*** (-3.659)	0.004** (2.049)	0.003 (1.406)
DID_Corruption	0.001*** (3.095)	-0.000053*** (-4.168)	-0.000026* (-1.95)
Controls	Y	Y	Y
Firm FE	Y	Y	Y
Year FE	Y	Y	Y
Observations	10,746	7,662	9,361
Adjusted R-squared	0.980	0.321	0.243

This table shows the effect of the UK Bribery Act in audit quality (proxied by audit fees and the absolute value of discretionary accruals). The table shows the effect of the UK BA on firms that fall under the UK jurisdiction and have operating in high-perceived corrupted countries. The variable in the column(1) is the natural logarithmic of audit fees, in column (2) the dependent variable is the absolute value of discretionary accruals as it was calculated by Dechow and Dichev (2002). In column (3) the dependent variable is the absolute value of discretionary accruals calculated using the modified Jones model (1991) . The variable corruption is calculated using the Zeume (2017) corruption measure using now the WGI instead of the CPI The regressions are clustered at country level. We have also used different combinations of clustering and results remain the same. Fixed Effects are as indicated. An asterisk indicates significance at the 10% level; two indicate significance at the 5% level; three indicate significance at the 1% level.

Table 12: Propensity Score Matching and Audit Fees

Propensity Score Matching: Audit Fees	
Dependent Variable	LN (Audit Fees)
DID	-0.165 (-0.667)
DID X Corruption	0.010* (1.767)
Leverage	0.000*** (8.802)
Inventory_Receivables	0.067 (0.065)
Quick	0.038 (0.408)
ROI	0.049 (0.072)
Loss	0.011 (0.078)
BIG4	-0.167 (-0.558)
Asset_growth	-0.339** (-2.233)
ROA	0.018 (0.938)
Size	0.226 (1.389)
Tenure	0.014 (0.736)
Book_Market	0.004** (2.109)
Corruption_Exposure	-0.000 (-0.047)
Constant	7.871*** (2.949)
Firm FE	Y
Year FE	Y
Observations	1,010
Adjusted R-squared	0.865

This table shows the effect of the UK Bribery Act on audit quality in the post-BA period, 2011-2012 after performing propensity score matching procedure on the variables that relate to audit fees. The dependent variable is the natural logarithm of audit fees demanded by the auditors that audit the parent company. In the first two columns, regressions are clustered at country level and in the third column we control for heteroskedasticity. We have also used different combinations of clustering and results remain the same. Fixed Effects are as indicated. An asterisk indicates significance at the 10% level; two indicate significance at the 5% level; three indicate significance at the 1% level.



Table 13: Propensity Score Matching on Discretionary Accruals

Propensity Score Matching: Discretionary Accruals	
Dependent Variable	ABS_TCA
DID	-0.000 (-0.075)
DID X Corruption	-0.000*** (-3.158)
Leverage	0.000 (0.117)
CFO	0.005 (0.211)
Loss	0.003 (0.599)
ROA	-0.001 (-1.274)
Asset_growth	0.018** (2.059)
Revenue_growth	0.010 (1.470)
Size	-0.000 (-0.015)
Tenure	0.002 (1.160)
Book_Market	0.000*** (6.398)
Corruption Exposure	-0.000 (-0.684)
Constant	0.025 (0.206)
Firm FE	Y
Year FE	Y
Industry FE	N
Observations	2,115
Adjusted R-squared	0.276

This table shows the effect of the UK Bribery Act on audit quality, through earnings quality, in the post-BA period, 2011-2012 after performing propensity score matching procedure on the variables that relate to discretionary accruals. The dependent variable is the absolute value of discretionary accruals calculated using the Dechow and Dichev (2002) model. In the first two columns, regressions are clustered at country level and in the third column we control for heteroskedasticity. We have also used different combinations of clustering and results remain the same. Fixed Effects are as indicated. An asterisk indicates significance at the 10% level; two indicate significance at the 5% level; three indicate significance at the 1% level.

Table 14: UK firms with foreign subsidiaries Vs UK firms without foreign subsidiaries

Alternative Treated and Control sample- UK firms	
Dependent Variable	Ln(Audit Fees)
DID	-2.838*** (-8.168)
DID X Corruption	0.018** (2.596)
Leverage	-0.000 (-0.783)
Inventory_Receivables	9.370** (2.567)
Quick	2.920*** (3.321)
ROI	-5.835** (-2.506)
Loss	-2.114*** (-3.331)
Asset_growth	-0.450 (-0.675)
Tenure	0.127* (1.847)
ROA	-0.399** (-2.984)
Size	0.499 (0.644)
Book_Market	-3.217** (-2.589)
Corruption Exposure	-0.046 (-1.504)
Constant	5.698 (0.507)
Firm FE	Y
Y	Y
Year FE	Y
Y Observations	86
Adjusted R-squared	0.304

This table shows the effect of the UK Bribery Act on audit quality, through earnings quality, in the post-BA period, 2011-2012 using only UK firms. The treated variable consists of UK firms with foreign subsidiaries and the control variable consists of UK firms without foreign subsidiaries. The dependent variable is the natural logarithm of audit fees. The regression is clustered at the firm level. Fixed Effects are as indicated. An asterisk indicates significance at the 10% level; two indicate significance at the 5% level; three indicate significance at the 1% level.

Table 15: Firms with high perceived Corruption Exposure

	(1)	(2)	(3)
Dependent Variables	ABS DA (Modified Jones)	ABS DA (Dechow&Dichev)	Ln (Audit Fees)
DID	0.005** (2.114)	0.002 (0.714)	-0.327** (-2.165)
DID X Corruption	-0.00087** (-2.204)	-0.00087* (-1.742)	0.008*** (3.060)
Controls	Y	Y	Y
Firm FE	Y	Y	Y
Year FE	Y	Y	Y
Observations	5,191	4,198	1,217
Adjusted R-squared	0.310	0.216	0.887

This table shows the effect of the UK Bribery Act on audit quality, in the post-BA period, 2011-2012 using only firms that exhibit high perceived corruption exposure. In column (1) the dependent variable is the absolute value of discretionary accruals calculated using the modified Jones model (1991). In column (2) the dependent variable is the absolute value of discretionary accruals calculated using the Dechow and Dichev (2002) model and in column (3) the dependent variable is the natural logarithm of audit fees. In the first two columns, regressions are clustered at country and industry level and in the third column the regression is clustered at country level. We have also used different combinations of clustering and results remain the same. Fixed Effects are as indicated. Controls are included in all three regressions. An asterisk indicates significance at the 10% level; two indicate significance at the 5% level; three indicate significance at the 1% level.

Fig. 1: The Effect of Corruption on the Post-Bribery Act Period



Figure 1 displays the "leads and lags" (coefficient plot) model (Atanasov and Black, 2016) based on firm and year fixed effects and clustering at country level, interactions between year dummies and Treated group and interactions between year dummies, Treated group and Corruption dummy. The dependent variable is the natural logarithm of audit fees. Coefficients between the dummy years, Treated group and Corruption dummy are presented here. The y-axis, indicates the level of the logarithm audit fees and the x-axis shows the year level. Year 2010 is considered the event year

Fig. 2: The Effect of the Post-Bribery Act Period on audit quality

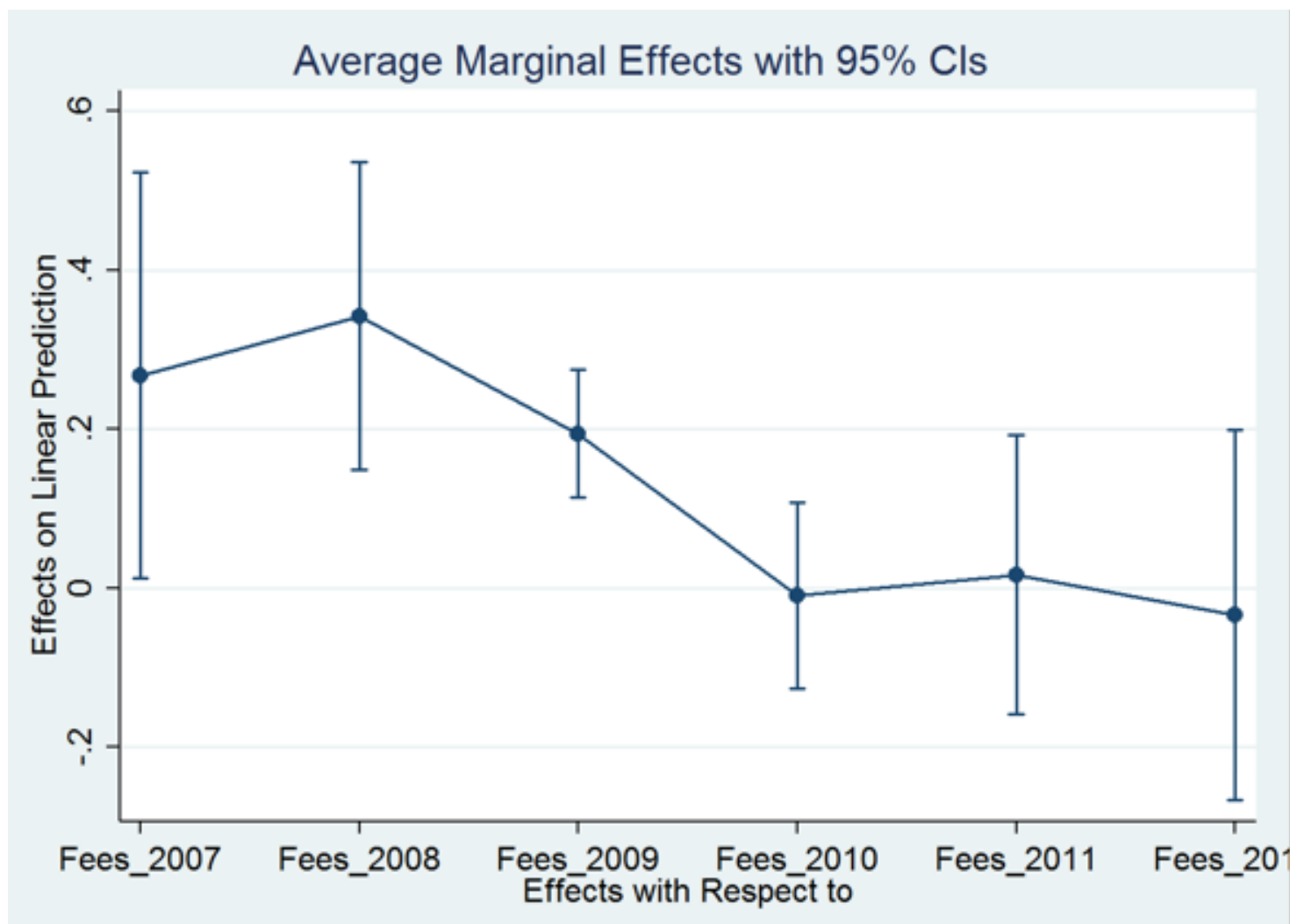


Figure 2 displays the "leads and lags" (coefficient plot) model (Atanasov and Black, 2016) based on firm and year fixed effects and clustering at country level and interactions between year dummies, Treated group and Corruption dummy. The dependent variable is the natural logarithm of audit fees. Coefficients between the dummy years and Treated group. The y-axis, indicates the level of the logarithm audit fees and the x-axis shows the year level. Year 2010 is considered the event year

Fig. 3: The Effect of Corruption on the Post-Bribery Act Period

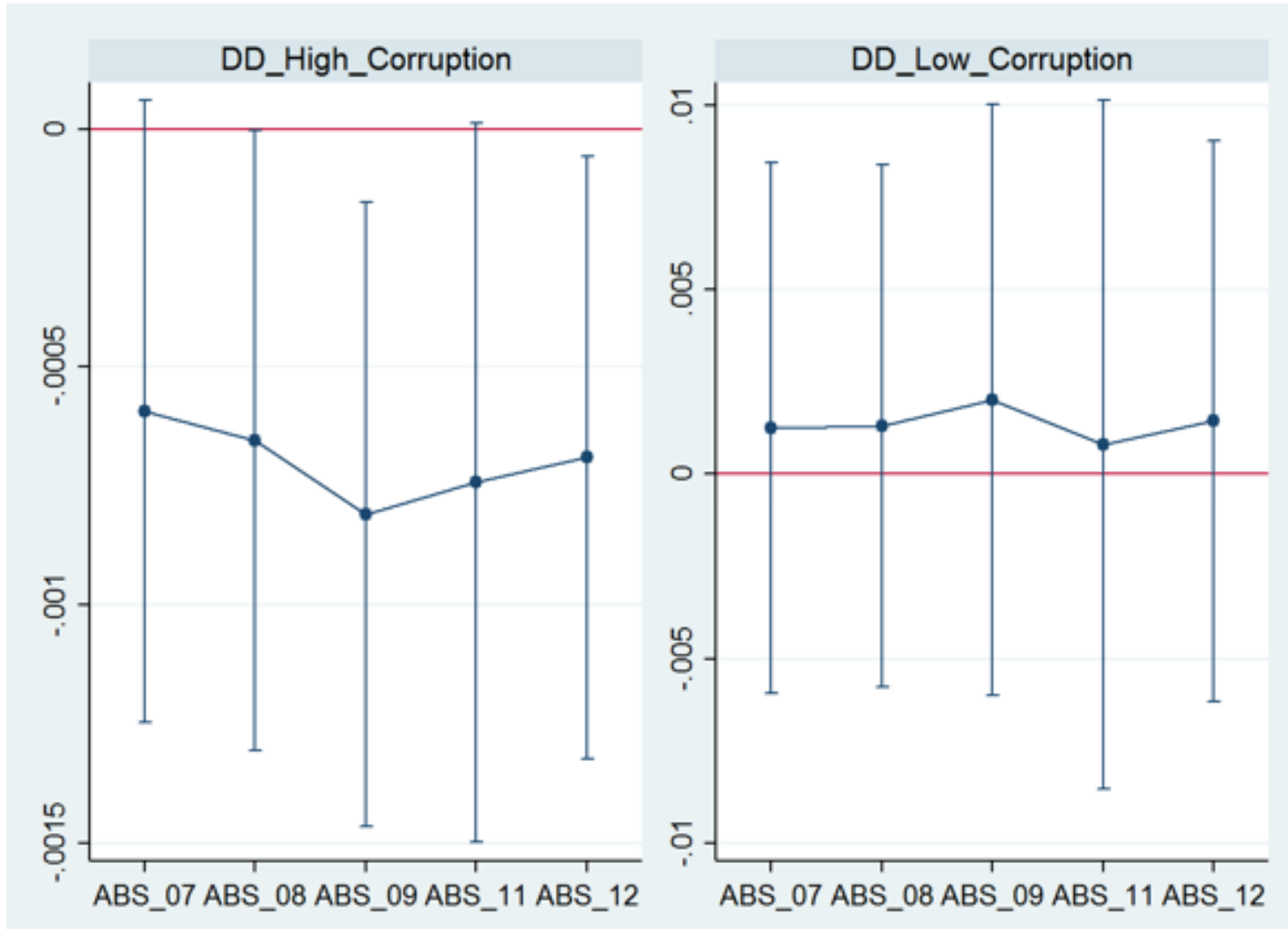


Figure 3 displays the "leads and lags" (coefficient plot) model (Atanasov and Black, 2016) based on firm and year fixed effects and clustering at country level, interactions between year dummies and Treated group and interactions between year dummies, Treated group and Corruption dummy. The dependent variable is the absolute value of discretionary accruals calculated using the Dechow and Dichve (2002) model. Coefficients between the dummy years, Treated group and Corruption dummy are presented here. The y-axis, indicates the level of the absolute value of discretionary accruals and the x-axis shows the year level. Year 2010 is considered the event year

Fig. 4: The Effect of the Post-Bribery Act Period on audit quality

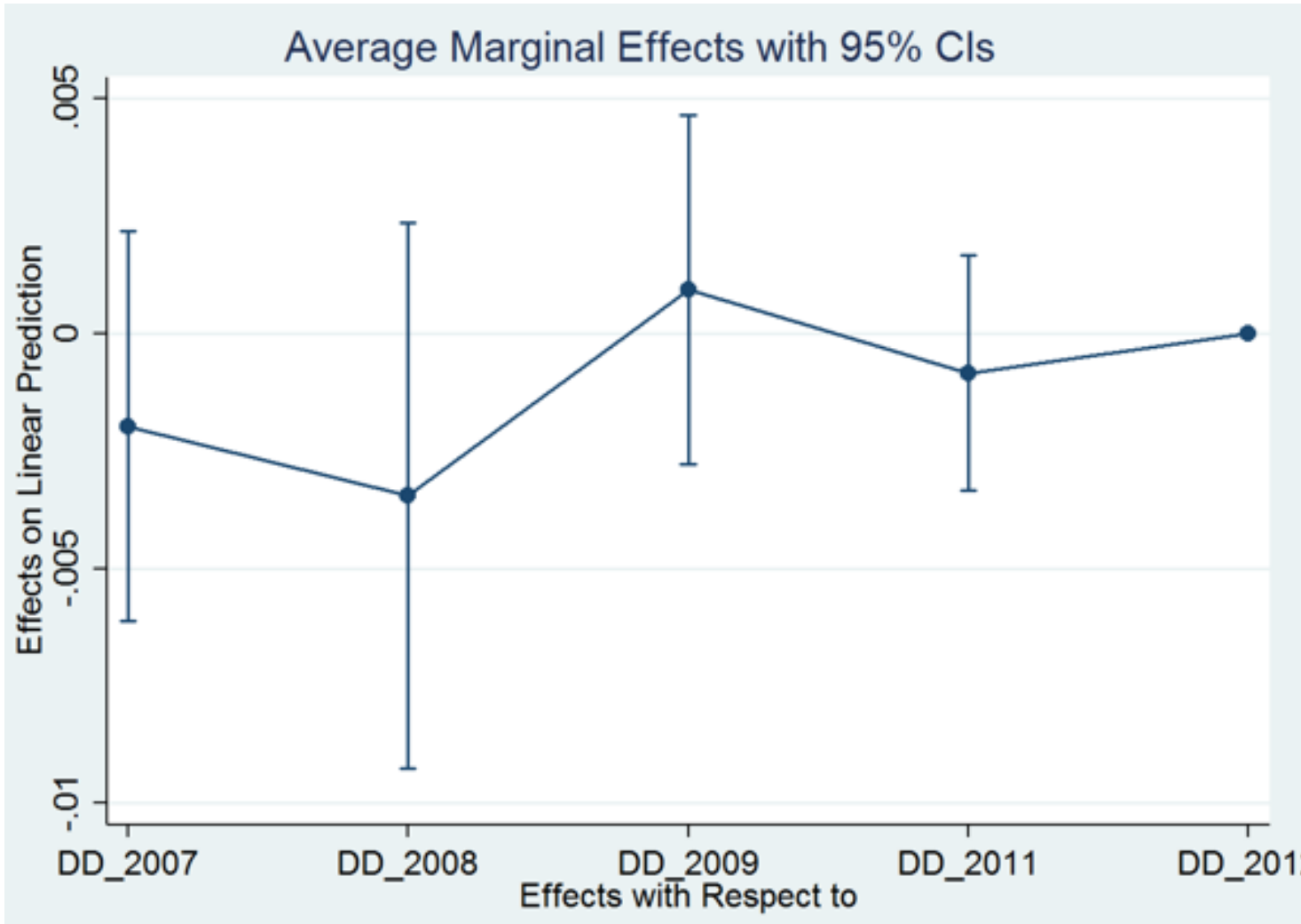


Figure 4 displays the "leads and lags" (coefficient plot) model (Atanasov and Black, 2016) based on firm and year fixed effects and clustering at country level, interactions between year dummies and Treated group and interactions between year dummies, Treated group and Corruption dummy. The dependent variable is the absolute value of discretionary accruals calculated using the Dechow and Dichve (2002) model. Coefficients between the dummy years and Treated group are presented here. The y-axis, indicates the level of the absolute value of discretionary accruals and the x-axis shows the year level. Year 2010 is considered the event year

Fig. 5: Sample matching after Propensity Score Matching based on Audit Fees

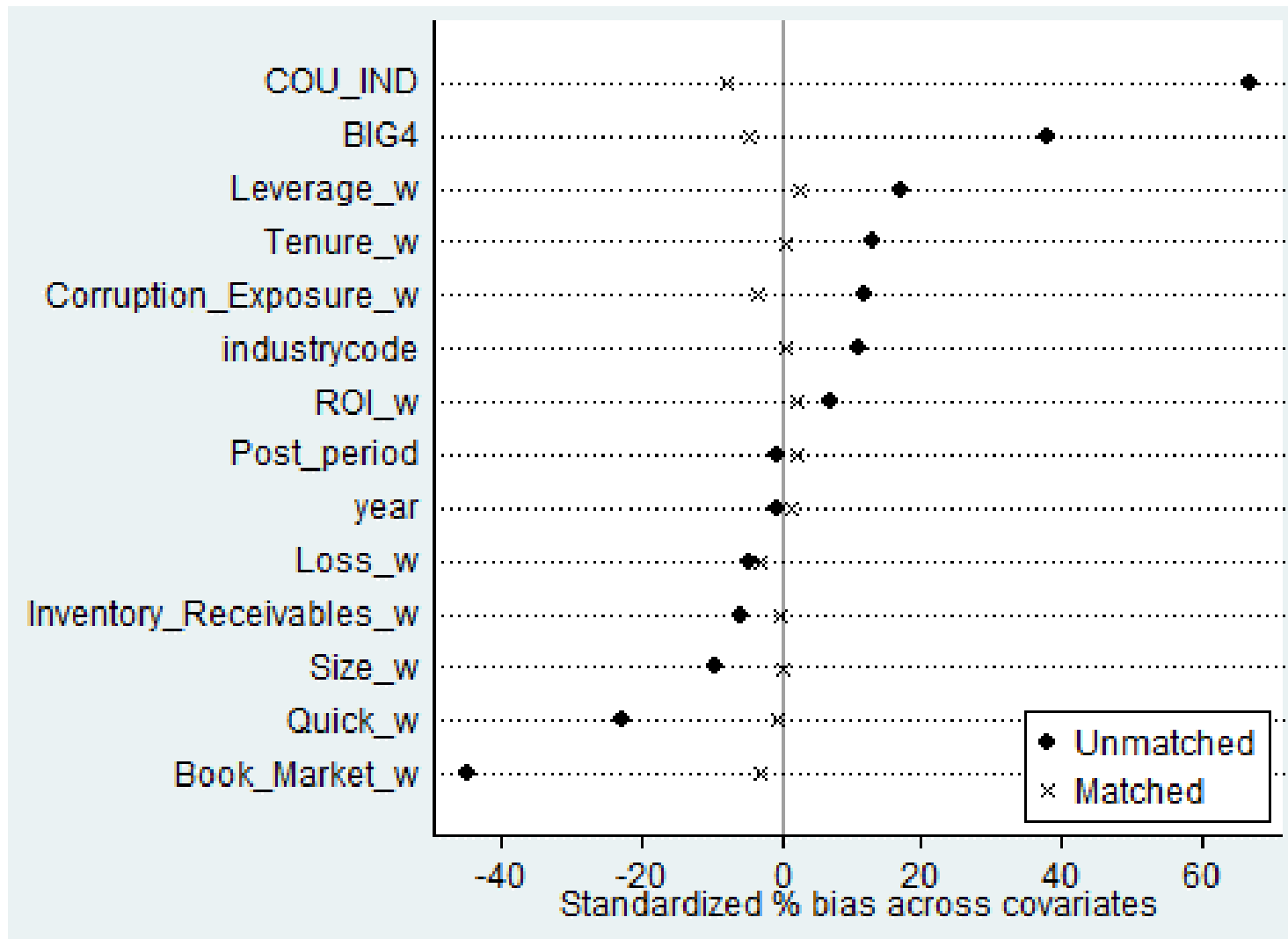


Figure 5 displays the effectiveness of the propensity score matching based on variables that relate to audit fees



Fig. 6: Sample matching after Propensity Score Matching based on Absolute Discretionary Accruals

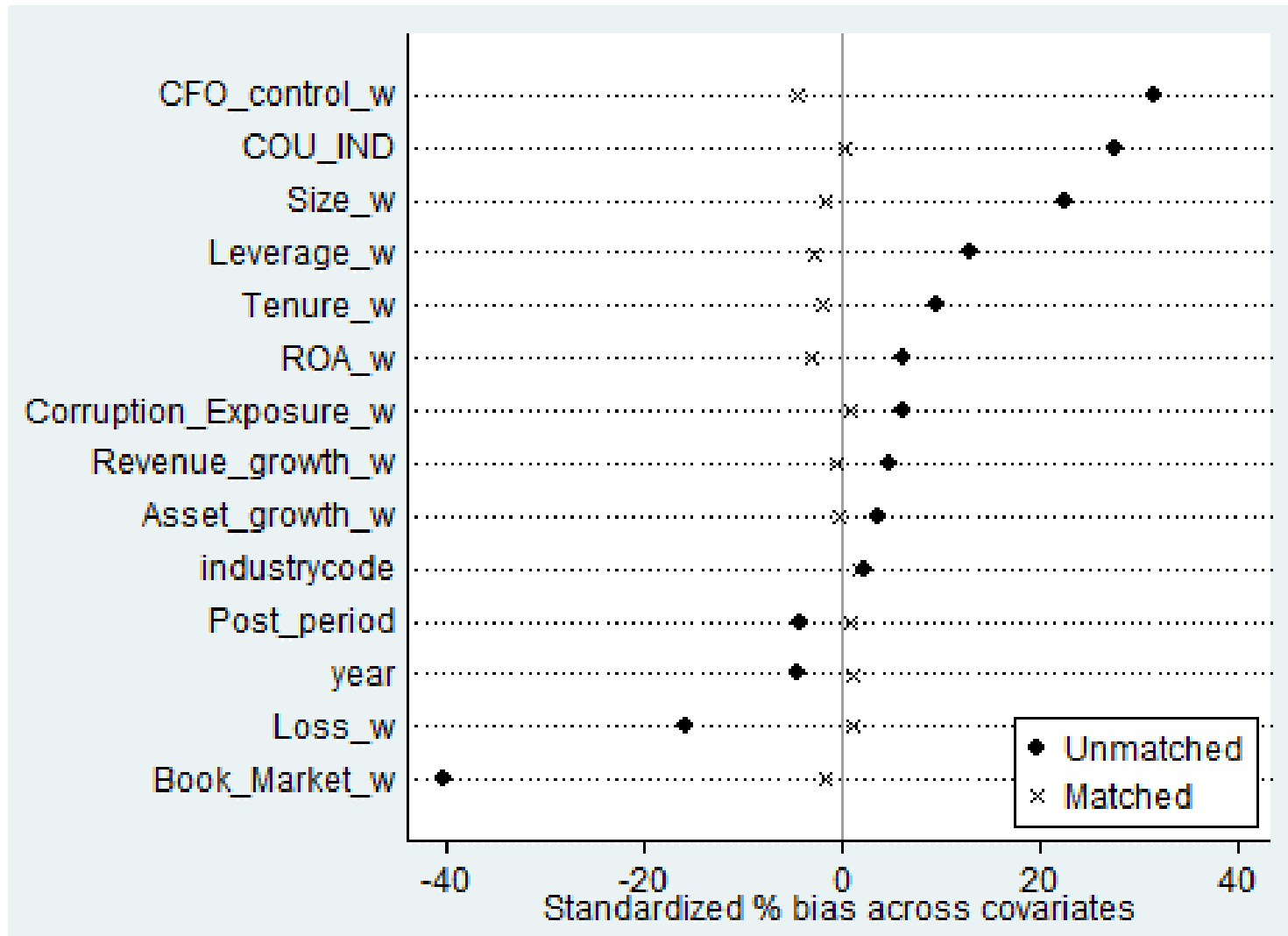


Figure 6 displays the effectiveness of the propensity score matching based on variables that relate to discretionary accruals

Fig. 7: Random Assignment of DID in audit fees

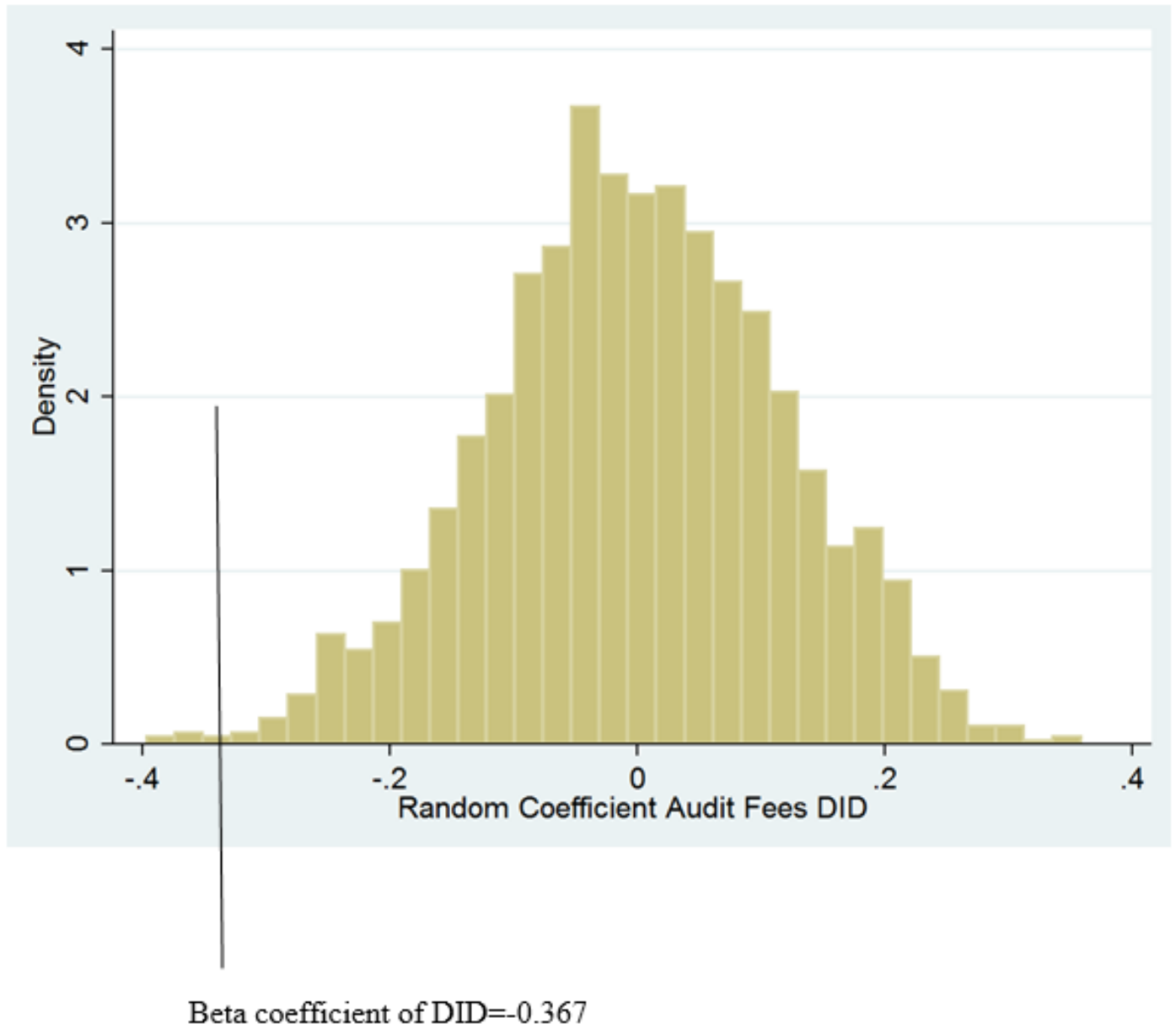
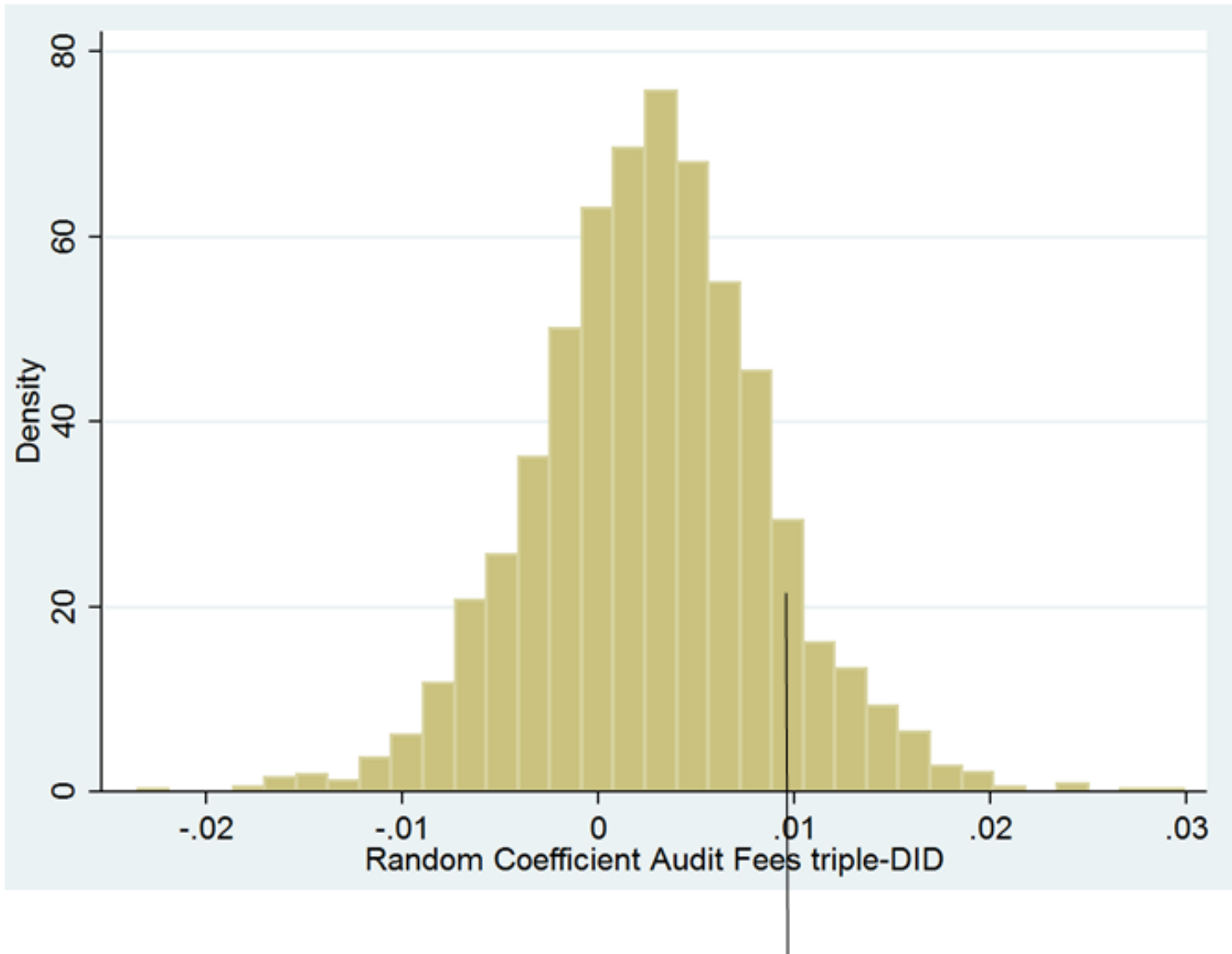


Figure 7 displays the coefficients of the difference-in-difference (DID) variable from table 2 column (1) after simulating for 2000 times a random assignment to the treated firms due to the law.

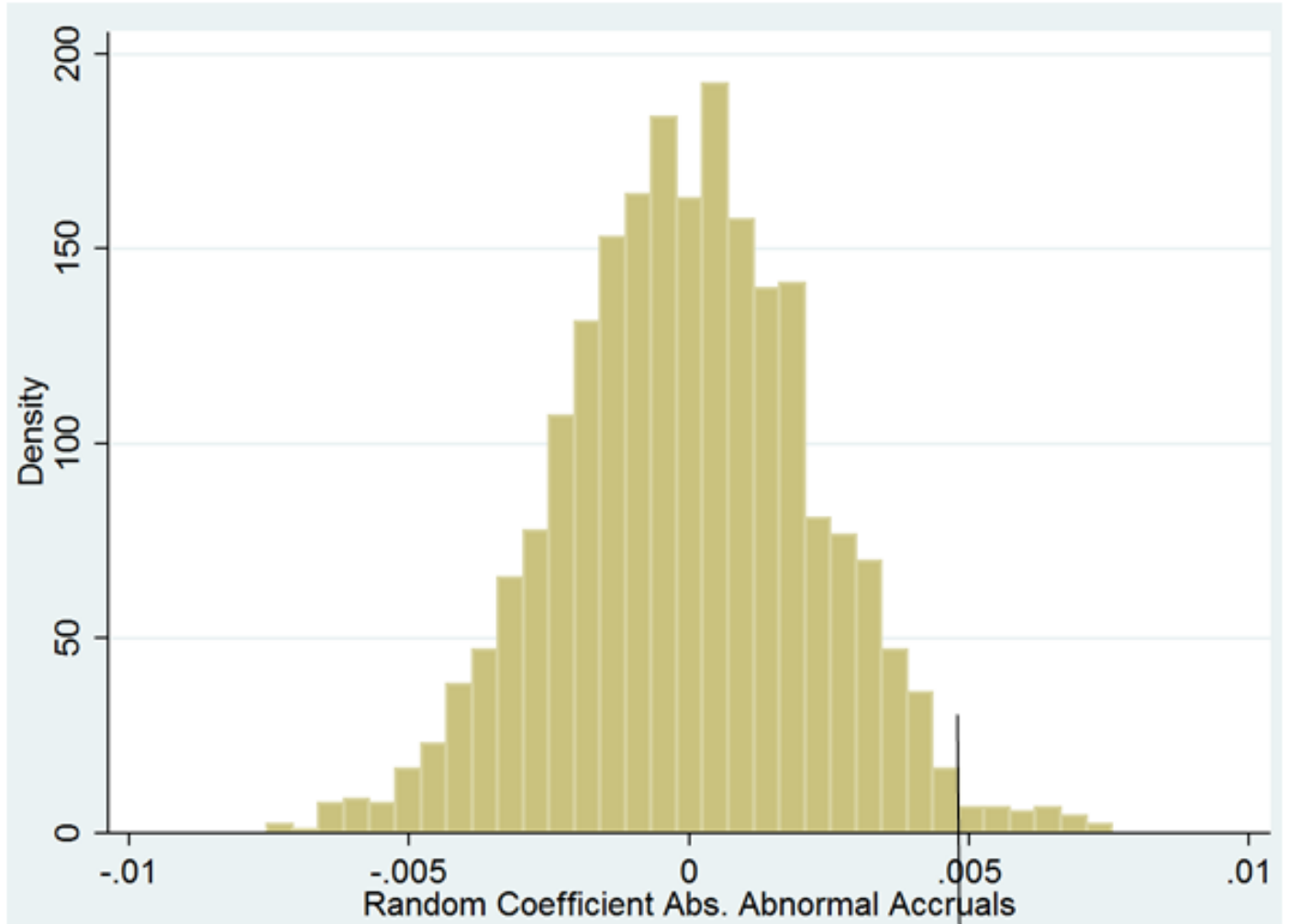
Fig. 8: Random Assignment of triple DID in audit fees



Beta coefficient of triple-DID=0.008

Figure 8 displays the coefficients of the triple difference-in-difference (DIDXCorruption) variable from table 2 column (1) variable after simulating for 2000 times a random assignment to the treated firms due to the law.

Fig. 9: Random Assignment of triple DID in absolute discretionary accruals



Beta coefficient of DID=0.004

Figure 9 displays the coefficients of the difference-in-difference (DID) variable from table 3 column (1) variable after simulating for 2000 times a random assignment to the treated firms due to the law.

Fig. 10: Random Assignment of triple DID in absolute discretionary accruals

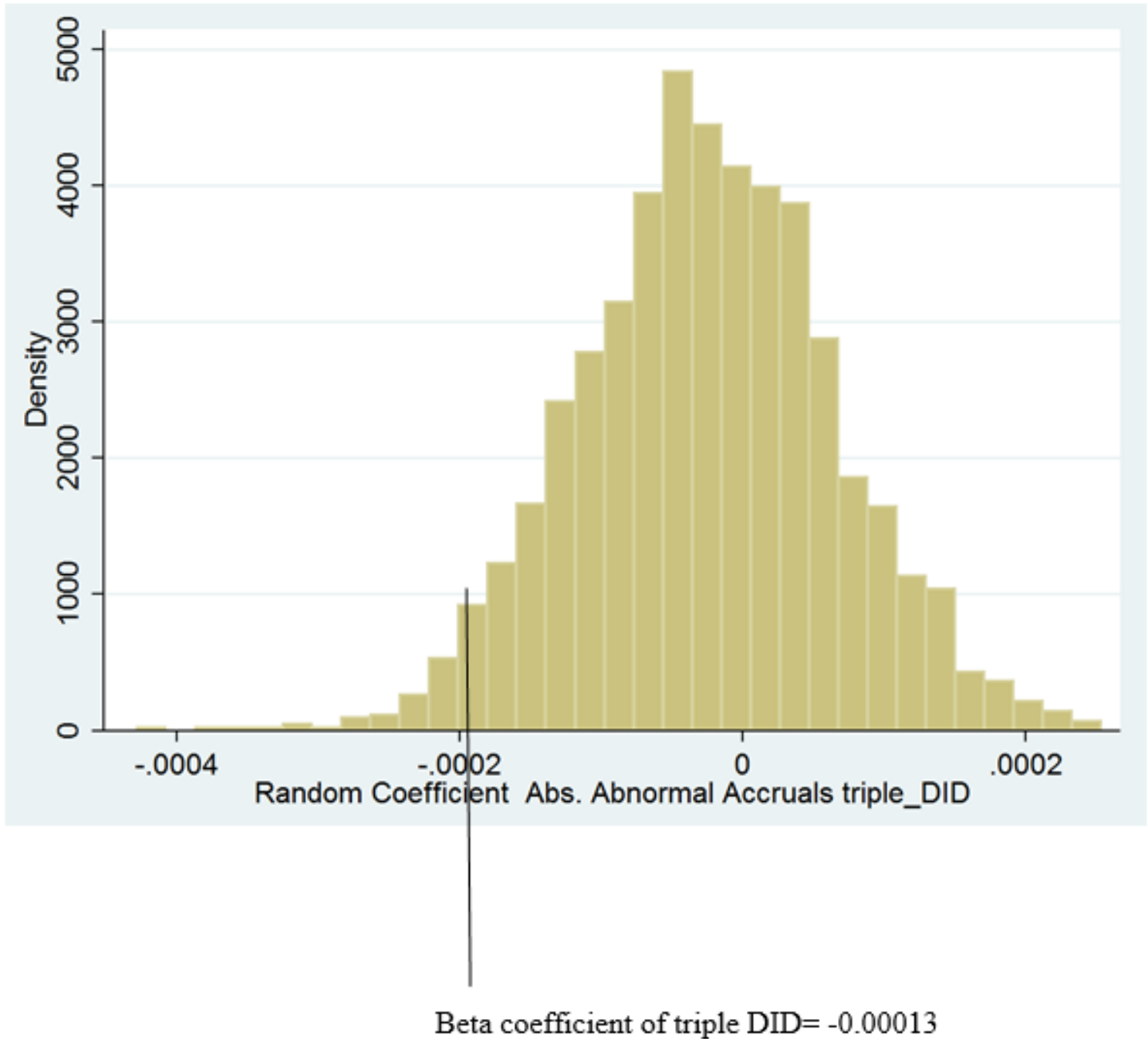


Figure 10 displays the coefficients of the triple difference-in-difference (DIDXCorruption) variable from table 3 column (1) variable after simulating for 2000 times a random assignment to the treated firms due to the law.