

The Impact of Anti-Corruption Laws: Evidence from the U.K. Bribery Act's Extraterritorial Reach*

Amanda Sanseverino[†]

ABSTRACT

I study the impact of foreign anti-corruption laws using a setting that exploits US multinational firms' differential exposure to the extraterritorial jurisdiction of the 2010 United Kingdom Bribery Act (UKBA). Results suggest that adoption of the UKBA, which raised public litigation costs associated with foreign bribery, induces US firms subject to its jurisdiction to curb their business exposure to countries with high corruption risk, relative to their unexposed US peers. The effect is more pronounced for firms with greater enforcement risk and bribery exposure, and is robust to a battery of placebo and additional analyses. This study is the first to provide empirical evidence of the impact of foreign anti-corruption laws on US firms, which are already subject to the US Foreign Corrupt Practices Act. This evidence supports extraterritoriality as a critical element of effective anti-corruption laws and highlights its important role in regulating multinational firms in the globalized economy.

Keywords: Anti-Corruption Laws; Bribery; Corruption; Extraterritoriality; Multinational Firms; Regulatory Globalization

JEL Classification: F23; F60; K20; K40; L51

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[†]Manhattan College, The O'Malley School of Business, 4513 Manhattan College Pkwy, Riverdale, NY 10471. Email: asanseverino@manhattan.edu.

I. INTRODUCTION

The regulation of multinational firms operating in multiple jurisdictions poses a major policy challenge (Stiglitz 2007, OECD 2020). Anti-corruption laws are a paramount example of the regulatory challenges brought about by globalization, as multinational firms have the ability to shift business across borders to circumvent national laws.^{1,2} The Organisation for Economic Co-operation and Development (OECD) Anti-Bribery Convention, which entered into force in 1999, endorses member countries to adopt a broad jurisdictional approach in implementing and enforcing anti-corruption laws (Brewster 2017). As a result, extraterritorial jurisdiction is the cornerstone of new and proposed anti-corruption laws adopted around the world.³ While extraterritoriality is likely critical in the long-term efficacy of these laws, whether this approach curbs corruption by multinational firms is unclear.

While it is widely acknowledged that the United States (US) has long been dominant in extending its regulatory reach globally, including in enforcing the Foreign Corrupt Practices Act (FCPA) (e.g., Christensen, Maffett, and Rauter 2020a,b, Goldman and Zeume 2020), whether multinational firms respond to extraterritorial laws adopted by other jurisdictions is less understood. Further, we lack evidence as to whether US firms react to extraterritorial laws adopted in other jurisdictions. To address these questions, I examine whether the 2010 adoption of the UK Bribery Act (UKBA) curbs US multinational firms' business in countries with a high risk of corruption ("high-risk" countries).⁴

The UKBA's expansive jurisdiction affects not only UK firms but also non-UK firms that do business in the UK, regardless of where the bribery occurs. The main identification strategy is based upon US firms' differential exposure to the UKBA: exposed (comparison) firms plausibly have (do not

¹ According to an International Monetary Fund (IMF) estimate, the annual worldwide cost of bribery is between \$1.5 and \$2 trillion, or roughly 2 percent of global GDP (IMF 2016).

² A common definition of corruption is "the abuse of entrusted power for private gain" (Transparency International 2021). Bribery is "giving someone a financial or other advantage to encourage that person to perform their functions or activities improperly or to reward that person for having already done so" (UK Ministry of Justice 2012b, 3). Corruption may include, in addition to bribery, activities such as embezzlement. Because bribery is the primary focus of the US Foreign Corrupt Practices Act and the UK Bribery Act, I use "corruption" and "bribery" interchangeably.

³ Laws have extraterritorial jurisdiction when "a [country] increases its jurisdiction beyond its own boundaries and into another [country]'s territory (Lordi 2012, 957).

⁴ Corruption is concealed and *ex ante* unobservable. Following prior literature, I utilize a country-level index capturing perceived levels of corruption, and for brevity refer to *perceivably* corrupt countries as "high-risk" countries.

have) business in the UK and thus are (are not) subject to the UKBA's jurisdiction. This quasi-natural experimental setting subjects *some* US multinational firms to additional anti-corruption litigation risk. Using a within-country foreign setting offers several advantages. First, it mitigates concerns involving concurrent country-wide policy or other institutional changes because both exposed and comparison firms are based in the US and are thus subject to similar economic and regulatory shocks. Second, it alleviates the potential for confounding factors arising from changes in, and levels of, country-level attributes affecting corruption exposure. Third, focusing on non-UK firms alleviates concerns related to contemporaneous events and the endogenous timing of adoption in the UK.⁵

For exposed firms, adoption of the UKBA plausibly increases the cost of foreign bribery by increasing both the magnitude and probability of anti-corruption sanctions. In particular, following adoption, exposed firms face a greater risk of multijurisdictional investigations, and consequently of increased total sanctions and other corruption-related public litigation costs (see Sections III and IV). To illustrate, following adoption, exposed firms subject to a US FCPA investigation face higher costs due to the possibility of a concurrent UKBA investigation, which would increase the total scale of potential anti-corruption sanctions. Exposed firms also face a higher likelihood of being investigated for anti-corruption violations because more enforcement agencies (in both the UK and US, rather than just the US) translates to more monitoring resources, leading to a higher likelihood of detection. Importantly, the UK is a common law jurisdiction with a history of strong enforcement and a strong cooperative relationship with the US in white-collar criminal enforcement. As a result, adoption encourages a reevaluation of exposed firms' compliance programs, including firms' assessment of corruption risk, potentially resulting in firms curbing their business in high-risk countries.

Still, whether adoption of the UKBA affects US multinational firms' exposure to high-risk countries ("corruption exposure") is not clear. Because US multinational firms (hereafter, "US firms") are already subject to the FCPA and likely have robust compliance programs in place prior to UKBA adoption, the UKBA may have little incremental effect on US firms' corruption exposure. Corruption exposure may also be unaffected if firms do not expect enforcement by the UK. Further, even if

⁵ For example, corruption scandals in the adopting country may raise public awareness about corruption, driving both the adoption of anti-corruption laws and the curbing of corruption for firms based in the adopting country. Hail, Tahoun, and Wang (2018) suggest that financial regulation is strongly reactive to corporate scandals. Because the UKBA was adopted in 2010, studying its impact also avoids confounding factors arising from the effects of recent extraterritorial laws adopted in non-US countries on US multinational firms.

the UKBA introduces significant incremental risk exposure, the UKBA's effect depends upon firms' assessment of the costs and benefits of paying bribes (Section IV provides details).

My baseline sample consists of 4,253 US firm-year observations during the period 2006–2013. Mandatory disclosures of material country-level segments facilitate the identification of US firms' material business in foreign countries. I construct an exposed group of US firms by identifying firms that report a pre-adoption UK segment, and construct a comparison group of similar US firms with limited or no exposure to the UKBA but with exposure to at least one other foreign country-level segment (*not* the UK). Analyses are based upon a difference-in-differences (DD) model combined with an entropy balancing procedure to ensure greater similarity between exposed and comparison firms (Hainmueller 2012). I employ a revenue-weighted firm-year measure of corruption exposure using Transparency International's Corruption Perceptions Index (CPI).

Results of the main analysis, which controls for variables predicted to affect corruption exposure, as well as firm, industry-year, and segment region-year and country-year fixed effects, show that, relative to comparison firms, exposed firms exhibit significantly lower mean corruption exposure following adoption of the UKBA. The estimated effect amounts to a 0.07 point average decrease in the relative CPI score of the exposed group.⁶ Tests of pre-adoption trends in corruption exposure before and after entropy balancing display no significant differences between exposed and comparison firms.

Findings of additional analyses corroborate evidence that adoption of the UKBA drives the main results. I perform two placebo tests. First, I replicate the main tests as though US firms with (without) material business in *Germany* should (should not) be affected by the UKBA, and do not find significant results. Second, I perform placebo regressions after assigning "treatment" to firms at random and find that the simulated DD estimates are centered near zero. I also find a more pronounced effect after conditioning on enforcement and bribery risk. Evidence from a battery of additional analyses and robustness tests supports the main conclusions.

This study is the first to empirically assess the impact of a non-US anti-corruption law's ex-

⁶ The economic significance of this effect may be illustrated as follows. Consider a hypothetical US firm with operations in North America, Europe, and the Middle East. In the pre-adoption period, the firm earns equal revenues in five countries: the US, UK, Qatar, United Arab Emirates, and Saudi Arabia, which have CPI scores in 2009 of 7.5, 7.7, 7.0, 6.5, and 4.3, respectively. The firm's operations in Saudi Arabia therefore present the highest corruption risk. A 0.07 lower *CE* in the post-adoption period relative to the pre-adoption period amounts to a $\sim 2.4\%$ shift of global revenues from Saudi Arabia to the remaining four countries (in which each of the four countries is allocated an equal proportion of the shifted revenues), or a $\sim 13.9\%$ reduction of the firm's Saudi Arabian revenues.

tratrerritorial jurisdiction on US firms, and provides evidence indicating that extraterritorial laws curb US firms' business in high-risk countries. This evidence is timely given the increasing prevalence of anti-corruption laws with extraterritorial application to US firms. Because US firms were subject to the FCPA prior to adoption of the UKBA, these findings suggest that such laws play an incremental role in curbing bribery by multinational firms. This study's findings suggest that foreign anti-corruption laws with extraterritorial reach raise the cost of foreign bribery by increasing both the magnitude and likelihood of sanctions, leading exposed firms (even those subject to robust home-country laws) to curb exposure to high-risk countries. This evidence complements concurrent research on the impact of US FCPA enforcement on non-US firms (Christensen et al. 2020a,b, Goldman and Zeume 2020).

My findings also provide information potentially relevant to regulators and stakeholders, as well as to auditing and other accounting professionals, who increasingly offer extensive anti-corruption engagements. Because extraterritorial laws affect firms' compliance systems and thereby real business operations, this study also has relevance for auditors and their responsibilities regarding material misstatements due to fraud (for discussions on the role of accounting in addressing fraud and corruption, see, e.g., Cooper, Dacin, and Palmer 2013). This study further contributes to literature on the effectiveness of anti-corruption laws generally, and to a broad recent literature examining the effects of anti-corruption policies on public firms (Karpoff, Lee, and Martin 2017, Zeume 2017, Griffin, Liu, and Shu 2021, Rauter 2020). My findings complement evidence from studies suggesting that anti-corruption laws curb corruption by domestic firms (e.g., Hines 1995, Zeume 2017). In contrast to this line of research, however, my study assesses the extraterritorial impact of anti-corruption laws.

More broadly, extraterritorial jurisdiction is increasingly being used in laws focusing on disclosure, taxation, crypto assets, money laundering, and other areas. Given the increasing prevalence of such laws, this study sheds light on the complexity of the globalized regulatory landscape for US firms operating abroad and speaks to the effectiveness of extraterritoriality in combating global cross-border issues. If a non-US law affects the behavior of US firms (which are subject to relatively high levels of regulatory scrutiny), then this provides a powerful test of the efficacy of extraterritorial approaches more generally. While previous studies provide evidence of the US legal and regulatory environment shaping the decisions of foreign firms (such as in the cross-listing literature, e.g., Doidge, Karolyi, and Stulz 2004), we generally lack evidence of effects in the reverse direction.

Finally, this study demonstrates how extraterritoriality can be exploited to conduct robust empirical analyses of the effects of laws and regulations. Specifically, extraterritorial jurisdiction permits settings which alleviate some of the identification challenges in regulatory studies, which often examine effects on firms in the adopting country (e.g., see Leuz and Wysocki 2016, Isidro, Nanda, and Wysocki 2020).⁷ This study also shows how segment reporting data can be used to conduct firm-level analyses in studies focusing on the effects of regulatory globalization.

II. INSTITUTIONAL BACKGROUND

Overview of the Global Anti-Corruption Landscape and the UK Bribery Act

The 1977 Foreign Corrupt Practices Act (FCPA) in the US was the first law to explicitly make it illegal to bribe foreign public officials. In the years following enactment of the FCPA, the US led the world in prosecuting anti-corruption violations. More recently, other jurisdictions have implemented similar anti-corruption laws. In 1997, OECD member countries, including the UK and the US, signed the *Convention on Combating Bribery of Foreign Public Officials in International Business Transactions* (the “Anti-Bribery Convention”). The Anti-Bribery Convention (ABC), which became effective in 1999, was the first international anti-corruption agreement; it establishes legally binding standards for OECD member countries to criminalize the payment of bribes to foreign public officials. In most countries, however, strict anti-corruption regimes were not adequately implemented or enforced for at least a decade after the ABC became effective.

The 2010 Bribery Act in the United Kingdom (UKBA), recognized as one of the strictest anti-corruption laws internationally, was the first in a new wave of robust (non-US) anti-corruption laws. Its adoption was a response to pressure from the OECD Working Group on Bribery, which criticized the UK for failing to implement and enforce anti-corruption legislation in accordance with the ABC (OECD 2008). A number of factors subjected the UK to especially harsh criticism, including significant deficiencies in existing anti-corruption laws and a major bribery scandal.⁸ The UKBA was drafted in March 2009, received Royal Assent in April 2010, and has been enforced since July 2011. Under the UKBA, it is illegal to pay bribes to foreign public officials and persons in the private sector,

⁷ For instance, policy reforms are frequently bundled with other country-level regulatory or institutional changes.

⁸ In the years preceding the UKBA, the UK faced criticism in part due to a decision to discontinue its investigation into bribery charges involving a large UK-Saudi arms deal contracted by BAE Systems (Transparency International 2010).

and to receive bribes. Criminal penalties include unlimited financial penalties and potential debarment for firms and individuals, and up to ten years imprisonment for liable individuals. Notably, section 7 of the UKBA establishes an offense for a bribing firm that fails to prevent bribery by its employees, agents, or subsidiaries (hereafter, the “S.7 offense”). The extraterritorial jurisdiction of a S.7 offense extends not only to UK firms operating in the UK and abroad, but also to non-UK firms carrying on business or part of a business in the UK, even if the bribery has no direct connection to the UK. S.7 applies to the offenses of paying bribes to foreign public officials and to persons in the private sector.

Extraterritorial Jurisdiction

Extraterritorial jurisdiction is an important element of anti-corruption laws because corruption is inherently a cross-border issue and the absence of extraterritorial provisions creates opportunities for multinational firms to evade detection and prosecution. A primary goal of extraterritoriality is to influence the behavior of—and more effectively prosecute—multinational firms, whose transactions are a major contributor to global issues including corruption (Hock 2017). Although the ABC encourages member countries to interpret jurisdiction broadly in drafting new laws (so that an extensive physical connection is not required), compliance has proved difficult for two main reasons (Schuman 2011). First, the ABC does not have its own enforcement mechanism. Second, member countries have incentives to avoid enforcement in order to secure a competitive advantage for their domestic firms. In other words, as more countries enact and enforce anti-corruption laws, incentives increase for other countries to weakly enforce their own laws. A solution to this collective action problem requires countries to adopt laws that can be enforced beyond their borders (e.g., Lestelle 2008).

Prior to adoption of the UKBA, the US FCPA was the only anti-corruption law with significant extraterritorial application to multinational firms. Evidence suggests that extraterritorial enforcement of the FCPA helps mitigate the collective action problem (e.g., Schuman 2011). FCPA enforcement against non-US firms encourages other countries to pursue investigations and prosecutions; a country where an FCPA-violating firm is based often brings its own enforcement action against the firm. FCPA enforcement also pressures non-US firms into adopting anti-corruption systems, thus reducing noncompliance and consequently any competitive advantage for firms in countries failing to address anti-corruption violations (Schuman 2011, Christensen et al. 2020a). In sum, extraterritoriality helps achieve a level playing field for domestic firms competing with foreign firms in countries with weak

regimes. Despite these potential benefits, however, extraterritoriality is controversial because it can serve national interests and negatively impact international relations, principles of international order, and financial markets (Lordi 2012, Brewster 2017, Hock 2017).

Comparing the UK Bribery Act and the US Foreign Corrupt Practices Act

From the perspective of US firms subject to the UKBA's jurisdiction, compliance with the UKBA does not necessarily follow from compliance with the FCPA. The UKBA is stricter and broader than the FCPA in several respects, making it necessary for US firms subject to the UKBA to reassess their compliance function (Warin, Falconer, and Diamant 2010, Lippman 2013). First, unlike the FCPA, the UKBA does not permit facilitating (or "grease") payments. Facilitating payments secure or expedite a routine governmental action that is part of a foreign public official's duties, such as issuing a license or work permit. Facilitating payments are frequently a slippery slope to more serious corruption (Argandoña 2005). Second, the UKBA applies not only to bribing foreign public officials, but also to the private sector, i.e., firm-to-firm or commercial bribery. Third, the UKBA provides for an affirmative defense against a S.7 offense of failing to prevent bribery. In other words, a firm has a full defense in court if it can prove that it had "adequate" anti-bribery procedures in place to prevent a case of bribery from occurring.⁹

Whether these incremental provisions have practical significance for US firms depends upon each individual firm's exposure and risk profile. For example, the FCPA exception for facilitating payments is narrowly written and interpreted, i.e., only nondiscretionary payments are permitted (e.g., for visas and permits), and prosecuted cases rarely involve such payments. In addition, although the UKBA expressly prohibits commercial bribery (unlike the FCPA), US authorities can nevertheless utilize state laws as well as federal mail and wire fraud statutes to prosecute commercial bribery. Consequently, the primary mechanism through which the UKBA can affect US firms is likely increased foreign bribery costs due to the potential for UK-US multijurisdictional investigations, leading to an increase in total monetary sanctions for anti-corruption violations in both magnitude and probability.

⁹ Another difference is that the UKBA does not provide for an affirmative defense for reasonable and *bona fide* hospitality expenses provided to government officials. Also, the UKBA criminalizes the *receipt* of bribes; this offense, however, is not covered by S.7 and thus its jurisdiction does not extend to non-UK firms with UK business. See Warin et al. (2010) for an in-depth comparison of the FCPA and UKBA.

III. ENFORCEMENT OF THE UK BRIBERY ACT

The UK Anti-Corruption Regime

The UK Serious Fraud Office (SFO), which prosecutes serious and complex cases of financial crime, is the main agency responsible for enforcing the UKBA. At the time of adoption, the extent of UKBA enforcement was uncertain. The patchwork of pre-UKBA anti-corruption statutes and common law, which dated back over a century, lacked clarity and often failed to allow for effective enforcement. For example, the UK's existing laws seemed to permit using a non-UK intermediary to bribe foreign public officials so long as the bribe took place outside the UK (OECD 2008).

The UKBA modernized the law to address sophisticated cross-border bribery and facilitate more effective enforcement within the UK and overseas (UK Ministry of Justice 2009). Together with the UK's strong legal institutions (e.g., La Porta, López-de-Silanes, Shleifer, and Vishny 1998), if enforced, the UKBA was expected to have a widespread and significant impact, and many legal experts anticipated strict enforcement (e.g., Bonneau 2010, Warin et al. 2010, Jordan 2011). In particular, the introduction of S.7 was critical in allowing the UK to hold corporations liable for bribery.

UKBA Cases

Over the period 2008 through mid-2020, there were 101 (35) total (corporate) anti-bribery cases in the UK (EY 2020).¹⁰ Of these cases, 95 (31) were concluded in the post-adoption period. UKBA cases accounted for 25 (9) of the concluded cases through mid-2020 (because the UKBA is not retroactive, pre-adoption statutes or common law provide the legal basis for many earlier cases). Figure 1 displays the count of UKBA enforcement actions by year through July 2021, with S.7 enforcement actions presented in dark shading (as discussed, S.7 applies to non-UK firms with UK business).

SFO statements around adoption indicate a commitment to holding non-UK firms that violate the UKBA accountable.¹¹ A recent judgment concerning Airbus SE, a Netherlands parent company headquartered in France, reflects a strict interpretation of the UKBA's extraterritorial reach. Although

¹⁰ These counts do not include ongoing investigations, dismissed cases, or cases in the pipeline. During the keynote address at the FCPA Conference in December 2018, the SFO director stated there are "dozens of bribery and corruption cases in the investigative pipeline" (Osofsky 2018), several of which were categorized by the OECD Working Group on Bribery as "high profile, multijurisdictional, high value and complex" (OECD 2017, 50).

¹¹ See, for example, <https://www.theguardian.com/law/2011/mar/25/serious-fraud-office-overseas-firms-bribery-act>.

the corruption in this case occurred entirely outside the UK, Airbus SE had continuously conducted business in the UK. The judgment does not reference the proportion of Airbus SE's UK revenues nor the potential improper behavior of its UK subsidiaries, indicating a broad interpretation of the criteria subjecting a non-UK firm to prosecution (Breen 2020).

[INCLUDE FIGURE 1 ABOUT HERE]

Settlements and convictions lag adoption because investigations take time to complete. The complexity involved in anti-corruption cases, where wrongdoing often takes place overseas, is especially conducive to lengthy investigations. For example, the average length of an FCPA investigation is over 3 years (Stanford Law School 2021), and despite a policy shift aimed to strengthen enforcement in 1997, sustained increases in FCPA settlements did not materialize until the early- to mid-2000s (e.g., Brewster 2017, Christensen et al. 2020a).¹² In addition, new laws involve a learning curve for firms, regulators, and enforcement agencies. For these reasons, the UKBA's most immediate impact on exposed firms was likely to encourage compliance (e.g., Koehler 2011).

UK-US Regulatory and Enforcement Dynamics

Adoption of the UKBA is significant for exposed US firms primarily because it increases the potential for joint and parallel investigations by multiple jurisdictions, thereby raising the cost of foreign bribery.¹³ To illustrate, consider a US firm that becomes subject to an FCPA investigation. For two main reasons, US firms exposed to the UKBA are subject to higher potential sanctions, compared to unexposed US firms. First, the potential for a parallel UKBA investigation increases the scale of possible monetary sanctions. Second, exposed firms face a greater likelihood of anti-corruption investigations because the UKBA introduces an additional regulatory monitor—the SFO—resulting in a higher probability of misconduct being detected. That is, a greater number of law enforcement agencies translates to greater monitoring resources, resulting in a greater probability of detection, subsequent investigation, and sanctions. The probability of “detection” also increases by way of firms’ potential self-reporting of misconduct under the UKBA and the FCPA (42% of firms self-report violations (Stanford Law School 2021); firms have incentive to self-report as it often results in less severe

¹² All Stanford Law School FCPA Clearinghouse statistics and figures are as of July 2021 unless otherwise indicated.

¹³ Naturally, other costs of violations factor into firms’ analyses of the costs and benefits of bribing, including reputational costs, negative effects on employee morale, and loss of bank and customer relationships (see Section IV).

sanctions). While the UK could hypothetically prosecute a US firm without any US agency involvement, such a scenario is likely not the primary enforcement consideration for exposed US firms.

Several other elements are important to consider with respect to multijurisdictional bribery investigations and the impact of the UKBA on US firms. First, globalization has led to an increasing number of joint, parallel, and successive anti-corruption investigations by multiple jurisdictions.¹⁴ Apart from coordinated investigations by the UK and US, exposed firms may also face so-called “me too” investigations for anti-corruption violations—for example, an FCPA offense may serve as an entry point into a complex web of related offenses, leading the SFO to investigate the same US firm for additional aspects of the scheme.¹⁵ US firms exposed to the UKBA also face the risk of “carbon copy” cases, in which an FCPA enforcement action may lead to a UKBA enforcement action (or vice versa) for the same or similar offense.¹⁶

Second, multijurisdictional FCPA cases generally see significantly larger settlement amounts as compared to cases involving only US agencies. Most corruption cases resolve in the form of settlements (Stanford Law School 2021). As of January 2021, the ten largest internationally coordinated resolutions involving the FCPA and other non-US agencies had an average settlement of \$1,709.8 million, compared to an average settlement of \$753.8 million for the ten largest FCPA resolutions not involving parallel or coordinated settlements with non-US agencies (Miller & Chevalier 2021).

The importance of international cooperation in anti-corruption enforcement is well-established (Brewster and Buell 2017), and coordination and cooperation across jurisdictions has increased significantly (e.g., Holtmeier 2015). Agencies across jurisdictions have incentives to coordinate as it

¹⁴ Arrieta (2016) observes: “First, bribery enforcement has become global, and is no longer dominated by the United States. Second, even if a bribery investigation has been resolved in one jurisdiction, international companies will likely have to ‘pay for their sins’ across several jurisdictions. A settlement or conviction in one country does not preclude others from investigating the firm for the same, or similar misconduct. Finally, companies may be subject to investigation for a number of years and incur multiple penalties in cases where bribe payments comprised a substantial part of the firm’s business strategy.” See also Holtmeier (2015) and Oded (2020).

¹⁵ While the US has frequently been the first jurisdiction to initiate corporate corruption investigations, there have also been cases where a non-US investigation, settlement, or enforcement action precedes an investigation by US agencies. For example, in 2013, Chinese authorities brought bribery allegations against GlaxoSmithKline, a major UK pharmaceutical company—following these charges, UK authorities began an investigation into the company and US authorities expanded their existing probe to incorporate these allegations (Flitter and Hirschler 2014, Ward 2014). The case of Alstom SA also highlights the potential for ongoing and recurring enforcement across multiple jurisdictions (Arrieta 2016, Cassin 2019).

¹⁶ The “piling on” of corporate penalties by various jurisdictions for similar or related corruption cases has recently prompted calls for a more coordinated, holistic approach to multijurisdictional enforcement. For example, in 2018, the US Department of Justice (DOJ) introduced a Policy on Coordination of Corporate Resolution Penalties, which aims to avoid disproportionate punishment beyond what is fair and necessary, and to achieve equitable resolutions (Rosenstein 2018).

increases the probability of successful joint resolutions and prosecutions. Nine of the ten largest FCPA monetary sanctions concern non-US entities, highlighting cooperation among countries (Stanford Law School 2021). Through 2017, foreign cooperation was present in over 50 percent of FCPA cases against non-US firms (Christensen et al. 2020a).

The US has a long established history of cooperating with the UK in investigating and prosecuting white-collar crime. Cooperation between the UK and US is facilitated by multilateral treaties such as the ABC, which requires OECD countries to provide legal assistance to one another in foreign bribery investigations, and the 2005 United Nations Convention Against Corruption. The International Organization of Securities Commissions (IOSCO) Multilateral Memorandum of Understanding also facilitates cooperation through information sharing among securities regulators (e.g., Lang, Maffett, Omartian, and Silvers 2020, Silvers 2016, 2020).¹⁷ In general, firms in ABC signatory countries (like the US) have a significantly greater chance of UKBA enforcement. In the FCPA context, nearly all cases against non-US firms involve firms based in signatory countries, and enforcement actions against UK firms are the second-most frequent among those against non-US firms (Christensen et al. 2020a).

Importantly, the UK-US cooperative relationship in white-collar criminal enforcement predates the UKBA, thereby limiting the possibility that any observed effect is driven by a contemporaneous increase in FCPA enforcement cooperation between the two countries. For both countries, the ABC entry-into-force date was February 15, 1999, a decade prior to passage of the UKBA. Formal changes in UK-US bilateral information-sharing arrangements occurred prior to 2004 (see Friedman, Jacobs, and Macel 2002), but there is no evidence of any new agreement concurrent with UKBA adoption that would facilitate a disproportionate increase in FCPA enforcement cooperation between the US and UK, relative to that between the US and other countries.

In sum, adoption of the UKBA plausibly raises the cost of foreign bribery for exposed US firms by increasing both the scale and probability of anti-corruption sanctions, mainly due to the potential for investigations involving both UK and US agencies. As a result, exposed firms have an incentive to

¹⁷ Additionally, the 2003 UK-US Extradition Treaty strengthened the ability of the two countries to extradite white-collar criminal offenders. Statements by UK and US agencies also support the UK-US cooperative relationship. For example, the former head of the DOJ FCPA Enforcement Unit stated, “[...] in many respects [the UK is] our closest law enforcement partner [...] Many of [the cases under UK investigation] are cases that we are working on as well [...]” (Mendelsohn 2009, transcribed interview). The International Development Committee of the UK House of Commons have referred to the DOJ as the SFO’s “closest partner,” and states that the agencies “have a number of joint investigations and work together very closely in this area” (House of Commons 2011, 65).

reassess their risk exposure as part of their anti-corruption compliance programs, potentially leading to a curbing of corruption exposure. See Section IV for further details on the UKBA's expected costs.

US Firm Awareness of the UKBA

This subsection briefly discusses factors indicating that exposed US firms were plausibly aware of the UKBA's extraterritorial implications. Bribery-related disclosures in 10-K and 8-K filings suggest that US firms anticipated potentially significant costs around adoption. For example, an excerpt from Atmel Corporation's 2010 10-K Item 1A: Risk Factors disclosure is provided below.

The United Kingdom, where we have operations, has recently adopted, but not yet implemented, the U.K. Bribery Act that could impose significant oversight obligations on us and could have application to our operations outside of the United Kingdom. The costs for complying with these and similar laws may be significant and could reasonably be expected to require significant management time and focus. Any violation of these or similar laws, intentional or unintentional, could have a material adverse effect on our business, financial condition or results of operations.

As another example, following adoption, Lockheed Martin revised their anti-corruption policy to expressly ban facilitating payments and commercial bribery, and to require risk-based anti-corruption due diligence of all international partners (Rubinfeld 2011). A high volume of communication from law firms discussing US multinational firms' UKBA exposure is also evident around adoption.

IV. RELATED LITERATURE AND HYPOTHESIS DEVELOPMENT

Related Literature

Few empirical studies examine the extraterritorial impact of anti-corruption (or other) laws adopted by the United States. One recent exception is Christensen et al. (2020a), who examine the effect of extraterritorial FCPA enforcement on non-US firms and show that a mid-2000s increase in FCPA enforcement reduces foreign direct investment in high-risk countries by US firms and non-US firms based in ABC signatory countries. Additionally, Christensen et al. (2020b) provide evidence suggesting that corporate FCPA enforcement reduces corruption in the African extraction sector. They show that, following the mid-2000s FCPA enforcement increase, economic activity increases in African communities located near resource extraction facilities whose owners are subject to the FCPA, relative to areas near other extraction sites. Goldman and Zeume (2020) find that, following FCPA enforcement actions against firms based in non-OECD countries, firms in the same country-industry experience increases in revenue and asset productivity, suggesting that anti-corruption enforcement

levels the competitive playing field. While the aforementioned research examines effects of the US FCPA on non-US firms, to my knowledge, there are no empirical studies focusing on the effect of extraterritorial provisions of a law adopted abroad on firms based in the US.

Other research examines the effects of anti-corruption laws on domestic firms rather than their extraterritorial impact. Zeume (2017), which focuses on the UKBA's effect on firms based in the UK, finds a decline in firm value for UK firms operating in corrupt countries, increased firm value for non-UK competitors of UK firms, and a decline in sales, M&A activity, and the expansion of subsidiaries in non-OECD countries for UK firms, relative to non-UK competitors. Many studies examining the FCPA's impact on US firms' business activity focus on aggregate rather than firm-level outcomes. While findings of early studies on the effectiveness of the FCPA were mixed, more recent evidence generally supports the idea that the FCPA curbs corruption.¹⁸ Research focused on the effects of international anti-corruption treaties yield conflicting evidence.¹⁹ Finally, several studies examining recent reforms in China (e.g., Griffin et al. 2021) find little evidence that the Chinese anti-corruption campaign reduced corporate corruption.

Hypothesis Development

Prior studies demonstrate that bribery is pervasive and not limited to firms based in poor, developing countries (e.g., Shleifer and Vishny 1993, Dass, Nanda, and Xiao 2016, Al-Hadi, Taylor, and Richardson 2021). For example, Enterprise Survey data from the World Bank suggest that approximately 32 percent of multinational firms pay bribes; further, 14 percent of multinational firms headquartered in OECD countries report bribing, with the average bribe paid amounting to around 5.63 percent of the contract value (D'Souza and Kaufmann 2013).²⁰ The strength of the economic

¹⁸ For example, Hines (1995) documents a decline in US business in corrupt countries following FCPA adoption, and Beck, Maher, and Tschoegl (1991) find an overall decline in the US export market share in corrupt countries, particularly in non-Latin American countries. Other early studies, however, find little evidence of the FCPA's efficacy. For instance, Wei (2000) finds that, after FCPA adoption, US investors are not more sensitive to investing in corrupt countries as compared to investors from other OECD countries that did not have laws explicitly banning bribery abroad, and Graham (1984) suggests no overall decline in US exports in corrupt countries following the FCPA. Cuervo-Cazurra (2008) finds a reduction of US FDI flows to corrupt countries only after the ABC became effective, i.e., the study does not find evidence of an effect driven by the FCPA alone, suggesting that international anti-corruption instruments facilitate a level playing field.

¹⁹ For example, while findings from D'Souza (2012) and Blundell-Wignall and Roulet (2017) are consistent with the ABC curbing investment in corrupt countries, Barassi and Zhou (2012) find that the ABC only minimally reduced multinational firms' investment in these countries, and Mungiu-Pippidi (2011) finds no evidence that the United Nations Convention against Corruption curbs corruption.

²⁰ The potential for bribery to occur anywhere in the world is also illustrated by corruption cases involving solely low(er)-corruption-risk countries. For example, as of June 16, 2021, there were 80 FCPA enforcement actions involving

and political institutions of countries where firms do business are important determinants of firms' propensity to bribe (e.g., Shleifer and Vishny 1993, D'Souza and Kaufmann 2013). By raising the cost of doing business in countries where corruption is prevalent, the UKBA could induce US firms under its jurisdiction to curb business in such countries.

Governmental monitoring and enforcement play a significant role in deterring corruption. For exposed firms, adoption of the UKBA plausibly increases the cost of foreign bribery due to a heightened potential for joint, parallel, or successive investigations and settlements across multiple jurisdictions, encouraging firms to reexamine their anti-corruption compliance programs and corruption risk, and consequently curb their business in high-risk countries. Exposure to corruption-related public litigation is determined by the magnitude of expected sanctions and the probability of detection. Expected sanctions increase following adoption primarily due to a heightened potential for investigations involving both the UK and US. For example, the UKBA permits the SFO to open an investigation into a US firm with UK business following an FCPA investigation of said firm (or vice versa), or to collaborate with US agencies in a joint settlement. Further, most corruption cases resolve in the form of settlements (Stanford Law School 2021), and settlement amounts and sanctions in multijurisdictional cases are typically much larger than in cases involving only US agencies (Miller & Chevalier 2021, Stanford Law School 2021). Prosecuted firms are potentially subject to unlimited fines and debarment.

Apart from the direct costs of anti-corruption sanctions, adoption of the UKBA raises the cost of foreign bribery for exposed firms because violations reduce firm value due to lost future contracts (e.g., with banks and customers), and legal, administrative, human resource, and internal investigation costs, as well as other reputational effects of accusations and investigations, including the possibility of downgraded credit ratings (e.g., Reuters 2010, Nichols 2012, D'Souza and Kaufmann 2013, Serafeim 2014, Birhanu, Gambardella, and Valentini 2016, Lin, Morck, Yeung, and Zhao 2016, Zeume 2017, Sampath, Gardberg, and Rahman 2018). Adoption also increases the likelihood of liable individuals facing prison time and other penalties. In addition, firms violating anti-corruption laws often face compliance obligations imposed by enforcement agencies, and in some cases are assigned costly alleged misconduct in countries with a 2009 CPI score above 5 (Stanford Law School 2021). These enforcement actions involve \$13.5 billion in bribes and \$7.2 billion in US sanctions. A subset of these enforcement actions which concern only countries with a CPI great than 5 involve \$329.6 million in bribe payments and \$505.2 million in US sanctions.

independent outside monitors (Warin, Diamant, and Root 2011).²¹ Compliance costs may also increase as a result of higher audit fees induced by UKBA exposure (Gutiérrez Urriaga, Hadjigavriel, and Gago Rodríguez 2020). Additionally, the UKBA is stricter than the FCPA in several respects (see Section II), thus increasing the likelihood that US firms' business in high-risk countries may trigger an anti-corruption violation and thereby increase the expected costs of foreign bribery.

The post-adoption probability of detection is at least as large as in the pre-adoption period because the UKBA introduces additional monitoring by UK agencies (primarily the SFO). As an example, the SFO may become aware of a possible UKBA violation by an exposed firm, prompting an FCPA investigation that would not have occurred absent this monitoring. As outlined in Section III, the UK-US cooperative relationship, US firm awareness of the UKBA, and a plausibly credible enforcement threat further increase public litigation risk for exposed firms following UKBA adoption.

For these reasons, US firms subject to the UKBA's jurisdiction plausibly face greater costs of foreign bribery in the post-adoption period relative to the pre-adoption period. As a result, following adoption, exposed firms have an incentive to reassess their compliance procedures, including a reevaluation of exposure to high-risk countries.²² In some cases, curbing corruption exposure allows firms to save on compliance costs. In addition, US firms may have implemented or improved anti-corruption procedures and controls to cover the incremental prohibitions of the UKBA over the FCPA (e.g., as in the aforementioned Lockheed Martin case). Anti-corruption investigations are costly, and S.7, as discussed, provides a defense for a firm which successfully demonstrates it had adequate procedures in place to prevent bribery. Even firms that do not contemplate bribery could face greater compliance costs under the UKBA because statutory ambiguities in anti-corruption laws make it possible for such firms to nevertheless be held liable, leading to overcompliance (Lippitt 2013).

²¹ The Walmart FCPA case illustrates the potentially high cost of anti-bribery violations. To settle a seven-year long investigation into alleged misconduct by its overseas units in Mexico, Brazil, China and India, Walmart paid the US Department of Justice and US Securities and Exchange Commission \$282 million in 2019. The company also paid \$160 million to settle a class action by investors dissatisfied with the manner in which Walmart handled the investigation, along with roughly \$900 million spent on legal fees, the internal investigation, and a revamp of compliance systems (Corkery 2019). Although the total bribe amount is unknown (Stanford Law School 2021), the New York Times estimated in 2012 that the company paid \$24 million to public officials in Mexico (Barstow 2012).

²² For example, according to Rahman and Ray (2021), partners of London-based law firm Rahman Ravelli, "The [UK Bribery] Act has emphasized the need for compliance and may well have driven companies to take steps to significantly reduce the risk of them becoming involved in bribery. The Act's value as a tool for emphasizing the need for compliance cannot be discounted."

However, whether adoption of the UKBA leads exposed firms to curb their exposure to high-risk countries is ultimately an open question. Exposed firms may not curb their corruption exposure if the UKBA is not perceived as an effective deterrent. It is also possible that any measures required to achieve compliance with provisions under the UKBA are immaterial for FCPA-compliant firms. Even if the UKBA presents a salient enforcement risk for US firms, its impact depends upon each firm's calculation of the costs relative to the benefits of paying bribes (Becker 1968). For some firms, the post-adoption benefits of bribing could still exceed the costs, as compliant firms might face competitive disadvantages (e.g., Darrough 2010, Goldman and Zeume 2020). In some countries, bribery is a cost of doing business, and paying bribes allows firms to circumnavigate administrative hurdles (e.g., Leff 1964, Beck and Maher 1986), and can generate positive net-present-value projects despite potential penalties and reputational costs (Cheung, Rau, and Stouraitis 2012, 2020, Karpoff et al. 2017).

V. DATA, SAMPLE SELECTION, AND MEASURES

Exposed and Comparison Firms

The UK uses a common sense approach to assess whether a non-UK firm is subject to the UKBA's jurisdiction (UK Ministry of Justice 2012a, 15). According to the SFO, carrying on business in the UK "should be understood to be buying and selling in the UK" (OECD 2012, 16). Official guidance indicates that jurisdiction based solely on a UK listing or the presence of a UK subsidiary is unlikely (UK Ministry of Justice 2012a, OECD 2012). These statements motivate the methodology in constructing exposed and comparison groups as US firms with material UK revenues carry on UK business and are therefore subject to the UKBA's jurisdiction.²³

Under Accounting Standards Codification (ASC) 280 *Segment Reporting*, US filers must separately disclose material revenues from customers located in an individual foreign country.²⁴ I therefore use geographic segment data to partition US firms into two groups: firms plausibly exposed to

²³ Although using UK segment disclosures is most in line with the common sense approach, because segment disclosures are subject to materiality thresholds, this proxy is also subject to limitations. Namely, US firms that report (do not report) a UK segment might not be (might be) exposed to the UKBA. This scenario, however, should bias against finding a significant effect as it entails the inclusion of some unexposed (UKBA-exposed) firms in the exposed (comparison) group. Concerns regarding selection bias are mitigated by requiring that all sample firms report at least one pre-adoption non-US country-level segment, as well as by including the count of geographic segments as a regression control and entropy balancing covariate, and by including geographic segment fixed effects in the regressions.

²⁴ ASC 280 (para. 280-10-50-41) states that public entities must report, unless it is impracticable to do so, "revenues from external customers attributed to the public entity's country of domicile and attributed to all foreign countries in total from which the public entity derives revenues. *If revenues from external customers attributed to an individual foreign country are material, those revenues shall be disclosed separately*" (emphasis added). The Financial Accounting Standards

the UKBA (exposed firms), and firms plausibly not exposed to the UKBA (comparison firms). To construct the exposed group, I identify US firms that report a UK segment in at least one year during the pre-adoption period. The comparison group consists of US firms that do *not* report a UK segment in any sample year. To assure comparability between exposed and comparison firms in having material exposure to at least one foreign country, I require comparison firms to report at least one non-US country-level segment in at least one pre-adoption year.²⁵

Sample

Sample firms consist of public companies incorporated in the US to ensure that both exposed and comparison firms are subject to the FCPA and other US regulatory and economic shocks prior to UKBA adoption in 2010. The baseline sample period includes years 2006 through 2013 to allow four years before and after adoption. Sample selection procedures are included in Table 1. I begin the sample selection process by manually cleaning and standardizing geographic segment names reported in the Compustat Segment data. This process assures that country-level segment names are properly mapped to the correct countries; any discrepancies are resolved by manually coding the correct country per the segment name. This process also assures consistency across variations in abbreviations, spelling, or other aspects of a given country name (e.g., a firm-year-segment titled “Ivory Coast” is treated the same as a firm-year-segment titled “Côte d’Ivoire”). I exclude firm-years in which only region-level segments are disclosed (e.g., Latin America as a whole), thereby retaining all firm-years with at least one country-level segment. I also exclude firm-years in which total revenue from country-level segments is equal to zero.

After merging Compustat Segment data with Compustat North America Fundamentals data, I construct the exposed and comparison groups. Firms that do not meet the criteria for inclusion in either the exposed or comparison group are not included in the sample. I exclude firms that do not have at least one observation in both the pre-adoption and post-adoption periods, as well as firm-years missing data necessary for control variables. This results in a baseline sample of 4,253 firm-years

Board (FASB) states, “an item of segment information that, if omitted, would change a user’s decision about that segment so significantly that it would change the user’s decision about the enterprise as a whole is material even though an item of a similar magnitude might not be considered material if it were omitted from the consolidated financial statements” (FASB 1997, 27).

²⁵ An advantage of using segment data is that firms need only report country-level segments considered material, thus mitigating the potential for classifying firms with trivial (substantial) UK business as exposed (comparison) firms.

with 214 exposed firms and 439 comparison firms.

[INCLUDE TABLE 1 ABOUT HERE]

Corruption Exposure Measure

For obvious reasons, firms do not voluntarily disclose their bribe payments. However, because firms operating in corrupt countries are more likely to engage in corruption (e.g., Shleifer and Vishny 1993, D’Souza and Kaufmann 2013), the extent of firms’ exposure to such countries is used to capture the extent of firms’ exposure to corruption risk. I construct a dependent variable measuring firms’ exposure to (perceivably) corrupt countries by using Transparency International’s Corruption Perceptions Index (CPI)—the index most often used in corruption studies.²⁶ For firm i in year t with segment revenue disclosed for J individual countries, the dependent variable CE_{it} (Corruption Exposure) is:

$$CE_{it} = \sum_{j=1}^J \left((10 - CPI_j) \times \frac{Revenue_{ijt}}{\sum_{j=1}^J Revenue_{ijt}} \right) \quad (1)$$

$Revenue_{ijt}$ is the revenue from country j reported by firm i in year t and CPI_j is the CPI score for country j in 2009, the year preceding adoption. Because the CPI score ranges from 0 (highly corrupt) to 10 (uncorrupt), CE_{it} is increasing in corruption exposure.

CE_{it} is based upon country-level revenues because revenue flows provide foreign public officials (and other parties) opportunities to siphon profits for personal gain. The most common international bribery cases involve a firm winning a contract by bribing foreign public officials, and such contracts frequently involve the sale of goods or services, or the building of infrastructure projects (OECD/The World Bank 2012). Following adoption of the UKBA, exposed firms may find it too costly to bid on contracts in high-risk countries, resulting in lower revenues reported in those countries. Corruption in the bidding process can occur by bribing either public officials or other parties (bribing private entities or individuals is prohibited under the UKBA commercial bribery offense).²⁷

²⁶ The CPI is a composite index which ranks 180 countries by their perceived levels of public corruption. CPI scores are based upon surveys of country experts and business leaders conducted by international organizations, including the World Bank and Freedom House.

²⁷ Another common form of bribery—bribes to obtain permits or licenses—applies only to public officials.

Compared to changes in investment activity, changes in revenues should generally be reflected within a shorter time frame. For example, a firm that earns revenue for the construction of a road in Mexico does not necessarily report concurrent changes in investment activity, at least not immediately.^{28,29}

VI. MAIN EMPIRICAL ANALYSIS

Research Design and Entropy Balancing Procedure

My main empirical tests are based upon the difference-in-differences (DD) model in Equation 2, where β_1 represents the mean change in corruption exposure from before to after adoption of the UKBA for exposed firms relative to comparison firms. The DD approach mitigates the potential for biases resulting from fundamental differences between exposed and comparison firms, and from time trends in relative corruption exposure unrelated to adoption. The potential for remaining confounding factors to affect inferences is further mitigated through use of the entropy balancing procedure.

A negative and statistically significant estimate of β_1 suggests that, relative to comparison firms, adoption of the UKBA induces exposed firms to curb their mean exposure to high-risk countries.

$$CE_{it} = \beta_0 + \beta_1 ExposedPost_{it} + \mathbf{X}_{it} + \tau_i + \varepsilon_{it} \quad (2)$$

$ExposedPost_{it}$ is equal to $Exposed_i \times Post_t$, where $Exposed_i$ is an indicator variable equal to one if firm i is an exposed firm and equal to zero if firm i is a comparison firm (as described in Section V), and $Post_t$ is equal to one if year t is 2010 or later, and zero otherwise. A vector of controls for other potential factors influencing corruption exposure, denoted by \mathbf{X}_{it} , accounts for time-varying firm fundamentals, including the natural logarithm of assets ($Size_{it}$), profitability (ROA_{it}), and growth opportunities (lMB_{it}). The number of geographic segments ($lSegCount_{it}$) and the number of subsidiaries ($lSubCount_{it}$) control for the complexity of firms' operations, and $Competition_{it}$ controls for competitive effects influencing incentives to bribe and foreign business opportunities. Because

²⁸ Consider a US firm that bribes a corrupt official in 2006 to win a contract bid to supply laptops for government offices in India. Though India is the location of delivery, the firm need not have a plant in India to manufacture the laptops (e.g., production might take place in China). In such a case, all else equal, higher revenues are earned in India, with no effect on investment or assets in India. After 2010, a UKBA-exposed firm might reassess its bribery risk and consequently decide not to pay bribes when bidding on new contracts in India and may therefore not be awarded the business. Or, the firm might avoid bidding on future contracts in India altogether and instead shift its growth strategy to less risky countries where it does business. Under these scenarios, the firm would report less post-adoption revenues in India.

²⁹ Examining a short-run revenue effect is also advantageous from an empirical perspective as longer post-adoption periods introduce a greater potential for confounding factors in difference-in-difference analyses.

the sample period encompasses financial crisis years, \mathbf{X}_{it} also includes controls for revenue growth ($Growth_{it}$), as well as indicator variables capturing financial constraints ($Constr_{it}$) and whether a firm has a credit rating ($Rating_{it}$).

Controls further include industry-year fixed effects, country-year fixed effects, and region-year fixed effects. Industry-year fixed effects capture common effects on corruption exposure in a particular year and industry. Country-year fixed effects, which control for common factors associated with material business in a particular country and year, are a series of indicator variables equal to one for each country-level segment disclosed by firm i in year t , and zero otherwise. Region-year fixed effects, which control for common factors associated with material business in a particular region and year, are a series of indicator variables equal to one for each region-level segment disclosed by firm i in year t , and zero otherwise.³⁰ Firm fixed effects, denoted by τ_i , control for time-invariant firm factors.

To control for any potential for differential changes in segment reporting incentives concurrent with adoption, \mathbf{X}_{it} includes $NoMatch\%_{it}$ and $Big4_{it}$, where $NoMatch\%_{it}$ is a segment reporting transparency measure capturing the proportion of material subsidiaries reported in Form 10-K Exhibit 21 that are not also reported as country-level segments (following Akamah, Hope, and Thomas 2018), and $Big4_{it}$ is an indicator variable capturing whether the firm is audited by a Big 4 firm. Controls for region-year fixed effects and $lSegCount_{it}$ as described above also help to control for factors related to asymmetrical changes in segment reporting incentives for exposed and comparison firms. Standard errors are adjusted for heteroskedasticity and two-way clustered by firm and industry-year. Variable definitions and data sources are provided in Appendix A.1.

Entropy balancing is a reweighting method that produces an improved counterfactual, resulting in estimated treatment effects that are less sensitive to sample composition and model choices (Hainmueller 2012). I perform the entropy balancing procedure because exposed and comparison firms exhibit dissimilar pre-adoption traits, and unweighted tests of relative trends in corruption exposure display a slight time trend. Pre-adoption comparison firm variables are reweighted to match the distributional properties of pre-adoption exposed firm variables. Specifically, I reweight comparison firm observations to match the first and second moments of the mean pre-adoption values of $Size$, ROA ,

³⁰ As an example, for Exxon Mobil Corp. with reported geographic segments for thirteen individual countries and one aggregate region in 2009, country-level indicator variables in 2009 equal one for the thirteen reported countries and zero for other countries, and region-level indicator variables in 2009 equal one for the reported region and zero for other regions.

lMB, *lSegCount*, *lSubCount*, *Competition*, *Growth*, *Constr*, *Rating*, *NoMatch%*, *Big4*, *CE*, *RevCorReg%*, firm age (*Age*), and the Fama and French 48 Industry for exposed firms.³¹

Descriptive Statistics, Parallel Trends, and Covariate Balance

Table 2 tabulates the industry frequency of exposed and comparison firms before entropy balancing. Business Services is the most represented industry in the exposed group, comprising 52 of 214 exposed firms, and the second-most represented industry in the comparison group, comprising 33 of 439 comparison firms. Electronic Equipment is the most common industry among comparison firms (49 firms). Differences in industry representation between exposed and comparison firms motivate the inclusion of industry as a conditioning variable in the entropy balancing procedure.

[INCLUDE TABLE 2 ABOUT HERE]

Panels A and B of Table 3 present summary statistics before and after entropy balancing for the baseline sample. Mean *CE* in Panel B (2.66) is less than in Panel A (2.96) because the entropy balancing procedure weights comparison firm observations to match the distributional properties of the exposed firm observations. A smaller mean *CE* after entropy balancing is consistent with the idea that, relative to comparison firms, US firms with UK business tend to be less exposed to high-risk countries. Mean assets, the number of geographic segments (*SegCount*), the number of subsidiaries (*SubCount*), and the presence of a credit rating and Big 4 auditor are greater after entropy balancing. Firms in the entropy-balanced sample have less growth opportunities on average compared to the sample before entropy balancing.

Panel C presents a frequency table of segment disclosures and 2009 CPI scores by country. Unsurprisingly, sample firms disclose US segments most often, accounting for 4,069 of 15,014 total firm-year-segments. The UK is the third-most disclosed country-level segment (1,188 firm-year-segments). Correlation tables for the unweighted and entropy-balanced regression variables are provided in Panels D and E, respectively. Correlations in Panels D and E generally differ in sign and magnitude because, by construction, reweighting the comparison group produces relationships among variables closer to those reflected in the exposed group.

³¹ *RevCorReg* is the proportion of region-level segment revenue earned in regions for which the mean 2009 CPI of countries included in the region is less than or equal to 5. It is an entropy balancing conditioning variable but not a control variable in the regressions because it is endogenous, i.e., it is a potential outcome of UKBA adoption. *Age* is not included as a control variable because it is collinear with the combination of firm and industry-year fixed effects.

[INCLUDE TABLE 3 ABOUT HERE]

The validity of DD analyses relies on the parallel trends assumption, i.e., the assumption that, had the UKBA not been adopted, relative trends in corruption exposure would have been the same for exposed and comparison firms. The parallel trends assumption cannot be directly tested because the counterfactual is unobservable; however, examining pre-adoption outcome trends can provide indirect evidence that it holds. Results of examining pre-adoption trends before entropy balancing, presented in Figure 2(a), support the parallel trends assumption. However, given the downward pre-adoption trend, using an entropy-balanced sample alleviates the potential for biases influencing relative differences in post-adoption corruption exposure. Figure 2(b) presents results of examining corruption exposure trends after entropy balancing. These results are comforting: not only do they suggest common trends, but there is no evidence of monotonically decreasing relative pre-adoption trends. It is also assuring that results of tests using the unweighted and entropy-balanced samples do not dramatically differ.

Evaluating the overlap in the pre-adoption distributions of relevant variables, i.e., the covariate balance, and adjusting for concerning differences is an important step in establishing credible inferences (e.g., Imbens and Rubin 2015, Atanasov and Black 2016).³² Panels A and B of Table 4 present the pre-adoption mean and variance of exposed and comparison group variables before and after entropy balancing, respectively. The covariate balance after entropy balancing demonstrates improved similarity in the pre-adoption means of exposed and comparison firm variables. Normalized mean differences after entropy balancing are negligible by conventional standards, with an average normalized difference across all variables of 0.016.³³ Importantly, the pre-adoption *CE* of exposed and comparison firms is much closer after entropy balancing. The variance ratio demonstrates differences in the variance of pre-adoption variables of the exposed and comparison firms (a variance ratio between 0.80 and 1.25 is ideal according to the criteria in Rubin 2001). Overall, identifying assumptions of the DD analyses are more likely to be satisfied after entropy balancing as it makes exposed and comparison

³² Despite evidence of parallel trends, DD estimates can be confounded if regressions include variables associated with the treatment assignment and the effect of such variables on the outcome varies over time. For example, increased global anti-corruption awareness may disproportionately affect comparison firms because comparison firms are more exposed to high-risk countries prior to adoption. This scenario would result in larger observed post-adoption declines in corruption exposure for comparison firms compared to exposed firms, leading to downward-biased DD estimates.

³³ Normalized differences are preferred in assessing covariate balance as they are unaffected by sample size (Imbens and Rubin 2015); prior research suggests normalized differences between -0.1 and 0.1 are negligible (e.g., Austin 2011).

firms more similar across variables that could potentially affect inferences.³⁴

[INCLUDE TABLE 4 ABOUT HERE]

Main Regressions: Impact of the UKBA on US Firms' Business in High-Risk Countries

Table 5 presents results of unweighted and entropy-balanced regressions estimating the effect of UKBA adoption on corruption exposure. Columns (1) and (2) present results of estimating Equation 2 for the baseline sample before and after entropy balancing. The estimated coefficient on *ExposedPost* of -0.0638 for the unweighted sample is negative and statistically significant ($p < 0.05$), suggesting that the UKBA leads exposed firms to curb their mean corruption exposure relative to comparison firms. After entropy balancing, the estimated coefficient equals -0.0717 ($p < 0.01$). The estimated effect amounts to an approximate 0.07 point decrease in relative CPI score of the exposed group, or 24 percent of the interquartile range in the pre-adoption sample distribution of corruption exposure. As an illustration, consider a hypothetical firm that earns equal pre-adoption revenues in the US, UK, Qatar, United Arab Emirates, and Saudi Arabia, which have CPI scores in 2009 of 7.5, 7.7, 7.0, 6.5, and 4.3, respectively. A 0.07 lower post-adoption *CE* (relative to pre-adoption *CE*) amounts to a $\sim 2.4\%$ shift of global revenues from Saudi Arabia (the country with the highest corruption risk) to the remaining four countries (in which shifted revenues are allocated equally among the countries), or a $\sim 13.9\%$ reduction in Saudi Arabian revenues. A decline of 0.1 in the 2009 CPI score equates to a difference in perceived corruption between, for example, Hungary (CPI=5.1) and Jordan (CPI=5.0).³⁵

[INCLUDE TABLE 5 ABOUT HERE]

Figures 2(a) and 2(b) demonstrate pre-adoption coefficient estimates that are not statistically different from zero. Corresponding trend regressions are tabulated in Columns (1) and (2) of Table 6. A joint F test fails to reject the null hypothesis that the pre-adoption coefficient estimates jointly equal zero. Collectively, this evidence supports the parallel trends assumption. Figure 2(c) plots the mean predicted values of *CE* separately for treatment and control firms—exposed firms exhibit a marked decline in *CE* following adoption, whereas the post-adoption *CE* trend for comparison firms is generally stable through 2012. Pre-adoption trends are relatively parallel through 2008; 2009 displays a

³⁴ Pre-adoption covariate values are (nearly) perfectly balanced at the firm level. Entropy balancing does not produce differences of exactly zero in Panel B because weights are determined at the firm level rather than the firm-year level.

³⁵ In a hypothetical case where, following adoption of the UKBA, the US devotes greater resources into monitoring comparison firms for FCPA violations, relative to exposed firms (i.e., because exposed firms are also monitored by the UK), this scenario would bias against finding a significantly negative effect in the empirical analyses.

smaller relative CE increase for exposed firms, potentially due to the draft UKBA announcement in March 2009. Placebo regressions are discussed in the following subsection, and other tests examining the potential for confounding factors are discussed in Sections VII and VIII.

[INCLUDE FIGURE 2 AND TABLE 6 ABOUT HERE]

Placebo Regressions

I perform two placebo analyses. First, I replicate the main analyses after constructing exposed and comparison groups as though US firms with (without) material business in *Germany* are exposed (comparison) firms. Germany and the UK are similar in several key respects, but doing business in Germany does not expose US firms to the UKBA. For one, Germany and the UK are large, developed economies and trading nations in Western Europe. US firms also conduct substantial business in Germany; Germany is the second-most frequent European country-level segment disclosed by US firms. Germany, like the UK, has a high quality of law enforcement (La Porta et al. 1998) and low perceived corruption (Transparency International 2009). Both countries ratified multilateral anti-corruption agreements, such as the ABC, and thus have similar levels of cooperation with the US in anti-corruption enforcement. Results before and after entropy balancing are presented in Columns (3) and (4) of Table 5. Consistent with the preceding results being attributable to UKBA adoption, coefficient estimates on *ExposedPost* are not statistically significant.³⁶ Evidence of parallel trends is supported by regressions presented in Columns (3) and (4) of Table 6.

Next, I assign “treatment” to firms at random by performing 1,000 replications of Equation 2 to produce histograms of the simulated DD estimates for β_1 . Figures 3(a) and 3(b), which present histograms for the unweighted and entropy-balanced samples, respectively, indicate placebo estimates centered near zero. The dashed lines represent the actual coefficient estimates from the Table 5 regressions, which lie in the left tail of the distributions. I begin with the sample for the main analyses prior to identifying exposed and comparison firms. Restricting the sample to firms with pre-adoption material revenues in at least one non-US country, and with at least one pre-adoption and post-adoption observation, results in 659 firms. In each replication, treatment is randomly assigned to 216 firms to maintain the same proportion of exposed firms as in the main tests $[(214 / (214 + 439)) \times 659]$.

[INCLUDE FIGURE 3 ABOUT HERE]

³⁶ A positive correlation between disclosing a German segment and disclosing a UK segment biases the falsification test in favor of a significant effect.

Extended Sample Period

Because investigations and prosecutions take time to carry out (especially in the case of a new law), my results suggest that, at the time of adoption, US firms anticipated future enforcement of the UKBA. However, because most enforcement actions occur in years after 2013, I estimate the main specifications after expanding the post-adoption period to include three additional years (i.e., through 2016).³⁷ The methodology used to construct exposed and comparison groups and sample selection procedures are the same as those described for the baseline sample. Regression results, tabulated in Columns (5) and (6) of Table 5, show that the estimated coefficient of interest is statistically significant ($p < 0.05$ for the unweighted sample; $p < 0.01$ for the entropy-balanced sample) and close in magnitude to those in the baseline regressions. Trend regressions tabulated in Columns (5) and (6) of Table 6, provide evidence of pre-adoption common trends.

VII. ADDITIONAL REGRESSIONS

The Effect of the UKBA Conditional on Enforcement Risk

The following analyses aim to examine heterogeneity based upon firms' probability of being subject to an anti-corruption investigation initiated either by the US, UK, or elsewhere, as described in Section III. A greater likelihood of enforcement encourages greater compliance by increasing the potential costs of UKBA violations. Because US firms with substantial UK business may expect a higher risk of enforcement by the SFO, I condition analyses on the magnitude of firms' UK segment revenue ($UKRev_{it}$) and an indicator variable capturing whether firms report a UK subsidiary in any pre-adoption year ($UKSub_i$). In addition, if exposed firms with a larger UK presence also compete more intensely with UK firms, $UKRev$ and $UKSub$ might also capture the UK-specific competition level, which could potentially factor into whether the decision to bring a UKBA enforcement action.

Results are presented in Columns (1) and (2) of Table 7. In Column (1), the estimated coefficient on $ExposedPost \times UKRev$ is -0.0193 ($p < 0.05$) and, in Column (2), the estimated coefficient on $ExposedPost \times UKSub$ is -0.1042 ($p < 0.10$). This evidence suggests that, following adoption, exposed firms with a greater risk of enforcement curb mean corruption exposure to a greater extent.

[INCLUDE TABLE 7 ABOUT HERE]

³⁷ The sample period is not extended beyond 2016 because the French anti-corruption law, Sapin II, which applies extraterritorially to US firms, was adopted in mid-2017, and could potentially confound inferences in this test.

The Effect of the UKBA Conditional on Bribery Risk

Next, I examine whether the adoption effect differs for firms that conduct business in countries with a relatively high risk of bribery. I construct an indicator variable, $Top5BPI_i$, which equals one if a firm discloses a pre-adoption segment for at least one country ranked in the top five countries perceived to be sources of foreign bribery according to Transparency International's 2008 Bribe Payers Index, and equals zero otherwise.³⁸ Results, presented in Column (3), show that the estimated coefficient on $ExposedPost \times Top5BPI$ is negative but not statistically different from zero.

I conduct another analysis examining the impact of heightened bribery risk by constructing a variable, $HighRisk_i$, which equals one if firm i reports at least one pre-adoption geographic segment with a 2009 CPI score less than or equal to 5, and zero otherwise. Column (4) displays a negative and statistically significant estimated coefficient of -0.1211 on $ExposedPost \times HighRisk$ ($p < 0.01$), suggesting a more pronounced effect for firms with pre-adoption business in high-risk countries.³⁹ Column (5) presents results after including all additional variables. Here, the enforcement risk effect remains significant for $ExposedPost \times UKRev$ ($\hat{\beta}_1 = -0.0141$; $p < 0.10$) but not for $ExposedPost \times UKSub$, suggesting that the two risk UK business proxies capture similar effects. The estimated coefficient on $ExposedPost \times HighRisk$ also remains significant ($\hat{\beta}_1 = -0.1154$; $p < 0.05$), suggesting that the bribery risk effect is incremental to the enforcement risk effect.

US Firms' Incremental Exposure to the UKBA

As discussed in Section II, it is unclear whether the statutory differences between the UKBA and the FCPA have practical significance for US firms. For example, unlike the FCPA, the UKBA does not provide an exception for facilitating payments, which are payments made to secure or expedite routine governmental services, such as acquiring licenses, work permits, or visas. In spite of the FCPA exception, however, some US firms may have adopted a conservative approach prior to the UKBA by implementing policies that prohibit facilitating payments (Warin et al. 2010). In addition,

³⁸ The top five countries perceived to be sources of foreign bribery are, in order, Russia, China, Mexico, India, and Italy. The 2008 Bribe Payers Index "ranks 22 of the most economically influential countries according to the likelihood of their firms to bribe abroad" (Transparency International 2008, 2).

³⁹ $Post \times HighRisk$ captures the mean change in corruption exposure from before to after adoption for comparison firms exposed to high-risk countries relative to other comparison firms. The positive coefficient estimate suggests a substitution effect: by inducing exposed firms to curb corruption exposure, UKBA adoption may introduce new investment opportunities for comparison firms operating in high-risk countries, allowing these firms to increase corruption exposure.

while commercial bribery is not prohibited under the FCPA (unlike under the UKBA), the US can use state laws as well as federal mail and wire fraud statutes to prosecute such offenses.

Further, it is difficult to empirically disentangle any effect of these incremental provisions from the hypothesized primary mechanism discussed in Section IV. One possibility entails conducting analyses examining the effect of UKBA adoption conditional on US firms' material business in countries where facilitating payments are most common. However, an identification challenge results from the potential for countries where facilitating payments are most common to also rank among the most corrupt. If exposed firms with pre-adoption business in high-risk countries curb post-adoption corruption exposure to a greater extent (relative to other exposed firms), any observed "facilitating payment" effect might simply capture the effect of bribery risk. To mitigate this concern, I examine a subset of sample firms with at least one pre-adoption high-risk country-level segment (i.e., for which 2009 CPI is less than or equal to 5). In using this sample, this test aims to capture the incremental effect of facilitating payment exposure beyond the effect of doing pre-adoption business in high-risk countries. A tradeoff is that the findings of these analyses are not generalizable beyond this subsample of firms.

These (untabulated) analyses yield mixed results. On the one hand, there is no evidence of a greater effect after conditioning on presence in countries where facilitating payments are most common.⁴⁰ On the other hand, firms with a greater magnitude and proportion of revenues in these countries exhibit a significantly greater curbing of corruption exposure relative to other high-risk firms. Collectively, there is some (albeit weak) evidence that statutory differences between the UKBA and FCPA might play a role (for this high-risk subsample). However, the mixed evidence and empirical challenges do not offer compelling evidence suggesting that facilitating payment risk is a major factor underlying the observed findings. The primary mechanism, as discussed, is likely the potential for UK-US investigations, which increase the cost of foreign bribery for exposed firms, thereby encouraging compliance improvements and potentially curbing business in high-risk countries.

Changes in Segment Reporting as an Alternative Explanation

This study's analyses focus on the effect of UKBA adoption on real business changes. Because managers can employ discretion in geographic segment reporting, a potential concern is that adoption

⁴⁰ To conduct this analysis, I use data from The World Bank Corruption Enterprise Surveys of firms (World Bank Group 2019) and, for each surveyed country, rank the mean response for six data items related to facilitating payments.

of the UKBA prompted a differential change in reporting approach for exposed firms relative to comparison firms. A specific concern involves the potential for managers of exposed firms to, following adoption, reduce transparency of reported segments concerning high-risk countries.

ASC 280 requires firms to disclose revenues from an individual foreign country if revenues from external customers attributed to that country are material. As these disclosures are audited and violating US GAAP can be costly, this study implicitly assumes that such discretion should not occur in such a systematic way as to drive the observed findings absent a real business change. Firms may also have limited opportunities to systematically adjust their reporting to conceal high-risk revenues because several years of segment reporting are presented side-by-side. Further, how anti-corruption regulation affects reporting transparency is *ex ante* unclear. For example, to avoid adverse capital market effects associated with heightened uncertainty, exposed firms might *increase* transparency to reveal more information about foreign bribery risks (e.g., Kim and Mensah 2019 show that adoption of the American Anti-Corruption Act results in a decline in opportunistic reporting).

An advantage of the empirical construct used in this study is that it relies on segment reporting at the country level only. Suppose that, after 2010, exposed firms (relative to comparison firms) aim to obfuscate revenues earned in high-risk countries. It would be difficult to achieve this goal through a manipulation of country-level segment revenue. For instance, if a firm reports a pre-adoption country-level segment for Argentina, a high-risk country with a 2009 CPI score of 2.9, it would be challenging for the firm to later make the argument (to internal and external auditors, for example) that some of the Argentinian revenue should be reported in a “South America” segment.⁴¹ A number of other factors alleviate this concern. The inclusion of *lSegCount*, *NoMatch%*, *Big4*, and *RevCorReg* as entropy balancing covariates facilitates greater similarity among exposed and comparison firms along dimensions which may impact the post-adoption geographic segment reporting incentives of exposed firms relative to comparison firms. Controlling for *lSegCount*, *NoMatch%*, *Big4*, and country-level and region-level segment fixed effects also mitigates the potential for reporting changes.

I also conduct a series of additional analyses. I first examine changes in the number of reported

⁴¹ Another advantage of relying on country-level segments is as follows. Because CPI is measured at the country-level, including region-level segments introduces significant measurement error, e.g., it is impossible to know if a segment for Europe captures revenues from countries like Bulgaria (a high-risk country with a 2009 CPI score of 3.8) or from countries like The Netherlands (a low-risk country with a 2009 CPI score of 8.9), or a combination of these types of countries.

high-risk region-level or country-level segments following adoption, which could potentially suggest discretionary reporting aimed at obfuscating corruption exposure. Results of untabulated analyses do not find evidence consistent with a significant change in reported high-risk segments for exposed firms relative to comparison firms, nor of a (relative) significant change in the total number of reported region-level or country-level segments. I then condition the main analysis on whether an exposed firm engages a Big 4 auditor, as a significantly weaker average effect for these firms could suggest potential opportunistic reporting.⁴² I do not find results consistent with this prediction. Collectively, these results are consistent with inferences in Christensen et al. (2020a), who do not find evidence suggesting that the mid-2000s increase in FCPA enforcement leads firms to aggregate country-level segment revenue into region-level segments.

The Financial Crisis as an Alternative Explanation

A potential concern is that the global financial crisis disproportionately affected exposed firms, resulting in less (relative) revenue growth in high-risk countries. A number of steps taken in the empirical analyses alleviate this concern; namely, the placebo regressions tabulated in Columns (3) and (4) of Table 5, the placebo analyses presented in Figure 3, as well as the inclusion of *Growth*, *Constr*, and *Rating* as entropy-balancing covariates and regression controls. *Growth* captures year-over-year revenue growth and aims to further mitigate concerns related to differential business opportunities for exposed firms relative to comparison firms. Controlling for *Constr*, an indicator variable which equals one when a firm is ranked in the top tercile of financial constraint based on the Kaplan-Zingales index, alleviates concerns that exposed firms (relative to comparison firms) experience external financing frictions after the crisis, leading to a reduction of business in certain countries. A related concern is that firms without a credit rating have more difficulty obtaining external financing and a crisis exacerbates this difficulty. Specifically, exposed firms could have less post-adoption revenues in institutionally weak countries which happen to be high-risk countries if exposed firms are more likely to not have a credit rating relative to (entropy-balanced) comparison firms. An untabulated t-test, however, displays no significant difference in the pre-adoption likelihood of having a credit rating. Nevertheless, I control for *Rating*, which equals one when a firm has S&P Domestic Long Term

⁴² Relative to other audit firms, Big 4 firms may be less likely to allow (undue) discretion in segment reporting. For example, Big 4 auditors may incur higher litigation and reputational costs if such discretion is employed in geographic segment classifications (e.g., DeAngelo 1981).

Issuer Credit Rating.

I also perform two further analyses. First, as another falsification test, I replicate the baseline analysis using 2005–2006 as the pre-adoption period and 2007–2009 as the post-adoption period. Untabulated results do not support the prediction that findings are attributable to the differential effects of the global financial crisis. Second, I replicate the main test after removing all sample firms in the financial industry and find that inferences are unchanged.

Does UKBA Adoption Impact US Firms' Business in the United Kingdom?

My findings suggest that, on average, US firms curb their mean exposure to high-risk countries following UKBA adoption. It is also possible that some exposed firms are unable to justify the costs of carrying on business in the UK in the post-adoption period. In untabulated analyses, I explore whether adoption leads to a curbing of UK business, by examining pre-adoption characteristics conditional on whether exposed firms continue to report a UK segment in the post-adoption period. Initial descriptive evidence indicates that, in the pre-adoption period, exposed firms that discontinue UK segment disclosure have significantly greater corruption exposure, fewer geographic segments, lower profitability, and less growth (compared to other exposed firms). Pre-adoption UK revenues are significantly smaller for these firms, potentially consistent with lower exit costs impacting a firm's decision to curb UK business. On the other hand, a firm might continue UK business after adoption but not disclose a UK segment because the business is less material for reasons unrelated to the UKBA.

However, credibly evaluating exposed firms' propensity to discontinue UK segment disclosure necessitates a benchmark comparison group. I therefore estimate a cross-sectional model after constructing a comparison group of US firms that disclose a pre-adoption German segment. This analysis is based upon the rationale that, other than the additional costs of foreign bribery brought on by the UKBA, there is no obvious reason for US firms with material UK (German) business to be more (less) likely to discontinue material UK (German) business in the post-adoption period. Untabulated findings do not provide evidence suggesting an uncharacteristically greater likelihood that exposed firms stop reporting a UK segment, relative to the likelihood that firms with material pre-adoption business in Germany stop reporting a German segment. Collectively, these results do not offer conclusive

evidence that the UKBA induced exposed firms to exit the UK.

VIII. ROBUSTNESS AND LIMITATIONS

Robustness and Additional Tests

While focusing on US firms mitigates concerns arising from the endogenous timing of adoption, the possibility remains that US firms with UK business react to other UK events at the time of adoption. Specifically, the observed effect might be driven by exposed firms' reaction to corruption-related public outcry in the UK rather than to the law itself. Untabulated event study analyses, however, do not support the idea that exposed and comparison firms react asymmetrically to news of a major pre-adoption bribery scandal in the UK, suggesting that findings are not attributable to this alternative explanation.⁴³ In addition, because exposed firms that compete intensely with UK firms may anticipate a higher risk of enforcement and therefore exhibit a stronger adoption effect (relative to other exposed firms), I examine exposed firms' response after conditioning on industry competition with UK firms. These (untabulated) analyses do not produce significant results.

To explore the effect of the UKBA on other outcomes, I estimate the main analyses using corruption exposure measures based upon subsidiaries, assets, and asset productivity, where asset productivity is the segment-level revenue per asset dollar.⁴⁴ Because changes in these outcomes can take time to occur (see Section V), I also estimate these regressions on an extended sample period through 2016.⁴⁵ Untabulated regression results suggest a negative and statistically significant effect only for the subsidiary and asset productivity *CE* measures for the extended sample period. Estimated effects for the sample period through 2013 are not statistically different from zero.⁴⁶

Analyses are based upon two-way clustering of standard errors by firm and industry-year because: (1) I expect corruption exposure to be correlated within each firm across time, as each firm's

⁴³ Event study analyses focus on cumulative abnormal returns around publications by investigative journalists at The Guardian revealing a significant UK bribery scandal (Leigh and Evans 2007).

⁴⁴ A measure based upon segment capital expenditures is infeasible because missing data results in a particularly small sample size. Note that examining FDI is also infeasible in this study's context as one is unable to distinguish FDI outflows (from the US to high-risk countries) that are attributable to exposed firms versus comparison firms.

⁴⁵ A common form of international bribery, for example, entails paying bribes to acquire necessary permits or licenses to operate in a country. Consider the hypothetical case of an oil firm bribing an Iranian official to obtain a drilling license. Before the firm can begin reaping the rewards of the license, it must first invest in the necessary infrastructure, including installing oil-drilling equipment (see, e.g., OECD/The World Bank 2012).

⁴⁶ A limitation of these analyses is a significantly reduced sample size as a result of missing segment-level asset data.

propensity to conduct business in a country for a given year is correlated with its business in that country in earlier years; and (2) Given the industry-specific nature of corruption, I assume observations across industries in a given year are correlated. Nevertheless, untabulated estimations based upon clustering by firm, industry, state, firm-year, industry-year, and state-year does not affect inferences.

Further regressions demonstrate that the baseline results are robust to using a corruption exposure measure which holds the CPI score fixed as of pre-adoption years 2006, 2007, and 2008 (untabulated). In addition, to ensure results are not driven solely by firms in the Business Services Industry, which is the most (second-most) represented industry in the exposed (comparison) group, I reestimate Equation 2 after excluding these firms and find that this exclusion does not affect inferences. Finally, firms that do not disclose a pre-adoption UK segment but that disclose a post-adoption UK segment are not included in my sample because I require that comparison firms do not disclose a UK segment in any sample year. To ensure results are not driven by this *ex post* classification, I estimate the main regressions after defining the comparison group as US firms that disclose at least one pre-adoption non-US country-level segment and do not disclose a UK segment in the pre-adoption period (rather than in the full sample period). Findings (untabulated) are statistically significant at the 10% level.

Limitations

A limitation of this setting is that exposed and comparison firms are not randomly assigned. While careful design, attention to institutional details, and a battery of placebo and additional analyses help alleviate the possibility that unobserved firm heterogeneity or concurrent shocks contaminate my findings, the observational nature of this study does not permit me to completely rule out the potential for confounding factors. Although I have not found evidence suggesting that the financial crisis or any other contemporaneous 2010 shocks could disproportionately affect exposed firms relative to comparison firms in such a way so as to drive the study's findings, one cannot completely eliminate this possibility. In addition, though I do not have evidence that exposed and comparison firms react asymmetrically to a pre-adoption UK bribery scandal, it is nevertheless possible that some US firms could respond to a contemporaneous 2010 UK shock (unrelated to the UKBA) in a manner similar to UK firms, though this concern should be less pronounced relative to studies examining effects on firms in the home country of the adopted regulation.

I use segment data as it provides firm-level information on business in various countries, and

because auditor oversight should limit opportunities for exposed firms to manipulate segment reporting to conceal corruption exposure. Manipulation may also be challenging given that several years of segment reporting are presented side-by-side in the financial statement notes. Further, it is not clear that firms would reduce transparency in response to anti-corruption regulation, e.g., firms might instead increase transparency to mitigate heightened litigation uncertainty. Nevertheless, the possibility that exposed firms systematically adjust their post-adoption segment disclosures cannot be eliminated entirely. While any reporting changes do not preclude real business changes, such changes could impact the size and significance of the estimated average effect. In general, the inability to accurately measure corruption exposure at the region level is a limitation of the study.

IX. CONCLUSION

This study is the first to provide empirical evidence of the real effects of non-US anti-corruption laws on US firms. I find that adoption of the UKBA curbs the mean corruption exposure of US firms subject to its jurisdiction, relative to similar US firms with little or no exposure. More broadly, given the increasing prevalence of foreign laws with extraterritorial jurisdiction, this study offers insight into the role of these laws in regulating multinational firms in the globalized economy. The enforcement of anti-corruption laws by jurisdictions other than the US may help alleviate the collective action problem, thereby reducing overall global corruption (e.g., Schuman 2011, Brewster and Buell 2017). Multinational firms based in developed countries play an important economic role in developing countries (Baher 2015). As corruption causes inefficient contracting and has a variety of other negative economic and social implications (e.g., Rose-Ackerman 1996), the findings of this study suggest one potential benefit of extraterritorial anti-corruption laws: a curbing of corruption in foreign multinational firms. This study does not speak to the overall net benefit of these laws.

Bribe behavior is influenced by the institutional environment of the country where a multinational firm is based. If US firms engage in less corruption relative to firms in other countries, the observed effect may reflect the lower bound of the effect of extraterritorial anti-corruption laws. On the other hand, the effect could be weaker outside of the US if, for example, firms in countries with weak institutions are unaccustomed to compliance systems. Future research exploring the interplay between the adopting country and the home country of affected firms can yield further insight into how country-level attributes factor into the impact of foreign anti-corruption laws.

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APPENDICES

APPENDIX A.1. VARIABLE DEFINITIONS AND DATA SOURCES

Variable	Description	Source
CE_{it}	<p>For firm i in year t with segment revenue disclosed for J individual countries, the revenue-weighted corruption exposure score, CE, which is measured at the firm-year level, is calculated as:</p> $CE_{it} = \sum_{j=1}^J \left((10 - CPI_j) \times \frac{Revenue_{ijt}}{\sum_{j=1}^J Revenue_{ijt}} \right)$ <p>where $Revenue_{ijt}$ is the Compustat segment revenue from country j disclosed by firm i in year t and CPI_j is Transparency International's CPI score for country j in 2009.</p>	Transparency International's Corruption Perceptions Index (CPI); Compustat Segment Data ("Segment Data")
$ExposedPost_{it}$	An indicator variable equal to one if firm i discloses a country-level geographic segment for the UK in at least one sample year prior to 2010, and if year t is 2010 or later, and zero otherwise.	Segment Data; Compustat North America (NA)
$Exposed_i$	An indicator variable equal to one if firm i discloses a country-level geographic segment for the UK in at least one sample year prior to 2010, and zero otherwise.	Segment Data
$Post_t$	An indicator variable equal to one if year t is 2010 or later, and zero otherwise.	Compustat NA
$Size_{it}$	The natural logarithm of the total assets for firm i in year t .	Compustat NA
ROA_{it}	The net income divided by total assets for firm i in year t .	Compustat NA
lMB_{it}	The natural logarithm of the market-to-book ratio for firm i in year t . The market-to-book ratio is calculated as total assets + market value of equity – common equity – deferred taxes, scaled by total assets.	Compustat NA
$lSegCount_{it}$	The natural logarithm of the total geographic segments disclosed by firm i in year t .	Segment Data
$lSubCount_{it}$	The natural logarithm one plus of the total subsidiaries disclosed by firm i in year t . Form 10-K Exhibit 21 data are available on Scott Dyreng's website: https://sites.google.com/site/scottdyreng/Home/data-and-code .	Exhibit 21; Dyreng and Lindsey (2009)
$Competition_{it}$	The product-differentiation measure developed by Hoberg and Phillips (2016).	Hoberg and Phillips (2016)
$Growth_{it}$	Current year revenue minus lagged revenue, divided by lagged revenue, for firm i in year t .	Compustat NA
$Constr_{it}$	An indicator variable equal to one if the Kaplan-Zingales (KZ) index calculation measuring dependence on external financing is in the top tercile (following convention) for firm i in year t , and zero otherwise. The KZ index, which is higher for firms that are more financially constrained, is constructed following Lamont, Polk, and Saaá-Requejo (2001).	Compustat NA
$Rating_{it}$	An indicator variable equal to one if firm i has an S&P Domestic Long Term Issuer Credit Rating in year t , and zero otherwise.	Compustat

Variable	Description	Source
$NoMatch\%_{it}$	For firm i in year t , the proportion of material subsidiaries reported in Form 10-K Exhibit 21 that are not also reported as country-level segments (Akamah et al. 2018).	Segment Data; Exhibit 21
$Big4_{it}$	An indicator variable equal to one if firm i is audited by a Big 4 firm or one of its predecessors in year t , and zero otherwise.	Compustat NA
$RevCorReg\%_{it}$	The proportion of region-level segment revenue earned in regions for which the mean 2009 CPI of countries included in the region is less than or equal to 5 reported by firm i in year t .	Segment Data; CPI
Age_{it}	The age of firm i in year t .	Compustat
$UKRev_{it}$	The natural logarithm of one plus the UK geographic segment revenues disclosed by firm i in year t .	Segment Data
$UKSub_i$	An indicator variable equal to one if firm i discloses a UK subsidiary in at least one sample year prior to 2010, and zero otherwise.	Exhibit 21
$Top5BPI_i$	An indicator variable equal to one if, in the pre-adoption period, firm i discloses a segment for at least one country ranked in the top five countries perceived to be sources of foreign bribery according to Transparency International's 2008 Bribe Payers Index, and zero otherwise. Based on a survey of senior business executives, the Bribe Payers Index captures the likelihood of foreign firms from countries in which respondents do business to engage in bribery when doing business in the respondents' country. The top five countries perceived to be sources of foreign bribery are, in order, Russia, China, Mexico, India, and Italy.	Segment Data; Transparency International's 2008 Bribe Payers Index
$HighRisk_i$	An indicator variable equal to one if firm i reports at least one pre-adoption geographic segment with a 2009 CPI score less than or equal to 5, and zero otherwise.	Segment Data; CPI

FIGURES

Figure 1: Annual Number of Concluded Cases Brought Under the UKBA

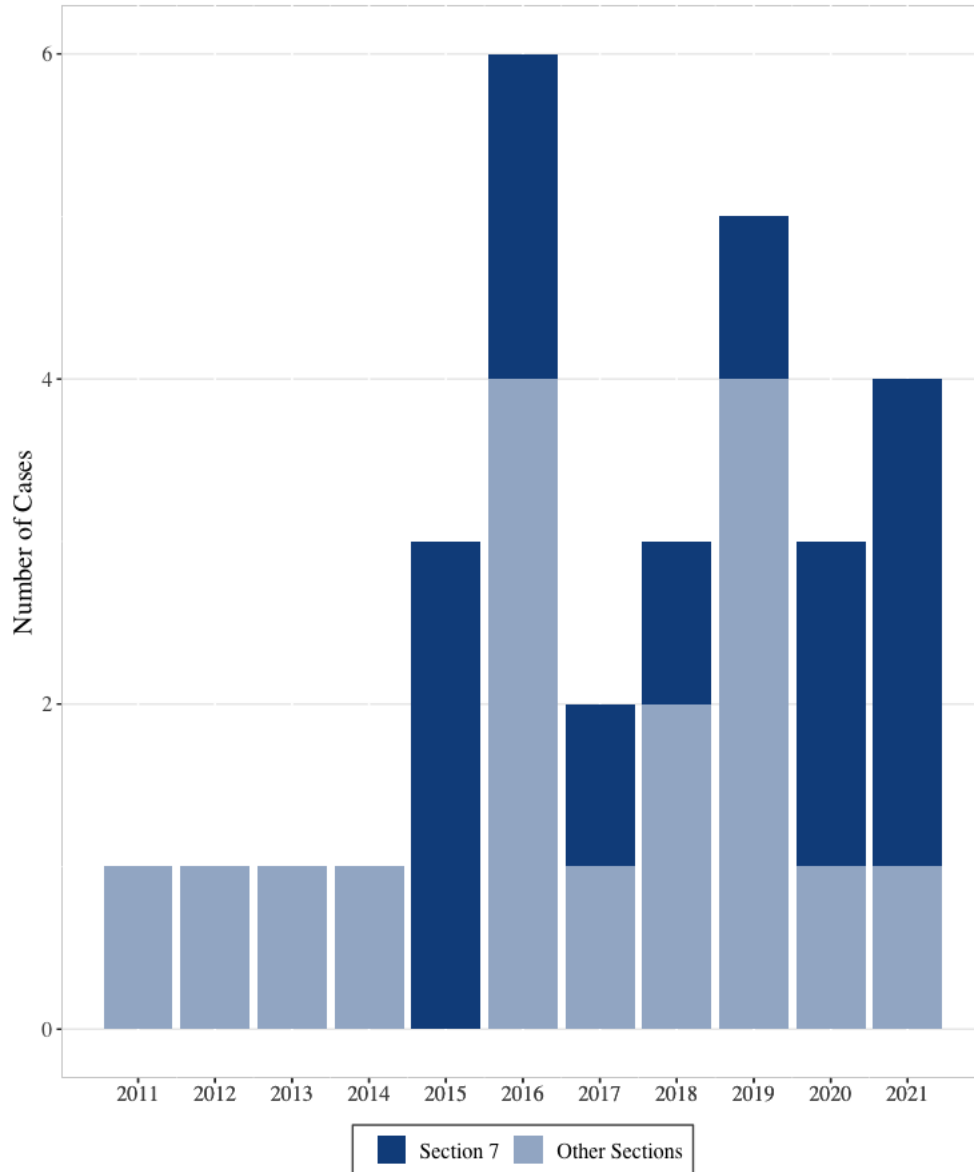
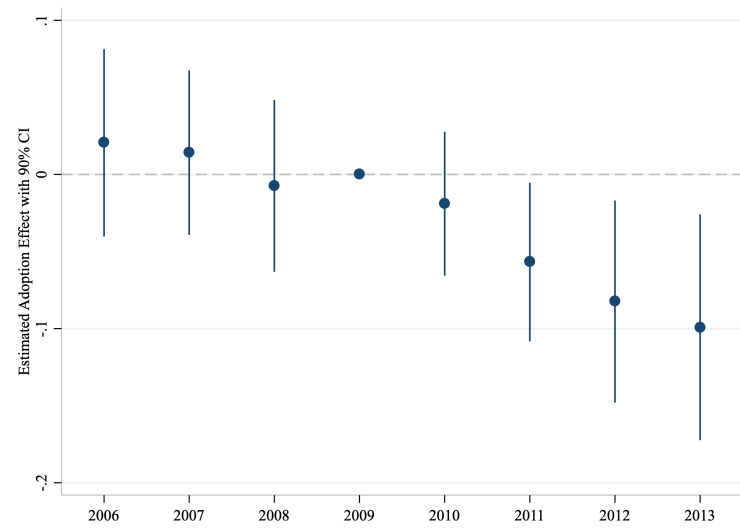
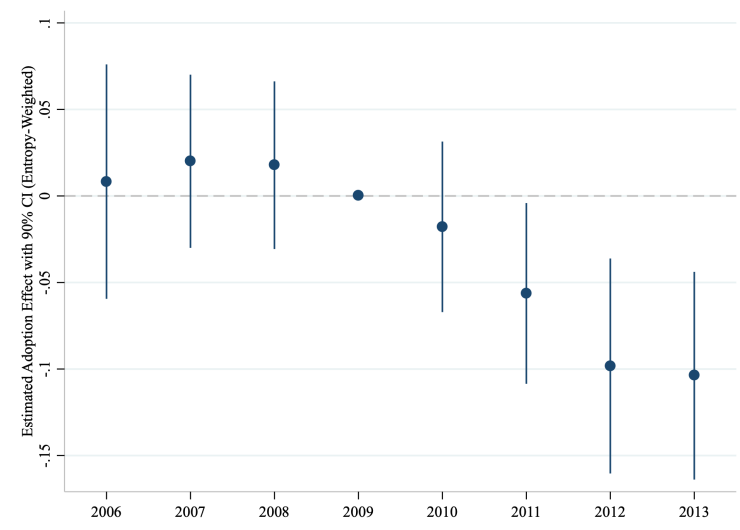


Figure 1 plots the number of concluded cases brought under the UKBA by year through July 2021. Cases involving section 7 of the UKBA are represented in dark shading. Dismissed cases and investigations currently being conducted are not included in the counts. Case information is retrieved from EY (2020) and other publicly available sources.

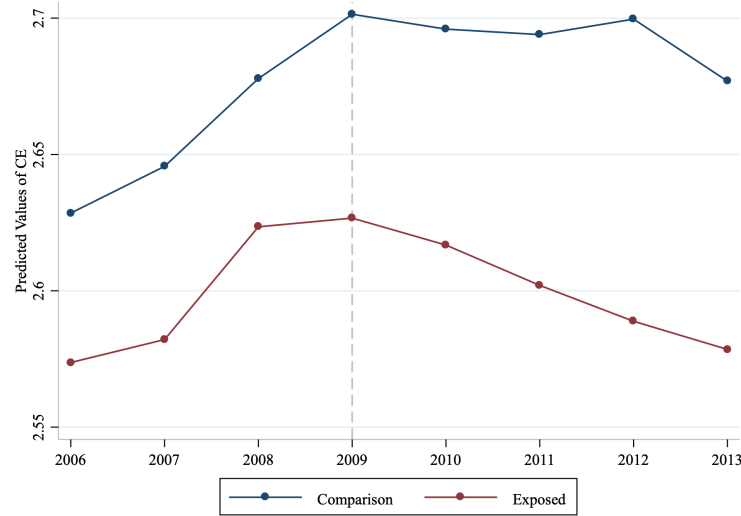
Figure 2: Relative Changes in Mean CE



(a) Trend Coefficients (Unweighted)



(b) Trend Coefficients (Entropy-Balanced)



(c) Exposed and Comparison Trends (Mean Predicted CE)

Figure 2(a) plots coefficient estimates and 90% confidence intervals from the unweighted regression estimated by replacing $Post_t$ in the Table 5 Column (3) specification with separate indicators for each sample year (other than 2009, which serves as the benchmark). Figure 2(b) plots coefficient estimates and 90% confidence intervals from the entropy-balanced regression estimated by replacing $Post_t$ in the Table 5 Column (4) specification with year indicators. Figure 2(c) plots predicted values of CE for comparison and exposed firms resulting from an entropy-balanced regression estimated after replacing $Post_t$ in Equation 2 with separate indicator variables for each sample year.

Figure 3: Coefficient Estimates Generated by Random Treatment Assignment

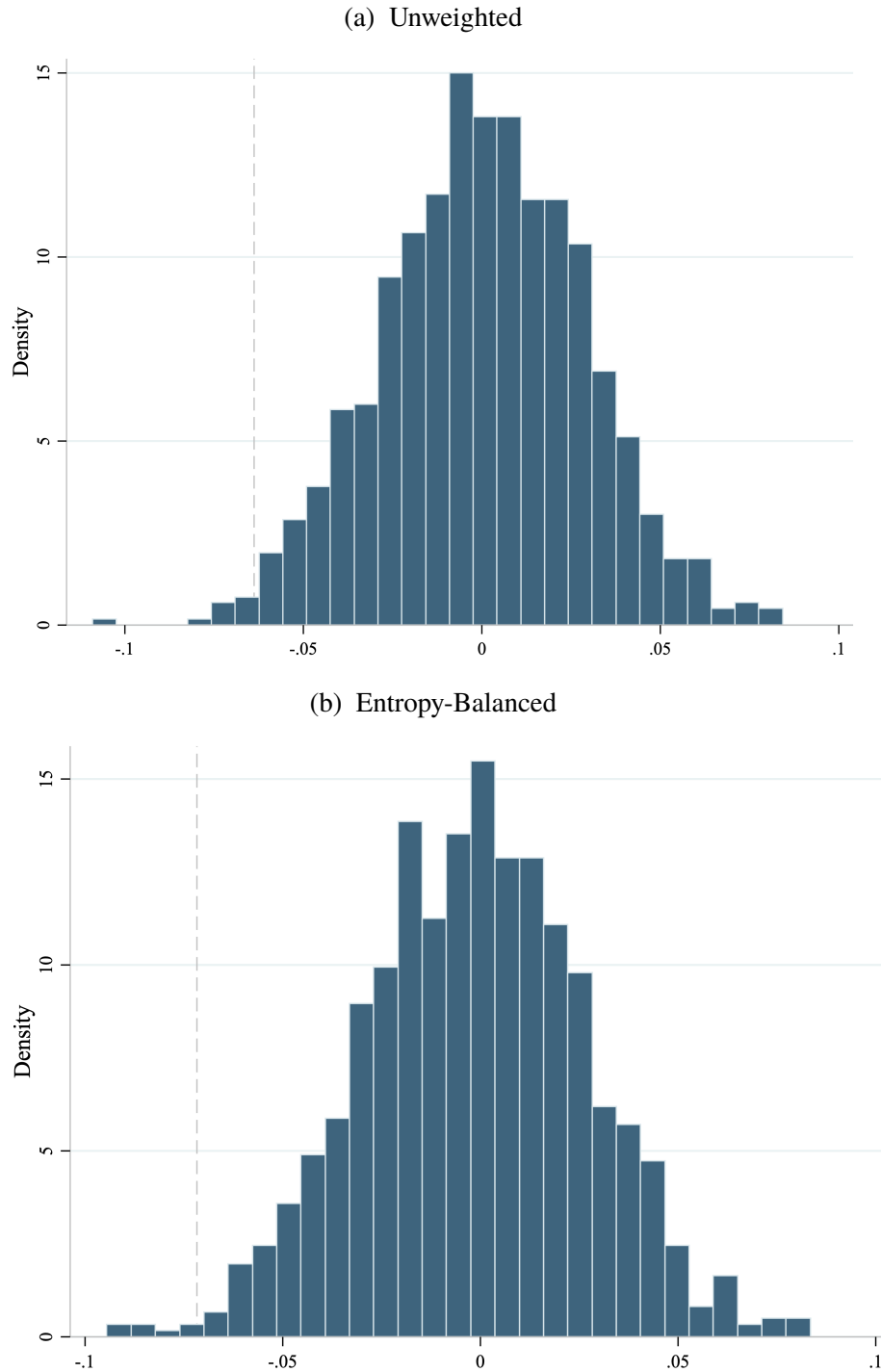


Figure 3 plots histograms of placebo coefficient estimates of the DD coefficient β_1 resulting from a simulation procedure which estimates Equation 2 after randomly assigning firms to the exposed group. Figures 3(a) and 3(b) present the histogram of the unweighted and entropy-balanced regression results, respectively. The simulation procedure consists of 1,000 replications. The dashed vertical lines represent the actual coefficient estimates of -0.0638 and -0.0717, respectively (see Columns (1) and (2) of Table 5). The entropy balancing procedure for the placebo regressions is identical to that used in the main regressions except that only the first moment is balanced. The second moment is not balanced because the algorithm fails to converge in all 1,000 replications.

Table 1: Sample Selection

<i>Sample selection:</i>	Firm-Years	
Matched Compustat North America Fundamentals data, Compustat Geographic Segment data, and Corruption Perceptions Index data for US firms for the period 2006–2013 (not including firm-years which do not report any country-level segments)		28,869
Less observations with missing control variables		12,496
Less firms not meeting criteria for inclusion in either the exposed or comparison group		11,517
Less firms without at least one observation in the pre-adoption period and at least one observation in the post-adoption period		603
Final baseline sample		4,253
<i>Exposed and comparison firm breakout:</i>	Firms	Firm-Years
Firms meeting criteria for inclusion in the exposed group	299	1,616
Less firms without at least one observation in the pre-adoption period and at least one observation in the post-adoption period	85	186
Final sample of exposed firms	214	1,430
Firms meeting criteria for inclusion in the comparison group	660	3,240
Less firms without at least one observation in the pre-adoption period and at least one observation in the post-adoption period	221	417
Final sample of comparison firms	439	2,823
Table 1 presents sample selection procedures for the baseline sample of firms over the period 2006–2013.		

Table 2: Industry Composition

	Exposed Firm Frequency	Perc.	Comparison Firm Frequency	Perc.
Agriculture	0	0	3	0.68
Aircraft	2	0.93	3	0.68
Apparel	2	0.93	5	1.14
Automobiles and Trucks	10	4.67	16	3.64
Banking	2	0.93	0	0
Beer & Liquor	3	1.4	0	0
Business Services	52	24.3	33	7.52
Business Supplies	3	1.4	14	3.19
Candy & Soda	0	0	2	0.46
Chemicals	7	3.27	19	4.33
Coal	0	0	1	0.23
Communication	4	1.87	6	1.37
Computers	8	3.74	9	2.05
Construction	1	0.47	6	1.37
Construction Materials	6	2.8	11	2.51
Consumer Goods	3	1.4	5	1.14
Electrical Equipment	6	2.8	14	3.19
Electronic Equipment	12	5.61	49	11.16
Entertainment	2	0.93	2	0.46
Fabricated Products	0	0	5	1.14
Food Products	0	0	8	1.82
Healthcare	3	1.4	4	0.91
Insurance	1	0.47	3	0.68
Machinery	14	6.54	20	4.56
Measuring and Control Equipment	7	3.27	13	2.96
Medical Equipment	8	3.74	23	5.24
Non-Metallic & Industrial Metal Mining	2	0.93	3	0.68
Other	4	1.87	10	2.28
Personal Services	3	1.4	6	1.37
Petroleum and Natural Gas	8	3.74	23	5.24
Pharmaceutical Products	11	5.14	26	5.92
Precious Metals	1	0.47	3	0.68
Printing and Publishing	3	1.4	1	0.23
Real Estate	3	1.4	1	0.23
Recreation	2	0.93	5	1.14
Restaurants, Hotels, Motels	0	0	2	0.46
Retail	1	0.47	5	1.14
Rubber and Plastic Products	2	0.93	5	1.14
Shipbuilding, Railroad Equipment	1	0.47	1	0.23
Shipping Containers	1	0.47	3	0.68
Steel Works Etc	4	1.87	10	2.28
Trading	6	2.8	19	4.33
Transportation	2	0.93	10	2.28
Utilities	1	0.47	9	2.05
Wholesale	3	1.4	23	5.24
Total	214	100.00	439	100.00

Table 2 presents the industry composition (based on the Fama and French 48-industry classification) of sample exposed and comparison firms before performing the entropy balancing procedure.

Table 3: Descriptive Statistics

Panel A: Summary Statistics Before Entropy Balancing						
	N	Mean	Std.Dev.	P25	P50	P75
<i>CE</i>	4,235	2.96	1.14	2.41	2.50	2.94
<i>Assets</i> (in millions)	4,235	4,662.19	13,576.36	180.23	794.81	3,023.17
<i>ROA</i>	4,235	0.01	0.18	-0.00	0.04	0.09
<i>MB</i>	4,235	1.78	1.13	1.10	1.43	2.05
<i>SegCount</i>	4,235	4.94	3.15	3.00	4.00	6.00
<i>SubCount</i>	4,235	35.85	71.63	2.00	12.00	38.00
<i>Competition</i>	4,235	0.36	0.29	0.13	0.25	0.51
<i>Growth</i>	4,235	0.11	0.35	-0.04	0.07	0.20
<i>Constr</i>	4,235	0.24	0.43	0.00	0.00	0.00
<i>Rating</i>	4,235	0.35	0.48	0.00	0.00	1.00
<i>NoMatch%</i>	4,235	0.49	0.36	0.00	0.57	0.82
<i>Big4</i>	4,235	0.75	0.43	1.00	1.00	1.00

Panel B: Summary Statistics After Entropy Balancing						
	N	Mean	Std.Dev.	P25	P50	P75
<i>CE</i>	4,235	2.66	0.63	2.39	2.48	2.67
<i>Assets</i> (in millions)	4,235	5,376.58	14,744.90	197.69	1,114.30	3,686.57
<i>ROA</i>	4,235	0.01	0.18	0.00	0.05	0.08
<i>MB</i>	4,235	1.74	0.97	1.12	1.44	2.02
<i>SegCount</i>	4,235	6.02	3.60	4.00	5.00	8.00
<i>SubCount</i>	4,235	45.37	82.59	3.00	16.00	54.00
<i>Competition</i>	4,235	0.36	0.28	0.14	0.26	0.51
<i>Growth</i>	4,235	0.11	0.35	-0.04	0.07	0.18
<i>Constr</i>	4,235	0.24	0.43	0.00	0.00	0.00
<i>Rating</i>	4,235	0.40	0.49	0.00	0.00	1.00
<i>NoMatch%</i>	4,235	0.49	0.34	0.00	0.57	0.79
<i>Big4</i>	4,235	0.78	0.41	1.00	1.00	1.00

Panel C: Frequency of Country-Level Geographic Segments		
Country	Firm-Year-Segments	CPI Score
United States of America	4,069	7.5
Canada	1,759	8.7
United Kingdom	1,188	7.7
China	952	3.6
Germany	784	8.0
Japan	778	7.7
Mexico	625	3.3
Australia	456	8.7
France	393	6.9
South Korea	307	5.5
Taiwan	278	5.6
Italy	259	4.3

Panel C: Frequency of Country-Level Geographic Segments

Country	Firm-Year-Segments	CPI Score
Brazil	244	3.7
Singapore	227	9.2
India	214	3.4
Netherlands	203	8.9
Spain	148	6.1
Belgium	131	7.1
Malaysia	129	4.5
Switzerland	118	9.0
Hong Kong	118	8.2
Argentina	95	2.9
Russia	85	2.2
Norway	84	8.6
Israel	82	6.1
New Zealand	75	9.4
Sweden	65	9.2
South Africa	65	4.7
Philippines	59	2.4
Poland	57	5.0
Hungary	54	5.1
Ireland	53	8.0
Denmark	47	9.3
Thailand	46	3.4
Chile	45	6.7
Czech Republic	42	4.9
Colombia	36	3.7
Finland	36	8.9
Indonesia	35	2.8
Venezuela	34	1.9
United Arab Emirates	33	6.5
Peru	29	3.7
Austria	28	7.9
Nigeria	26	2.5
Portugal	25	5.8
...
Total	15,014	

Panel D: Correlations Before Entropy Balancing

	<i>CE</i>	<i>Size</i>	<i>ROA</i>	<i>IMB</i>	<i>lSegCount</i>	<i>lSubCount</i>	<i>Competition</i>	<i>Growth</i>	<i>Constr</i>	<i>Rating</i>	<i>NoMatch%</i>
<i>Size</i>	-0.11***	1.00									
<i>ROA</i>	0.06***	0.30***	1.00								
<i>IMB</i>	-0.05***	-0.13***	0.08***	1.00							
<i>lSegCount</i>	-0.04***	0.17***	0.07***	0.04***	1.00						
<i>lSubCount</i>	-0.08***	0.61***	0.17***	-0.03**	0.31***	1.00					
<i>Competition</i>	0.08***	-0.21***	0.06***	-0.06***	-0.06***	-0.12***	1.00				
<i>Growth</i>	0.11***	-0.05***	0.05***	0.16***	-0.06***	-0.06***	-0.06***	1.00			
<i>Constr</i>	-0.01	0.05***	-0.31***	-0.19***	-0.06***	-0.03**	-0.03*	-0.07***	1.00		
<i>Rating</i>	-0.14***	0.68***	0.11***	-0.13***	0.09***	0.41***	-0.14***	-0.06***	0.19***	1.00	
<i>NoMatch%</i>	-0.19***	0.37***	0.12***	0.04***	0.09***	0.69***	-0.07***	-0.07***	-0.09***	0.21***	1.00
<i>Big4</i>	-0.23***	0.54***	0.13***	0.05***	0.13***	0.38***	-0.17***	-0.04***	-0.01	0.35***	0.34***

Panel E: Correlations After Entropy Balancing

	<i>CE</i>	<i>Size</i>	<i>ROA</i>	<i>IMB</i>	<i>lSegCount</i>	<i>lSubCount</i>	<i>Competition</i>	<i>Growth</i>	<i>Constr</i>	<i>Rating</i>	<i>NoMatch%</i>
<i>Size</i>	0.05***	1.00									
<i>ROA</i>	0.07***	0.33***	1.00								
<i>IMB</i>	0.05***	-0.09***	0.08***	1.00							
<i>lSegCount</i>	0.18***	0.24***	0.15***	0.04***	1.00						
<i>lSubCount</i>	0.08***	0.64***	0.19***	-0.08***	0.31***	1.00					
<i>Competition</i>	0.02	-0.19***	0.05***	-0.11***	-0.07***	-0.13***	1.00				
<i>Growth</i>	-0.03**	-0.05***	0.00	0.18***	-0.07***	-0.06***	-0.05***	1.00			
<i>Constr</i>	-0.06***	0.02	-0.35***	-0.20***	-0.01	0.04***	-0.03**	-0.05***	1.00		
<i>Rating</i>	-0.02	0.69***	0.15***	-0.11***	0.16***	0.47***	-0.11***	-0.04**	0.15***	1.00	
<i>NoMatch%</i>	-0.01	0.40***	0.14***	0.00	0.02	0.71***	-0.08***	-0.06***	-0.06***	0.25***	1.00
<i>Big4</i>	-0.09***	0.57***	0.21***	0.02	0.08***	0.36***	-0.17***	-0.08***	-0.08***	0.38***	0.30***

Table 3 presents descriptive statistics. Panels A and B report summary statistics before and after performing the entropy balancing procedure for the baseline sample over the period 2006–2013. Panel C reports the count of firm-year-segments and the 2009 CPI scores by country (for brevity, the 45 most frequently disclosed countries are reported). Panels D and E report correlations for the baseline sample before and after performing the entropy balancing procedure, respectively. In Panels D and E, significance at the 1%, 5%, and 10% levels is denoted by ***, **, and *, respectively. Continuous independent variables are winsorized by year at the 1st and 99th percentiles. A list of variable definitions and data sources is provided in Appendix A.1.

Table 4: Pre-Adoption Distributional Properties Before and After Entropy Balancing

Panel A: Covariate Balance Before Entropy Balancing							
	Mean		Mean	Normalized	Variance		Variance
	Exposed	Comparison	Difference	Difference	Exposed	Comparison	Ratio
<i>CE</i>	2.62	3.02	-0.40***	-0.41	0.39	1.54	0.25
<i>Size</i>	6.66	6.48	0.18**	0.09	3.98	3.62	1.10
<i>ROA</i>	0.00	-0.00	0.00	0.03	0.04	0.04	0.92
<i>LMB</i>	0.45	0.46	-0.01	-0.03	0.21	0.29	0.74
<i>lSegCount</i>	1.60	1.30	0.29***	0.54	0.32	0.24	1.33
<i>lSubCount</i>	2.54	2.26	0.28***	0.17	2.69	2.47	1.09
<i>Competition</i>	0.36	0.36	0.01	0.03	0.08	0.09	0.87
<i>Growth</i>	0.12	0.11	0.01	0.03	0.14	0.16	0.87
<i>Constr</i>	0.24	0.25	-0.00	-0.01	0.18	0.19	0.99
<i>Rating</i>	0.37	0.32	0.05**	0.11	0.23	0.22	1.08
<i>NoMatch%</i>	0.46	0.48	-0.02	-0.06	0.12	0.14	0.85
<i>Big4</i>	0.77	0.76	0.02	0.04	0.17	0.18	0.96
<i>RevCorReg%</i>	0.11	0.11	0.01	0.04	0.02	0.02	0.82
<i>Age</i>	22.98	23.24	-0.26	-0.02	255.87	252.90	1.01

Panel B: Covariate Balance After Entropy Balancing							
	Mean		Mean	Normalized	Variance		Variance
	Exposed	Comparison	Difference	Difference	Exposed	Comparison	Ratio
<i>CE</i>	2.62	2.58	0.04	0.07	0.39	0.25	1.53
<i>Size</i>	6.66	6.75	-0.09	-0.05	3.98	3.92	1.02
<i>ROA</i>	0.00	0.01	-0.00	-0.02	0.04	0.04	0.94
<i>LMB</i>	0.45	0.46	-0.01	-0.02	0.21	0.21	1.00
<i>lSegCount</i>	1.60	1.62	-0.02	-0.04	0.32	0.29	1.13
<i>lSubCount</i>	2.54	2.58	-0.05	-0.03	2.69	3.01	0.89
<i>Competition</i>	0.36	0.34	0.02*	0.08	0.08	0.07	1.08
<i>Growth</i>	0.12	0.12	-0.00	-0.00	0.14	0.21	0.67
<i>Constr</i>	0.24	0.26	-0.02	-0.04	0.18	0.19	0.95
<i>Rating</i>	0.37	0.40	-0.02	-0.05	0.23	0.24	0.98
<i>NoMatch%</i>	0.46	0.47	-0.01	-0.03	0.12	0.12	1.02
<i>Big4</i>	0.77	0.81	-0.04**	-0.09	0.17	0.15	1.14
<i>RevCorReg%</i>	0.11	0.11	0.00	0.01	0.02	0.02	1.12
<i>Age</i>	22.98	23.20	-0.22	-0.01	255.87	263.51	0.97

Table 4 presents the pre-adoption (i.e., 2006–2009) mean and variance of exposed and comparison firm variables before and after performing the entropy balancing procedure for the baseline sample. The mean difference is the simple difference in means. Statistical significance of univariate t-tests of the mean difference at the 1%, 5%, and 10% levels is denoted by ***, **, and *, respectively. The normalized difference is equal to $\bar{x}_e - \bar{x}_c \div \left(\frac{s_e^2 + s_c^2}{2} \right)^{\frac{1}{2}}$ where \bar{x}_e (s_e^2) and \bar{x}_c (s_c^2) denote the pre-adoption sample mean (variance) of the exposed and comparison firms, respectively. The variance ratio equals $s_e^2 \div s_c^2$. Continuous independent variables are winsorized by year at the 1st and 99th percentiles. A list of variable definitions and data sources is provided in Appendix A.1.

Table 5: Effect of the UKBA on US Firms' Exposure to High-Risk Countries

	(1)	(2)	(3)	(4)	(5)	(6)
	<i>Main Regressions</i>		<i>Placebo Analyses</i>		<i>Extended Sample Period</i>	
	Unweighted Sample	Entropy- Balanced	Unweighted Sample	Entropy- Balanced	Unweighted Sample	Entropy- Balanced
<i>ExposedPost</i>	-0.0638** (-2.4312)	-0.0717*** (-2.8011)	0.0016 (0.0438)	0.0493 (1.4119)	-0.0695** (-2.5269)	-0.0808*** (-3.0298)
<i>Size</i>	0.0337 (1.3116)	-0.0227 (-0.8037)	0.0357 (1.3187)	0.0890* (1.7448)	0.0295 (1.0324)	0.0034 (0.1317)
<i>ROA</i>	-0.1082** (-1.9876)	-0.0853 (-1.2311)	-0.0942* (-1.6647)	-0.2202** (-2.0691)	-0.1314** (-2.5334)	-0.1313*** (-2.6808)
<i>lMB</i>	0.0207 (0.7971)	-0.0425 (-1.0756)	0.0248 (0.9410)	0.0377 (0.5327)	0.0336 (1.3253)	-0.0262 (-0.8907)
<i>lSegCount</i>	0.2376** (2.5904)	0.1295* (1.6607)	0.2461*** (2.6444)	-0.0178 (-0.1632)	0.2131*** (2.7553)	0.1296* (1.8768)
<i>lSubCount</i>	0.0078 (0.5855)	0.0237* (1.6553)	0.0130 (0.9704)	0.0420** (2.0457)	0.0069 (0.5662)	0.0144 (0.9696)
<i>Competition</i>	0.0136 (0.3737)	-0.0090 (-0.2487)	0.0012 (0.0333)	-0.0152 (-0.2891)	-0.0008 (-0.0283)	-0.0257 (-0.6871)
<i>Growth</i>	0.0111 (0.4839)	-0.0109 (-0.4649)	0.0088 (0.3816)	-0.0222 (-0.3009)	0.0086 (0.3967)	-0.0100 (-0.3955)
<i>Constr</i>	-0.0334 (-1.4447)	-0.0143 (-0.6494)	-0.0315 (-1.3000)	-0.0302 (-0.9035)	-0.0307 (-1.6100)	-0.0162 (-0.8148)
<i>Rating</i>	-0.0255 (-0.9727)	-0.0123 (-0.4291)	-0.0282 (-0.9927)	0.0498 (1.4418)	-0.0295 (-1.3357)	-0.0190 (-0.7553)
<i>NoMatch%</i>	-0.0702 (-1.3785)	-0.0932* (-1.7924)	-0.0982* (-1.9064)	-0.1883** (-2.3108)	-0.1023** (-2.0807)	-0.0893* (-1.6658)
<i>Big4</i>	0.0002 (0.0051)	0.0015 (0.0360)	-0.0193 (-0.4307)	0.0557 (0.7671)	-0.0127 (-0.3704)	0.0125 (0.3267)
Observations	4,235	4,235	4,192	4,192	5,432	5,432
Firm Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Industry-Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Country-Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Region-Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.954	0.901	0.954	0.881	0.947	0.887

Table 5 reports results of unweighted and entropy-balanced Ordinary Least Squares (OLS) regressions estimating the effect of UKBA adoption on CE_{it} (Equation 2). Columns (1) and (2) present the main results for the baseline sample over the period 2006–2013. Columns (3) and (4) present placebo results over the period 2006–2013, in which $Exposed_i$ equals one if firm i discloses a Germany segment in at least one pre-adoption sample year, and zero if firm i reports at least one non-US country-level segment in at least one pre-adoption sample year and does not report a Germany segment in any sample year. The placebo exposed (comparison) group comprises 133 (512) distinct firms. Columns (5) and (6) present results for the extended sample period 2006–2016. Regressions are estimated after excluding any singleton observations, as retaining singleton groups in regressions with multiple levels of fixed effects overstates statistical significance and is computationally inefficient (Correia 2016). Coefficient estimates for the intercept are untabulated. Robust t-statistics based on two-way clustering of standard errors by firm and industry-year are in parentheses below the estimated coefficients. Continuous independent variables are winsorized by year at the 1st and 99th percentiles. A list of variable definitions and data sources is provided in Appendix A.1. Statistical significance at the 1%, 5%, and 10% levels is denoted by ***, **, *, respectively.

Table 6: Trend Regressions

	(1)	(2)	(3)	(4)	(5)	(6)
	<i>Main Regressions</i>		<i>Placebo Analyses</i>		<i>Extended Sample Period</i>	
	Unweighted Sample	Entropy- Balanced	Unweighted Sample	Entropy- Balanced	Unweighted Sample	Entropy- Balanced
<i>Exposed</i> 2006	0.0205 (0.5570)	0.0083 (0.2019)	0.0183 (0.4708)	0.0317 (0.7680)	-0.0001 (-0.0035)	-0.0223 (-0.5952)
<i>Exposed</i> 2007	0.0141 (0.4365)	0.0200 (0.6608)	0.0026 (0.0794)	-0.0141 (-0.3313)	-0.0109 (-0.3274)	-0.0043 (-0.1334)
<i>Exposed</i> 2008	-0.0074 (-0.2184)	0.0178 (0.6054)	0.0332 (0.9226)	0.0239 (0.5253)	-0.0256 (-0.7740)	-0.0058 (-0.2190)
<i>Exposed</i> 2010	-0.0190 (-0.6706)	-0.0178 (-0.5972)	0.0389 (1.2342)	0.0485 (1.2102)	-0.0371 (-1.2230)	-0.0488 (-1.3243)
<i>Exposed</i> 2011	-0.0569* (-1.8234)	-0.0563* (-1.7786)	-0.0016 (-0.0435)	0.0501 (1.0292)	-0.0748** (-2.4031)	-0.0815*** (-2.6243)
<i>Exposed</i> 2012	-0.0825** (-2.0746)	-0.0983*** (-2.6091)	-0.0041 (-0.0953)	0.0692 (1.4404)	-0.0921** (-2.3176)	-0.0957*** (-2.6708)
<i>Exposed</i> 2013	-0.0992** (-2.2337)	-0.1039*** (-2.8547)	0.0171 (0.3268)	0.0723 (1.2537)	-0.1087*** (-2.6184)	-0.1077*** (-2.8779)
<i>Exposed</i> 2014					-0.1079** (-2.5672)	-0.1229*** (-3.2789)
<i>Exposed</i> 2015					-0.1107** (-2.4136)	-0.1313*** (-3.3759)
<i>Exposed</i> 2016					-0.0634 (-1.2426)	-0.0797* (-1.9196)
Observations	4,235	4,235	4,192	4,192	5,432	5,432
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Firm Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Industry-Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Country-Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Region-Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.954	0.901	0.954	0.881	0.947	0.887
Pre-adoption Joint F Stat	0.44	0.25	0.39	0.78	0.37	0.15
Pre-adoption Joint F P-Val	0.728	0.861	0.760	0.507	0.776	0.932

Table 6 reports results of unweighted and entropy-balanced OLS regressions estimating Equation 2 after replacing $Post_t$ with separate indicators for each sample year (other than the benchmark year 2009). Columns (1) and (2) present results for the baseline sample over the period 2006–2013. Columns (3) and (4) present results for the placebo sample over the period 2006–2013. Columns (5) and (6) present results for the extended sample period 2006–2016. Controls include $Size_{it}$, ROA_{it} , lMB_{it} , $lSegCount_{it}$, $lSubCount_{it}$, $Competition_{it}$, $Growth_{it}$, $Constr_{it}$, $Rating_{it}$, $NoMatch\%_{it}$, and $Big4_{it}$. In each column, the pre-adoption joint F-statistic and p-value result from a test of the null hypothesis that the $Exposed_{2006}$, $Exposed_{2007}$, and $Exposed_{2008}$ estimated coefficients jointly equal zero. Regressions are estimated after excluding any singleton observations, as retaining singleton groups in regressions with multiple levels of fixed effects overstates statistical significance and is computationally inefficient (Correia 2016). Coefficient estimates for the intercept are untabulated. Robust t-statistics based on two-way clustering of standard errors by firm and industry-year are in parentheses below the estimated coefficients. Continuous independent variables are winsorized by year at the 1st and 99th percentiles. A list of variable definitions and data sources is provided in Appendix A.1. Statistical significance at the 1%, 5%, and 10% levels is denoted by ***, **, *, respectively.

Table 7: Conditional Regressions – Enforcement and Bribery Risk

	(1)	(2)	(3)	(4)	(5)
<i>ExposedPost</i> × <i>UKRev</i>	-0.0193** (-2.5515)				-0.0141* (-1.9384)
<i>ExposedPost</i> × <i>UKSub</i>		-0.1042* (-1.7099)			-0.0786 (-1.3077)
<i>ExposedPost</i> × <i>Top5BPI</i>			-0.0222 (-0.4026)		-0.0786 (-1.3077)
<i>ExposedPost</i> × <i>HighRisk</i>				-0.1211*** (-2.6455)	-0.1154** (-2.1913)
<i>ExposedPost</i>	-0.0099 (-0.2613)	-0.0033 (-0.0698)	-0.0630*** (-2.6517)	0.0353 (1.0592)	0.1279** (2.3437)
<i>Exposed</i> × <i>UKRev</i>	-0.0059 (-0.5241)				-0.0106 (-0.9526)
<i>Post</i> × <i>UKSub</i>		0.0237 (0.6045)			0.0195 (0.4859)
<i>Post</i> × <i>Top5BPI</i>			0.0900* (1.8115)		0.0672 (1.3386)
<i>Post</i> × <i>HighRisk</i>				0.1169*** (3.2049)	0.0913*** (2.6374)
Observations	4,235	4,235	4,235	4,235	4,235
Controls	Yes	Yes	Yes	Yes	Yes
Firm Fixed Effects	Yes	Yes	Yes	Yes	Yes
Industry-Year Fixed Effects	Yes	Yes	Yes	Yes	Yes
Country-Year Fixed Effects	Yes	Yes	Yes	Yes	Yes
Region-Year Fixed Effects	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.902	0.901	0.902	0.901	0.903

Table 7 reports entropy-balanced OLS regression results of estimating Equation 2, conditional on measures of enforcement and bribery risk, for the baseline sample over the period 2006–2013. Column (1) presents results after including additional variables $ExposedPost_{it} \times UKRev_{it}$ and $Exposed_i \times UKRev_{it}$. $UKRev_{it}$ is equal to the natural logarithm of one plus total UK segment revenues. Column (2) presents results after including additional variables $ExposedPost_{it} \times UKSub_i$ and $Post_t \times UKSub_i$. $UKSub_i$ equals one if firm i discloses a pre-adoption UK subsidiary, and zero otherwise. Column (3) presents results after including additional variables $ExposedPost_{it} \times Top5BPI_i$ and $Post_t \times Top5BPI_i$. $Top5BPI_i$ equals one if, in the pre-adoption period, firm i discloses a segment for at least one country ranked in the top five countries perceived to be sources of foreign bribery according to Transparency International’s 2008 Bribe Payers Index, and zero otherwise. Column (4) presents results after including additional variables $ExposedPost_{it} \times HighRisk_i$ and $Post_t \times HighRisk_i$. $HighRisk_i$ equals one if firm i reports at least one pre-adoption geographic segment with a 2009 CPI score less than or equal to 5, and zero otherwise. Column (5) presents results after including all additional variables reported in Columns (1)–(4). $Post_t \times UKRev_{it}$ and $UKRev_{it}$ are subsumed by $ExposedPost_{it} \times UKRev_{it}$ because $UKRev_{it}$ is always equal to zero when $Exposed_i$ is equal to zero. $Exposed_i \times UKSub_i$, $Exposed_i \times Top5BPI_i$, $Exposed_i \times HighRisk_i$, $UKSub_i$, $Top5BPI_i$, and $HighRisk_i$ are subsumed by firm fixed effects. Controls include $Size_{it}$, ROA_{it} , lMB_{it} , $lSegCount_{it}$, $lSubCount_{it}$, $Competition_{it}$, $Growth_{it}$, $Constr_{it}$, $Rating_{it}$, $NoMatch\%_{it}$, and $Big4_{it}$. Regressions are estimated after excluding any singleton observations, as retaining singleton groups in regressions with multiple levels of fixed effects overstates statistical significance and is computationally inefficient (Correia 2016). Coefficient estimates for the intercept are untabulated. Robust t-statistics based on two-way clustering of standard errors by firm and industry-year are in parentheses below the estimated coefficients. Continuous independent variables are winsorized by year at the 1st and 99th percentiles. A list of variable definitions and data sources is provided in Appendix A.1. Statistical significance at the 1%, 5%, and 10% levels is denoted by ***, **, *, respectively.