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Terrorism and global business performance

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Abstract

This paper contributes to the literature on business performance by investigating the relationship between terrorism and global business performance at country level. A measure of a country's distance from the frontier score of the World Bank's *Doing Business* index is used to proxy for business performance. The results of the fixed-effects estimations based on 173 countries over 7 years (2009–2017) show that terrorism has no significant relationship with global business performance. We then partition our sample into developed, developing and fragile countries. The results still show that there is no robust significant relationship between terrorism and business performance for the sub-samples of developed and developing countries. However, the results based on the fragile countries' sub-sample suggest a significant negative relationship between terrorism and business performance. The results are consistent with an alternative measure of business performance and estimation technique that controls for endogeneity.

KEYWORDS

developed, developing, fragile country, global business performance, terrorism

1 | INTRODUCTION

Terrorism incurs significant economic as well as human costs. For example, the global economic impact of terrorism reached US$89.6 billion in 2015, which was only 15% less than the year before—when it was $105.6 billion. Overall, the costs arising from terrorism have increased 11-fold over the past 15 years (Dudley, 2016). The human cost of terrorism is equally staggering given that, globally, deaths from terrorism rose from just over 11,000 in 2007 to over 26,000 in 2017. Over the same time period, terror attacks rose from about 2,800 in 2007 to approximately 11,000 in 2017. Among the Organisation for Economic Co-operation and Development (OECD) countries, deaths increased over 900% between 2007 and 2016, with the largest increases occurring in Turkey, France, the United States, and Belgium (Institute for Economics and Peace, 2016).

The growing economic and human cost of terrorism has led to many empirical studies seeking to establish the impact of terrorism on business performance (e.g., Abadie & Gardeazabal, 2008; Aslam & Kang, 2015; Chen & Siems, 2004; Chesney, Reshetar, & Karaman, 2011; Drakos, 2004, 2010; Graham & Ramiah, 2012; Ito & Lee, 2005; Procasky & Ujah, 2016). Collectively these studies evince that terrorism has a negative impact on business performance although the impact is often reversed either in the short run or long run. For example, focusing on the effect of terrorism on the tourism sector, Pizam and Smith (2000) found that a large portion of the terrorism

incidents (79%) caused a significant decline in tourism demand that lasted from 1 month to 6 months, with recovery in approximately 50% of the cases within 3 months.

In their study on the effects of terrorism on the London and Athens stock markets Kollias, Papadamou, and Stagiannis (2011), p. s75), concluded that

> in very broad terms, the findings of our event study methodology do not seem to point to any clear and unequivocal picture or pattern and no significant and notable change over time has emerged in terms of abnormal returns in either market. In line with other studies, the effects generally appear to be transitory in both markets.

Despite the largely consistent findings by existing studies, our knowledge of the relationship between terrorism and business performance is still limited for a number of reasons; hence the need for our study. First, current studies mainly focus on the effects of terrorism on the share prices of firms listed on stock exchanges (e.g., Arif & Sulemon, 2017; Drakos, 2004; Ito & Lee, 2005; Ramiah, Cam, Calabro, Maher, & Ghafouri, 2010) or the tourism sector (e.g., Araña & León, 2008; Llorca-Vivero, 2008; Pizam & Smith, 2000; Yaya, 2009). Unlike previous studies, this paper seeks to relate the effects of terrorism to business performance at a country level rather than at firm/sector level as established by prior evidence. This highlights the overall aggregate impact of terrorism on the aggregate performance of businesses in a country. The main advantage of this approach is that it captures the general business environment in each country rather than at firm/sector level and, therefore, proxies business performance from all firms, both listed and unlisted. This is the first time such evidence has been established in the current literature.

Second, despite the suggestions that terrorism may affect business performance in developing and fragile (failed) countries differently (e.g., Essaddam & Karagianis, 2013; Llorca-Vivero, 2008; Piazza, 2008; Procasky & Ujah, 2016) very few but contradictory studies exist. For example, in respect of the developing/developed dichotomy, Procasky and Ujah (2016) found that terrorism results in a higher cost of debt for the country's sovereign risk and, by extension, the firms in the impacted countries. Moreover, the impact was more pronounced in developing markets where the authors found that a comparable two-point increase in terrorism on average resulted in an entire notch downgrade in the sovereign credit rating of the country. Essaddam and Karagianis (2013) found that firms operating in wealthier, or more democratic countries, face greater volatility in stock returns relative to firms in developing countries. Conversely, Llorca-Vivero (2008) found that the negative consequences of terrorism are greater in developing countries. The contradictory evidence from Essaddam and Karagianis (2013) and Llorca-Vivero (2008) means that it is not clear whether developed or developing countries are impacted more by terrorism.

In respect of fragile countries, we found no study that has examined whether terrorism affects these countries differently given the severity of terrorism incidents in such countries. The severity of such terrorism incidents is due to these countries' lack of ability to project power internally; they also have incompetent and corrupt law enforcement capabilities, which create opportunities for terrorist groups to penetrate, recruit and operate within them at lower cost and with little government interference or scrutiny (Piazza, 2008). For instance, Al-Qaeda and other terrorist groups are using the southern region of Afghanistan as a secure base to mass-produce trained terrorists due to the region's inability to project power internally (Stephen, 2006). Given that businesses have long been the favourite targets of these attacks, there have been several calls for the need for research and policy to focus more on these countries (Bader, Berg, & Holtbrügge, 2015; Newman, 2007; Piazza, 2008).

Against this backdrop, the paper is motivated to determine whether the effect of terrorism on business performance may vary depending on whether the country is classified as developed, developing or fragile. We argue that the effect of terrorism in these countries may depend on how they are classified because of the existence of institutional voids, which tend to be very pervasive and undermine the conduct of international businesses operating in these regions (Doh, Rodrigues, Saka-Helmhout, & Makhija, 2017; Mair & Marti, 2009; Suder, Reade, Riviere, Birnik, & Nielsen, 2017). "Institutional voids" refer to conditions where institutional arrangements needed to support normal functioning of the market are absent, or weak, or fail to accomplish the role expected of them (Mair & Marti, 2009). This often results in higher cost of doing business. Most fragile states are characterized by sustained degradation of preconditions relevant for markets to exist as well such as governance structure, rules of exchange (Fligstein, 2001) and autonomy (McMillan, 2002) as well as the institutions needed for the market to function well—that is, governance mechanism, disclosure requirements and functioning judiciary (La Porta, Lopez-de-Silanes, Shleifer, & Vishny, 1998; Rotberg, 2003). In more severe cases of institutional voids, multinational enterprises (MNEs) are better able to fill these voids for their host countries, which often create high costs for these firms (Doh et al., 2017; Oetzel & Getz, 2012). We argue that the combination of high security risk and severe institutional

voids, where businesses are learning to adapt to dangerous and high-risk environments whilst operating and protecting staff and assets, makes fragile countries an extreme business environment. Given that the challenges in developing countries and fragile countries particularly are very difficult to tackle, it is interesting to find out how terrorism affects businesses in such an environment.

In order to achieve our objective, we used a panel of 173 countries over the period 2009–2017. To capture business performance, the World Bank's *Doing Business* index was used. The *distance to the frontier score* benchmarks economies with respect to regulatory best practice across several indicators that cover topics on areas of *Doing Business*. A country's distance to the frontier score illustrates the extent of the gap between the economy and the regulatory frontier at any given time (World Bank, 2017). We, therefore, argue that economies that are farther away from the frontier are more likely to perform better. Our justification for this argument stems from the characteristics of the topics on areas of doing business[1] used in constructing the frontier. The results of the fixed-effects estimations show that terrorism has no significant impact on global business performance for the full sample, developed and developing countries. However, terrorism has a significant negative relationship with business performance in fragile countries.

The study contributes to the literature in a number of ways. First, our study contributes by examining the relationship between terrorism and global business performance at country level rather than at firm level (e.g., Chesney et al., 2011; Drakos, 2004, 2010). We achieved this by utilizing the World Bank's *Doing Business* index as a proxy for global business performance. By estimating business performance at country level, it means that we are able to approximate the general performance of all businesses within a particular country regardless of industry or listing status. Second, the study also contributes by providing evidence of the impact of terrorism on business performance in developed and developing countries. Our findings add to very limited and contradictory evidence (e.g., Essaddam & Karagianis, 2013; Llorca-Vivero, 2008; Procasky & Ujah, 2016) on whether terrorism has different effects on business performance in developed and developing countries. Contrary to existing results, our results suggest that terrorism does not affect business performance in either developed or developing countries. Finally, despite studies on the relationship between terrorism and economic performance in individual fragile countries (e.g., Khan & Estrada, 2016; Shahzad, Zakaria, Rehman, Ahmed, & Fida, 2016), ours is the first to provide evidence of how terrorism affects business performance in fragile countries.

The rest of this paper is structured as follows: Section 2 reviews the literature on terrorism and business failure. In Section 3, the data are defined and the models outlined. Section 4 presents the empirical results followed by a discussion. The summary and conclusions are in Section 5.

2 | LITERATURE REVIEW

2.1 | Empirical evidence on terrorism and business performance

Many empirical studies seek to establish the impact of terrorism on business performance (e.g., Abadie & Gardeazabal, 2008; Aslam & Kang, 2015; Chen & Siems, 2004; Chesney et al., 2011; Drakos, 2004, 2010; Graham & Ramiah, 2012; Ito & Lee, 2005; Procasky & Ujah, 2016; Tingbani, Okafor, Tauringana, & Zalata, 2019). The collective evidence suggests a significant relationship between terrorism and business performance. For instance, Arif and Sulemon (2017) found a significant mixed positive *and* negative impact of terrorism on stock prices of different sectors on the Karachi Stock Exchange. In a related study, Araña and León (2008) also found the 9/11 attacks caused a shock to tourists' utility and that some destinations experienced a strongly negative impact on their image and attractiveness, while others upgraded as a consequence of the terrorism.

Similarly, Arin, Ciferri, and Spagnolo (2008) provided evidence that the response to terror shocks varies across the six countries investigated (Indonesia, Israel, Spain, Thailand, Turkey and the UK). Specifically, they found that Spain and the UK are generally less affected by terror shocks, which suggested that financial investors in these two countries are more resilient to these events. Very recently, Tingbani et al. (2019) investigated the impact of terrorism on global business failure. Evidence from their fixed-effects estimations reveals a significantly negative relationship between terrorism and business failure. Specifically, the authors found the impact to be more pervasive in developing and fragile states. Unlike Tingbani et al. (2019), though, our study focuses on performance rather than on business failure.

Overall, the evidence presented in this section, which is mainly based on stock markets' and tourism industries' reaction to terrorism incidents, shows that there is an initial negative reaction. However, much of the reviewed literature also suggests that the negative reaction is reversed either in the short term or the long term. There is also limited evidence from these studies that the reaction to incidences of terrorism will differ according to whether the country involved is a developed or a developing one, and the severity of the attack. However, despite the suggestion that the severity of terrorism incidents can impact performance differently, there is no empirical evidence as to whether terrorism has a different effect on fragile states where terrorism

incidents are on-going. Thus, besides adding empirical evidence to the limited research on the relationship between terrorism and global business performance, the paper also contributes by providing evidence on how terrorism affects business performance in fragile countries.

2.2 | Hypotheses development

2.2.1 | Terrorism and global business performance

Several prior studies provided a range of theoretical and empirical evidence to establish a link between terrorism and business performance. The growing evidence suggests that terrorism induces both direct and indirect costs, which adversely affect business performance. Lenain, Bonturi, and Koen (2002) contended that, during periods of terror attacks, resources devoted to improving security in both public and private sectors may crowd out more productive spending, thereby raising the cost of capital and labour. Such adverse business conditions exert differential impacts on business performance both in the short run and in the long run (Liu, 2009).

Similarly, the fear of terrorism also limits investment to drive business growth. Becker and Rubinstein (2004) argued that the fear of terrorism heightens the level of uncertainty in the market, which adversely impacts on consumer behaviour and the firm's investment decisions (see Drakos, 2010). According to Sandler and Enders (2008), the immediate cost of terrorism is localized, thereby causing a substitution of economic activities from relatively vulnerable sectors to relatively safer sectors. This substitution allows large diversified firms to cushion their losses. Consumer choices are also likely to be affected due to the likelihood of been harmed through a terror attack (Greenbaum, Dugan, & LaFree, 2007).

Terrorism also hinders the performance of businesses by raising the cost of doing business in terms of higher wages and greater expenditure on security. Brodeur (2017) contended that the overall psychological effect of the risk of a future terror attack and the direct cost of increased airport security have an adverse economic consequence on business survival and growth. Other costs (including security and surveillance expenditure, repairs and replacement of stolen properties) adversely deplete the already scarce financial resources, which may result in adverse business performance (Fernandez, 2008).

On the other hand, the fear of uncertainty under such conditions most likely creates a beneficial environmental jolt for firms to ensure they thrive (Carter & Auken, 2006). For instance, following the September 11th attack, homeowners in Ohio increased their preference for lower-density housing. Zycher (2003) found that after the September 11th attack there was a significant increase in demand for security and technology-related businesses, whilst tourism-related businesses experienced a decline in demand. Drakos and Kutan (2003) found a similar drop in demand for tourism in those Mediterranean countries that had experienced terror attacks, and a significant rise in destinations deemed to be safer. Furthermore, it is also been argued that differences in resources between countries could cushion the effect of terrorism or speed up recovery from either a large-scale attack or prolonged attack (Sandler & Enders, 2008). Given the overall indirect and direct costs associated with terrorism and the fact that it creates a beneficial environmental jolt for firms to thrive and maximize their performance, we expect terrorism to significantly affect business performance. Against this backdrop, we formulate the following hypothesis:

H1 *Terrorism is significantly associated with global business performance.*

2.2.2 | Terrorism and business performance in developed and developing countries

The conceptual case for expecting a significant relationship between terrorism and business performance is based on the suggestion that the fear of terrorism heightens the level of uncertainty in the market, which significantly impacts on consumer behaviour and the firm's investment decisions (Becker & Rubinstein, 2004; Drakos, 2010). However, in this section, we highlight that the impact of terrorism on global business performance is likely to vary from one country to another due to the existence of institutional voids, which tend to influence the conduct and performance of businesses (Doh et al., 2017; Mair & Marti, 2009; Suder et al., 2017). "Institutional voids" refer to conditions where institutional arrangements needed to support normal functioning of the market are absent, or weak, or fail to accomplish the role expected of them (Mair & Marti, 2009). This often results in higher costs of doing business. We postulate that the severity of the impact of terrorism incidents on business performance depends on the level of institutional voids countries face. Liu (2009) contended that institutional voids exert differential impacts on business performance both in the short run and in the long run (Liu, 2009). For example, Llorca-Vivero (2008) suggested that terrorism has greater adverse effects in developing countries due to the sustained degradation of preconditions relevant for markets to exist.

In a related study, Procasky and Ujah (2016) indicated that, compared to developed countries, businesses in

developing countries are likely to experience more effects of terrorism in terms of high insurance costs. Unlike most developed countries, developing ones are often perceived to be riskier due to their coercive inability to control their national borders, or project power throughout their national territory. According to Rotberg (2003) most of these countries continually face the threat of secession, civil war and large-scale violent internal struggles for control between the government and one or more non-state actors, all of which make them riskier and more costly to do business with. Over time insurers can take advantage of the heightened uncertainty by raising high premium charges for businesses operating in those zones. This has had a significant impact on the growth and survival of firms operating within such regions compared to developed countries (International Monetary Fund—IMF, 2001).

Notwithstanding this, terrorism is found to have a significant impact on the performance of businesses operating in developed countries although it is short-lived due to their resource capabilities and high institutional quality (Tingbani et al., 2019). For instance, a study by Arin, Ciferri, and Spagnolo (2008) on the responses of businesses to terror shocks across the six countries investigated (Indonesia, Israel, Spain, Thailand, Turkey and the UK) suggested that the impact varies across countries. Specifically, they found that Spain and the UK generally recovered quickly from the negative effects of terrorism due to their resource capabilities and high institutional quality (see Arin, Cifferi and Spagnolo, 2008). In a similar vein, Essaddam and Karagianis (2013) found that firms operating in wealthier or more democratic countries face greater volatility in stock returns relative to firms in developing countries. However, conversely, Llorca-Vivero (2008) found that the negative consequences of terrorism are greater in developing countries. The contradictory evidence from Essaddam and Karagianis (2013) and Llorca-Vivero (2008) means that it is not clear whether developed or developing countries are impacted more by terrorism. Given this overall evidence, we develop the following hypotheses:

H2 *Terrorism has a significant association with business performance in developed countries.*

H3 *Terrorism has a significant association with business performance in developing countries.*

2.2.3 | Terrorism and business performance in fragile states

Most fragile states are characterized by sustained degradation of preconditions relevant for markets to exist as well such as governance structure, rules of exchange (Fligstein, 2001) and autonomy (McMillan, 2002) as well as the institutions needed for the market to function well—that is, governance mechanisms, disclosure requirements and functioning judiciary (La Porta et al., 1998; Rotberg, 2003). As a result, the impact of terrorism tends to be more severe and pervasive on the performance of businesses operating in these regions.

According to Gaibulloev and Sandler (2009), transterrorism has growth-limiting effects on fragile states. It reduces growth by crowding-in government expenditures. Reade and Lee (2012) argued that businesses operating in terror-endangered areas, particularly fragile states, are more likely to face challenges from the organizational commitment of their workforce compared to their peers operating in less terror-endangered areas. Several studies (Warr, 2000; Wilcox, Land, & Hunt, 2003) suggested that the fear of violence could drive changes in the routine activities of workers. Such fear also generates organizational stress, which impacts adversely on employees' work attitude, and increases their disaffection with host country nationals in the case of expatriates, which eventually impedes their performance (Bader & Berg, 2013).

Bader and Schuster (2015) found that large and diversified social networks positively impact on the psychological wellbeing of international expatriates working in terror-endangered countries and that safety-related intrafamily tensions have a diminishing influence on the performance of expatriates. Dreher, Krieger, and Meierrieks (2011) stated that the fear and uncertainty impact on the individual migration decisions of staff; they impact on individuals' perceptions of their living and working conditions, thus forcing them to migrate to safer locations. This and other induced indirect costs adversely affect the performance of businesses operating in most fragile states. On the basis of this, we formulate the following hypothesis:

H4 *Terrorism has a significantly negative impact on business performance in fragile states.*

3 | SAMPLE CONSTRUCTION AND EMPIRICAL METHODS

3.1 | Sample Construction

We sourced our data from the World Bank Ease of Doing Business Index, the World Bank Development Indicators (WDI) and the Global Terrorism Database (GTD). We employed data from all the global countries for which data on business performance was available. The sample (173 countries) was further disaggregated into developed (40 countries), developing (133 countries), and fragile

(failed) sub-samples[2] (39 countries). However, since the study was mainly on terrorism, only countries that are known for terrorism and are regarded as fragile were used. This category of fragile countries was also adopted by Okafor and Piesse (2017) in their study of terrorism. This is because countries such as Zimbabwe and North Korea, among others, are ranked highest on the fragile index but are not known for terrorism. Conversely, countries such as the UK, France and Germany that are highly terror-prone are not ranked high in the fragile states index. Somalia was excluded from the sample due to the unavailability of data. The period 2009–2017 was employed for the analyses. The sample of countries employed in the data collection is shown in Tables 1 and 2.

TABLE 1 Sample countries

Afghanistan	Comoros	Hungary+	Moldova	South Africa
Albania	Congo Democratic	Iceland+	Montenegro	South Sudan
Algeria	Congo Rep	India	Morocco	Spain+
Angola	Costa Rica	Indonesia	Mozambique	Sri Lanka
Antigua and Barbuda	Cote d'Ivoire	Iran	Myanmar	St Lucia
Argentina	Croatia+	Iraq	Namibia	St. Kitts and Nevis
Armenia	Cyprus+	Ireland+	Nepal	Sudan
Australia+	Czech Republic+	Israel+	Netherlands+	Suriname
Austria+	Denmark+	Italy+	New Zealand+	Swaziland
Azerbaijan	Djibouti	Jamaica	Nicaragua	Sweden+
Bahamas	Dominica	Japan+	Niger	Switzerland+
Bahrain	Dominican Republic	Jordan	Nigeria	Syria
Bangladesh	Ecuador	Kazakhstan	Norway+	Tajikistan
Barbados	Egypt	Kenya	Pakistan	Tanzania
Belarus	El Salvador	Korea Rep+	Panama	Thailand
Belgium+	Equatorial Guinea	Kosovo	Papua New Guinea	Timor-Leste
Belize	Eritrea	Kuwait	Paraguay	Togo
Benin	Estonia+	Kyrgyz Republic	Peru	Trinidad and Tobago
Bhutan	Ethiopia	Laos	Philippines	Tunisia
Bolivia	Fiji	Latvia+	Poland+	Turkey
Bosnia and Herzegovina	Finland+	Lebanon	Portugal+	UAE
Botswana	France+	Lesotho	Qatar	Uganda
Brazil	Gabon	Liberia	Romania+	Ukraine
Brunei Darussalam	Gambia	Libya	Russian Federation	United Kingdom+
Bulgaria+	Georgia	Lithuania+	Rwanda	United States+
Burkina Faso	Germany+	Luxembourg+	Saudi Arabia	Uruguay
Burundi	Ghana	Madagascar	Senegal	Uzbekistan
Cambodia	Greece+	Malawi	Serbia	Vanuatu
Cameroon	Grenada	Malaysia	Seychelles	Venezuela
Canada+	Guatemala	Maldives	Sierra Leone	Vietnam
Central African Republic	Guinea	Mali	Singapore+	West Bank
Chad	Guinea-Bissau	Malta+	Slovak Republic+	Yemen
Chile+	Guyana	Mauritania	Slovenia+	Zambia
China	Haiti	Mauritius	Solomon Islands	Zimbabwe
Colombia	Honduras	Mexico		

Note: This table presents the sample of countries employed for our analysis on the impact of terrorism on global business performance over the period 2009–2017. + is for developed countries.

TABLE 2 Sample countries

Afghanistan**	Indonesia	Philippines
Algeria***	Iran***	Rwanda*
Bangladesh**	Iraq***	Senegal*
Burundi*	Kenya*	Sri Lanka**
Cameroon*	Lebanon***	South Sudan*
Central African Republic*	Libya***	Sudan*
Chad*	Mali*	Syria***
Colombia	Mozambique*	Thailand
Congo Democratic*	Myanmar	Tunisia***
Cote d'Ivoire*	Nepal**	Turkey***
Egypt***	Niger*	Uganda*
Ethiopia*	Nigeria*	West Bank***
India**	Pakistan**	Yemen***

Note: This table presents the sub-sample of countries employed for our analysis on the impact of terrorism on business performance in 39 fragile countries over the period 2009–2017. * is for SSA countries, ** is for South Asian countries and *** is for MENA countries.

3.2 | Variable description

3.2.1 | Dependent variable

The main dependent variable for the study is the distance to the frontier score,[3] in country *i* at time *t*. The measure represents the best performance observed on each of the *Doing Business* indicators. Basically, the topics on areas of *Doing Business* used in the construction of the distance to the frontier suggest that countries with lower scores have a deteriorating business environment and, thus, such countries are more likely to be characterized by poorer levels of business performance. For example, a score of 25 means that a country is 75 percentage points away from the frontier of best performance across all economies and across time. The topics on areas of *Doing Business* used to construct the frontier include ease in starting a business, dealing with permits, getting electricity, registering a property, getting credit, protecting investors, paying taxes, trading across borders, enforcing contracts and resolving insolvency. Broadly, some studies have established links between the quality of institutional environment and business performance. For example, in their empirical study, Tingbani et al. (2019) used the *resolving insolvency* indicator of the Doing Business Index to proxy for business failure. [In addition, see Xavier, Bandeira-de-Mello, & Marcon, 2014 and He, Zhang, & Wang, 2015] for an extensive review of the relationship between institutional business environment and business.] To further justify our rationale for using this construct as a proxy for business performance, we present the following discussions based on the topics on areas of *Doing Business*, which the World Bank uses in constructing the distance to the frontier score.

Economies that experience enormous difficulties in starting up a business would be characterized by the presence of numerous informal businesses. It is very important to formalize a business since most often fail in the first couple of years of existence (Cressy, 1999). The informal nature of businesses within such a country means that they "operate in the shadows" and are afraid of marketing themselves for fear of the law. They may also not be able to trade with certain customers or increase their customer base, the consequences of which can be productivity losses, lower sales, difficulty in accessing finance, and lack of access to government benefits (Bruhn & McKenzie, 2014). Similarly, businesses in economies with inefficient regulatory systems on construction permits are more likely to underperform. The absence of basic infrastructures and safety standards that can be consequences of the inability to easily obtain such permits is not just costly but can also pose serious operational challenges for businesses. In contrast, ease in dealing with such permits can save time for businesses and will allow them to direct their efforts and resources more efficiently, hence achieving better performance (World Bank, 2013).

Access to an electricity supply is very important for businesses to operate and grow. According to a World Bank report in 2017, businesses in mostly developing countries perceive difficulty with electricity supply as a major obstacle to their operations (World Bank, 2017a). According to Abeberese (2012), shortages in electricity can also cause businesses to reduce their productive investments, with negative implications for performance. Difficulty in registering a property for business operations can also create a burdensome environment for business activities to thrive in and pose serious challenges for industrial development (Agboli & Ukaegbu, 2006). Also, the difficulty businesses encounter in registering their property can reduce their ability to access credit facilities and also expose them to incidents of bribery at the land registry. Both scenarios can have severe consequences for business performance (World Bank, 2013).

There is evidence to suggest that credit has an important role to play in the overall business environment of a country through its ability to enhance business growth and productivity. This is because access to credit in a country can boost the ability of businesses to grow to their optimal size since there will be lower transaction costs and lower risk premia (Beck & Demirguc-Kunt,- 2006; Harvie, Narjoko, & Oum, 2013). Economies, where the interests of investors are not protected, run the risk of low business performance levels. This is because investors will be more reluctant to invest their money for fear

of management misusing the funds for personal gains (Lobet, 2008). Moreover, where investors' interests are not protected, businesses will struggle to maintain good corporate governance standards that are necessary for business performance and growth (Klapper & Love, 2004). Efficient tax-related procedures are beneficial for businesses because overly complicated tax systems are associated with large informal sectors and less investment (World Bank, 2017b). Thus, when tax compliance systems are effectively designed, they encourage businesses to participate in the formal economy by stimulating investment and enhancing performance (Baliamoune-Lutz & Garello, 2014; World Bank, 2017b).

The ease of trading across borders is often as a result of trade liberalization and trade reforms. Businesses within a country that easily trades internationally often enjoy favourable economic conditions and can benefit through the following channels: Improved allocation of resources, greater competition, and access to better technologies, inputs and intermediate goods (Boubakri, Cosset, & Guedhami, 2005). All of these would enhance the overall performance and productivity of businesses (Topalova & Khandelwal, 2011). The ability of a country to effectively enforce contracts through fair, speedy trials are very important for businesses entangled in disputes. If business disputes take a very long time to resolve through the courts, firms—particularly the small ones—may not possess the financial strength to stay in business that long, regardless of the outcome (World Bank, 2013). This is because businesses will incur huge

TABLE 3 Variable definitions

Variable category	Definitions
Dependent variables	
Distance to the frontier (Business performance)	This measures the distance of each economy to the "frontier," which represents the best performance observed. A country's distance to frontier is reflected on a scale from 0 to 100, where 0 represents the lowest performance and 100 represents the frontier (WDI, 2017).
Current account balance	This measures the difference between a country's trade balance (exports minus imports). It is represented as a share of GDP (Holmes, 2006).
Independent variables	
Number of terrorist incidents (per 100,000 of population	This captures the number of terrorist incidents in a given year. Terrorism is defined as the planned use of threat of extra normal violence by subnational groups to obtain a political, religious or ideological objective through threats to a large audience, usually not directly involved with the decision making (GTD, 2019; Ismail & Amjad, 2014).
Number of fatalities and injured (per 100,000 of population	This captures the number fatalities and injured from terror attacks in a given year (GTD, 2019)
Control variables	
Savings (% of GDP)	Measures the difference between GDP and total consumption (WDI, 2019).
Credit to private investors (% of GDP)	This refers to financial resources provided to the private sector by financial corporations, such as through loans, purchases of non-equity securities, and trade credits (WDI, 2017).
Inflation	Annual % change in the cost of consumer goods and services (WDI, 2019).
Lending rate (%)	This refers to the bank rate that usually meets the short- and medium-term financing needs of the private sector (WDI, 2019).
GDP per Capita Growth Rate	This measures the annual growth rate of gross domestic product per capita (WDI, 2019)
FDI (% of GDP)	This is the net inflows of foreign direct investment in an economy as a share of GDP. The net inflows of investment are to acquire a lasting management interest (10% or more of voting stock) in an enterprise operating in an economy other than that of the investor (WDI, 2019)
Trade openness	This measures the degree of openness of a country. It is calculated as the sum of exports and imports of goods and services as a share of GDP (WDI, 2019)
Gross fixed capital formation (% of GDP)	This includes land, plant, machinery, equipment and infrastructural purchases and improvements including the construction of roads, railways, commercial and industrial buildings, etc. (WDI, 2019)

TABLE 4 Descriptive statistics

Variable category	Mean	25th Percentile	75th Percentile	SD	Min.	Max.
Dependent variable						
Business performance	60.121	37.960	69.268	13.243	20.925	91.240
Alternative measure for the dependent variable						
Current account balance (% of GDP)	−3.154	−19.001	1.444	10.199	−65.029	45.454
Key independent variable						
Terrorist incidents (per 100,000 of population)	0.184	0.000	0.040	0.826	0.000	11.544
Number of fatalities and injuries (per 100,000 of population)	0.919	0.000	0.073	5.197	0.000	90.518
Control variables						
Saving (% of GDP)	19.490	−6.767	28.025	17.345	−66.922	75.550
Credit to private investors (% of GDP)	66.306	6.499	89.610	57.297	−114.694	317.410
Inflation (%)	5.204	−0.594	6.089	14.396	−6.811	379.848
Lending rate (%)	11.726	3.477	14.808	8.031	0.500	65.418
GDP/Capita growth rate (%)	1.581	−5.405	3.722	5.635	−62.378	121.780
FDI (% of GDP)	8.729	−0.077	5.731	52.288	−28.583	1,282.630
Trade openness	88.869	34.971	105.387	51.771	0.167	408.362
Gross fixed capital formation (% of GDP)	24.248	12.899	27.782	8.370	−3.744	85.101

Note: This table presents the summary statistics of the variables employed in the analysis.

TABLE 5 Descriptive statistics

Variable category	Mean	25th Percentile	75th Percentile	SD	Min.	Max.
Dependent variable						
Business performance	50.869	32.614	57.875	10.717	27.500	78.453
Alternative measure for the dependent variable						
Current account balance (% of GDP)	−5.591	−22.328	−1.044	9.167	−46.262	29.114
Key Independent variable						
Terrorist incidents (per 100,000 of Population)	0.655	0.000	0.401	1.600	0.000	11.544
Number of fatalities and injuries (per 100,000 of population)	3.828	0.000	1.582	10.436	0.000	90.518
Control variables						
Saving (% of GDP)	16.556	−8.515	23.851	13.902	−30.939	48.452
Credit to private investors (% of GDP)	40.082	−1.864	57.395	39.038	−114.694	202.879
Inflation (%)	8.589	−0.039	8.892	24.352	−6.811	379.848
Lending rate (%)	12.281	5.039	15.148	7.093	4.334	28.447
GDP/Capita growth rate (%)	2.280	−5.920	4.789	9.349	−62.378	121.780
FDI (% of GDP)	2.747	−0.036	3.115	4.574	−4.852	39.456
Trade openness	59.199	30.885	72.023	24.447	0.167	139.676
Gross fixed capital formation (% of GDP)	24.990	13.204	30.985	9.170	0.000	53.988

Note: This table presents the summary statistics of the variables employed in the analysis for the fragile countries.
Source: WDI (2019) and GTD (2019).

costs in pursuing legal means to protect themselves against uncompetitive behaviours such as piracy, contract violations, counterfeiting, and false advertising (Sheng, Zhou, & Li, 2011). Therefore, effective contract systems have great significance for business performance as they can reduce informality, improve access to credit, promote investment, and increase trade (World Bank, 2013). Last, effective insolvency laws can stimulate the reorganization of businesses and enhance their performance and survival (Dewaelheyns & Van Hulle, 2008). They can save struggling businesses when possible, or reallocate insolvent resources of failing firms more productively, thereby speeding up their recovery. Investors and entrepreneurs are more willing to commit to productive activities when they know they are not putting their entire personal fortunes in jeopardy (Cirmizi, Klapper, & Uttamchandani, 2011).

3.2.2 | Independent variables

Our main independent variables are the number of terrorist incidents and the number of fatalities and injured. We normalized our main independent variables per 100,000 of the population as this would allow for better comparability across countries. Furthermore, using the numbers of fatalities and injured would also enhance the analysis as it allows an investigation of the severity of terror attacks.

3.2.3 | Control variables

The study also used control variables that can impact on business performance. These variables mainly proxy for financial development, productivity and economic openness. According to the available literature, financial development has positive implications for a country's long-run level of real activity (Boyd, Levine, & Smith, 2001). Financial development comes with better economies of scale, increased supervision and regulation and sustainable competition. This we argue will mitigate against the performance and growth of businesses, since there will be higher levels of savings, greater availability of credit, lower levels of inflation and more efficient lending rates within that economy. Banks and other lending institutions often create loans from savings. This means that businesses are less likely to be credit-constrained in countries with access to savings and credit (Demirguc-Kunt & Levine, 2001; Lensink, Servin, & Berg, 2017). According to Detragiache, Tressel, and Gupta (2008), studies have shown that firms benefitted immensely in terms of profit through an increase in loan size.

TABLE 6 Correlation matrix (global sample)

		1	2	3	4	5	6	7	8	9	10	11	12
1	Business performance	1.000											
2	Current account balance (% of GDP)	0.270	1.000										
3	Terrorist incidents (per 100,000 of population)	−0.182	−0.086	1.000									
4	Number of fatalities and injuries (per 100,000 of population)	−0.202	−0.045	0.866	1.000								
5	Saving (% of GDP)	0.282	0.627	−0.052	−0.031	1.000							
6	Credit to private investors (% of GDP)	0.635	0.142	−0.111	−0.124	0.192	1.000						
7	Inflation (%)	−0.221	−0.085	0.007	0.042	−0.063	−0.262	1.000					
8	Lending rate (%)	−0.365	−0.183	−0.014	0.025	−0.211	−0.363	0.151	1.000				
9	GDP/Capita growth rate (%)	0.008	0.016	−0.058	−0.039	−0.023	−0.075	−0.123	−0.025	1.000			
10	FDI (% of GDP)	0.053	−0.140	−0.046	−0.059	−0.033	0.285	−0.067	0.010	−0.014	1.000		
11	Trade openness	0.250	0.126	−0.015	−0.047	0.258	0.200	−0.107	−0.187	0.017	0.283	1.000	
12	Gross fixed capital formation (% of GDP)	−0.024	−0.218	−0.078	−0.066	0.318	−0.101	−0.027	−0.072	0.205	−0.004	0.103	1.000

Tsoukas (2011) also showed that financial development played an important role in firm performance; that is, more liquid markets improved the survival chances of firms. In contrast, inflation and high lending rates can erode the profit and increase the cost of doing business, respectively. The latter can also imply that firms find it difficult to access credit, resulting in a fall in competitiveness, cost efficiency and performance levels.

With respect to productivity, we used the growth rate in per capita income and gross fixed capital formation. There is evidence to suggest a positive relationship between changes in per capita growth rate, investment, return on capital (Gruber & Kamin, 2007) and subsequently business performance (Ma, Yao, & Xi, 2006). Gross fixed capital formation can also motivate the business performance through its impact on economic output (Jiang, Laurenceson, & Tang, 2008). For general economic openness, trade openness and FDI were used. Trade openness is often used in literature to capture a country's connectedness to the global market. A country with fewer barriers can be attractive for foreign capital and, thus, can positively impact business performance (Moral-Benito & Roehn, 2016). In addition, there is empirical evidence to suggest that FDI in an economy can have a positive spillover effect on the performance of firms within an economy (Buckley, Clegg, & Wang, 2002; Cubillo Pinilla, 2008). See Table 3 for variable category and description.

3.3 | Preliminary data analysis

Tables 4 and 5 show the descriptive statistics of the variables used. On average, the business performance measure is around the 60% points. The minimum is at around the 21% points while the maximum is at around the 91% points. The sub-samples in Table 5 show that, at the mean, the group of fragile countries achieve business performance at around the 51% points. While the minimum is 27.5% points, the maximum is around 78% points. The percentiles show that, overall, 25% of countries in the sample have business performance that is less than 37.9% points. However, the fragile countries have values at the 25th percentile that are below the 32.6% points. The fragile countries on average record the highest number of terrorist incidents (per 100,000 of population) and number of fatalities and injured (per 100,000 of population). At the mean, about 0.04 terrorist incidents (per 100,000 of population) and 0.073 fatalities and injured (per 100,000 of population) were recorded over the period under review in the overall sample of countries. The values for the fragile countries are 0.40 and 1.58, respectively. The rest of the descriptive analysis can be interpreted from Tables 4 and 7. The correlation matrix is reported in Tables 6 and 7. As can be seen, there are no obvious multicollinearity concerns.

TABLE 7 Correlation matrix (Fragile and Terror-prone Countries)

		1	2	3	4	5	6	7	8	9	10	11	12
1	Business performance	1.000											
2	Current account balance (% of GDP)	0.136	1.000										
3	Terrorist incidents (per 100,000 of population)	−0.218	−0.155	1.000									
4	Number of fatalities and injuries (per 100,000 of population)	−0.233	−0.034	0.874	1.000								
5	Saving (% of GDP)	0.133	0.532	−0.113	−0.024	1.000							
6	Credit to private investors (% of GDP)	0.555	−0.111	−0.179	−0.187	−0.038	1.000						
7	Inflation (%)	−0.149	0.049	−0.037	0.008	0.139	−0.047	1.000					
8	Lending rate (%)	−0.201	−0.078	−0.033	0.039	−0.050	−0.229	0.046	1.000				
9	GDP/Capita growth rate (%)	0.046	0.230	−0.108	−0.075	0.067	0.028	−0.172	−0.009	1.000			
10	FDI (% of GDP)	0.041	−0.546	−0.211	−0.211	−0.119	0.042	−0.133	0.109	0.060	1.000		
11	Trade openness	0.096	−0.135	0.267	0.164	−0.016	0.098	−0.244	−0.205	−0.029	0.256	1.000	
12	Gross fixed capital formation (% of GDP)	0.148	−0.221	−0.179	−0.159	0.415	0.094	−0.056	−0.081	0.229	0.356	0.056	1.000

TABLE 8 Fixed-effects (country and year effects)—baseline estimations

Dependent variables	Model 1 (All Sample) Fixed Effects Business performance	Model 2 (All Sample) Fixed Effects Business performance	Model 3 (Developed) Fixed Effects Business performance	Model 4 (Developed) Fixed Effects Business performance	Model 5 (Developing) Fixed Effects Business performance	Model 6 (Developing) Fixed Effects Business performance	Model 7 (Failed) Fixed Effects Business performance	Model 8 (Failed) Fixed Effects Business performance
Independent Variables								
Terrorist incidents (per 100,000 of population)	−0.241		−0.437		−0.275		−0.434*	
	(0.289)		(0.623)		(0.254)		(0.261)	
Number of fatalities and injuries (per 100,000 of population)		−0.042*		−0.217		−0.051		−0.094**
		(0.025)		(0.283)		(0.039)		(0.037)
Saving (% of GDP)	0.088***	0.088***	−0.025	−0.025	0.082***	0.081***	0.064	0.053
	(0.028)	(0.028)	(0.136)	(0.250)	(0.022)	(0.022)	(0.040)	(0.040)
Credit to private investors (% of GDP)	0.001	0.000	0.029**	0.029*	−0.017	−0.018	−0.175***	−0.182***
	(0.020)	(0.020)	(0.011)	(0.014)	(0.015)	(0.015)	(0.027)	(0.027)
Inflation (%)	−0.034	−0.034	−0.343**	−0.346	−0.031	−0.032	−0.018	−0.023
	(0.051)	(0.051)	(0.162)	(0.209)	(0.026)	(0.026)	(0.044)	(0.044)
Lending rate (%)	−0.034	−0.033	−0.096	−0.091	−0.025	−0.023	0.036	0.042
	(0.043)	(0.043)	(0.158)	(0.175)	(0.040)	(0.040)	(0.048)	(0.048)
GDP/Capita growth rate (%)	−0.007	−0.007	0.279**	0.279**	−0.013	−0.013	0.019	0.010
	(0.032)	(0.032)	(0.112)	(0.125)	(0.032)	(0.032)	(0.049)	(0.049)
FDI (% of GDP)	0.045***	0.044***	0.005	0.005	0.060***	0.059***	0.009	−0.019
	(0.014)	(0.015)	(0.020)	(0.010)	(0.022)	(0.022)	(0.121)	(0.120)
Trade openness	0.065***	0.065***	0.119***	0.120***	0.059***	0.058***	0.073**	0.069**
	(0.016)	(0.016)	(0.021)	(0.032)	(0.012)	(0.012)	(0.031)	(0.030)
Gross fixed capital formation (% of GDP)	−0.058	−0.056	−0.174	−0.172	−0.046	−0.043	0.027	0.051
	(0.038)	(0.038)	(0.113)	(0.180)	(0.030)	(0.030)	(0.060)	(0.060)
Constant	51.996***	52.034***	66.525***	66.352***	49.892***	49.953***	49.632***	49.805***
	(1.956)	(1.960)	(4.740)	(6.762)	(1.529)	(1.527)	(2.367)	(2.340)
F stat	13.890	14.190	7.720	88.100	15.190	15.230	8.760	9.130
$p > F$	.000	.000	.000	.000	.000	.000	.000	.000
Observations	944	944	151	151	793	793	231	231
R-squared within	0.267	0.267	0.533	0.531	0.275	0.275	0.443	0.454

Note: The number of observations varies due to missing data of some of the dependent and control variables. Values in the table have been approximated to 3 decimal places.
Note: This table presents the regression results of the estimations for the entire sample and sub-samples. Standard errors are in parentheses. *Significance at the 10% Level; **Significance at the 5% Level; ***Significance at the 1% Level.

4 | EMPIRICAL APPROACH

4.1 | The Baseline Specification and Method

The modelling uses a panel of 173 countries. The panel of countries was further disaggregated into developed, developing and fragile countries. The data are annual and for the period 2009–2017. The data were estimated using a fixed-effects technique, as this was favoured by the Hausman test[4] against the random effects. There are numerous advantages for using a fixed-effects technique. First, the technique can address heterogeneity across countries, as revealed in the summary statistics. This eliminates the risk of obtaining biased estimates that could arise due to countries operating under different political, regulatory and business environments. Second, the technique allows for different intercepts for the individual countries in the sample, but still maintains constant slope coefficients. Third, by also allowing for the cross-section and the time aspects of the panel data, more explanatory power is added to the regressions, thus increasing the degrees of freedom of the model (Baltagi, 1995; Gujarati, 2004). The estimating equation can be expressed as

$$Y_{it} = \alpha_i + \beta X_{it} + X_{Ct}\Gamma + \mu_i + v_{it}, \quad (1)$$

where Y is the business performance in country i at time t. X_{Ct} is a matrix of independent and control variables and α and β are the coefficients to be estimated. μ_i and v_{it} represent the disturbance term—country-specific effects and random errors distributed. An expanded version of Equation (1) is expressed as

$$\begin{aligned} Y_{it} = {} & \alpha_i + \beta * Terror\ incidents_{it} + \beta * Savings_{it} \\ & + \beta * Credit\ to\ private\ investors_{it} + \beta * Inflation_{it} \\ & + \beta * Lending\ rate_{it} + \beta * GDP/Capita\ Growth_{it} + \beta * FDI_{it} \\ & + \beta * Trade\ openness_{it} + \beta * Gross\ fixed\ capital_{it}\ \mu_i + v_{it}, \end{aligned} \quad (2)$$

and

$$\begin{aligned} Y_{it} = {} & \alpha_i + \beta\, Fatalities\ and\ injured_{it} + \beta * Savings_{it} \\ & + \beta * Credit\ to\ private\ investors_{it} + \beta * Inflation_{it} \\ & + \beta * Lending\ rate_{it} + \beta * GDP/Capita\ Growth_{it} \\ & + \beta * FDI_{it} + \beta * Trade\ openness_{it} \\ & + \beta * Gross\ fixed\ capital_{it}\ \mu_i + v_{it}, \end{aligned} \quad (3)$$

The model was first estimated for the entire sample (173 countries). This was followed by disaggregating into developed (40 countries), developing (133 countries), and fragile terror-prone countries (39 countries). Finally, regional (SSA, South Asia and MENA) dummies were

TABLE 9 Estimations of the marginal effects of fragile regions—baseline estimations

Dependent variables	Model 1 (SSA) Fixed Effects Business performance	Model 2 (SSA) Fixed Effects Business performance	Model 3 (South Asia) Fixed Effects Business performance	Model 4 (South Asia) Fixed Effects Business performance	Model 5 (MENA) Fixed Effects Business performance	Model 6 (MENA) Fixed Effects Business performance
Independent variables						
Terrorist incidents (per 100,000 of population)	−0.214		−1.082*		−0.311	
	(1.821)		(0.588)		(0.290)	
Number of fatalities and injuries (per 100,000 of population)		0.138		−0.244***		−0.067
		(0.211)		(0.088)		(0.044)
CONTROL VARIABLES	YES	YES	YES	YES	YES	YES
Constant	49.632***	49.901***	50.198***	50.948***	50.058***	50.451***
	(2.373)	(2.340)	(2.408)	(2.403)	(2.408)	(2.399)
F stat	8.230	8.700	8.380	8.930	8.330	8.72
$p > F$	.000	.000	.000	.000	.015	.000
Observations	231	231	231	231	231	231
R-squared within	0.443	0.457	0.448	0.464	0.446	0.458

Note: Values in the table have been approximated to 3 decimal places. For brevity, the control variables are not reported.
Note: This table presents the regression results of the marginal effects of the fragile countries. *Significance at the 10% Level; **Significance at the 5% Level; ***Significance at the 1% Level.

TABLE 10 Robustness checks using alternative business performance measure

Dependent variables	Model 1 (All Sample) Fixed Effects CA Balance (% of GDP)	Model 2 (All Sample) Fixed Effects CA Balance (% of GDP)	Model 3 (Developed) Fixed Effects CA Balance (% of GDP)	Model 4 (Developed) Fixed Effects CA Balance (% of GDP)	Model 5 (Developing) Fixed Effects CA Balance (% of GDP)	Model 6 (Developing) Fixed Effects CA Balance (% of GDP)	Model 7 (Failed) Fixed Effects CA Balance (% of GDP)	Model 8 (Failed) Fixed Effects CA Balance (% of GDP)
Independent variables								
Terrorist incidents (per 100,000 of population)	−0.276		0.121		−0.303		−0.509	
	(1.238)		(0.486)		(0.359)		(0.350)	
Number of fatalities and injuries (per 100,000 of population)		−0.066		0.250		−0.071	−0.149***	
		(0.242)		(0.556)		(0.055)		(0.051)
CONTROL VARIABLES	**YES**	**YES**	**YES**	**YES**	**YES**	**YES**	**YES**	**YES**
Constant	9.865***	9.916***	10.351***	10.470***	9.174***	9.253***	6.263**	6.868**
	(3.364)	(3.365)	(3.674)	(3.676)	(2.151)	(2.147)	(2.873)	(2.830)
F stat	20.100	20.070	19.470	19.500	55.310	55.440	6.090	6.670
$p > F$	.000	.000	.000	.000	.000	.000	.000	.000
Observations	929	929	153	153	776	776	223	223
R-squared within	0.519	0.520	0.739	0.739	0.586	0.586	0.365	0.386

Note: Values in the table have been approximated to 3 decimal places. For brevity, the control variables are not reported.

Note: This table presents the regression results of the estimations for the entire sample and sub-samples. Standard errors are in parentheses. *Significance at the 10% Level; **Significance at the 5% Level; ***Significance at the 1% Level.

interacted[5] with the independent variables in order to observe differences in the marginal effects across these regional sub-samples. The inclusion of the regional dummies of SSA, South Asia and MENA is because countries in these regions are the most terror-prone in the top-ranked category of fragile states index (Okafor & Piesse, 2017). Also, these countries contribute a very significant share of global terrorism. The time period of the panel data is very short; hence, unit root test and co-integration are not suitable. Moreover, these tests are best suited for time-series studies.

4.2 | Empirical Evidence

The baseline results are shown in Tables 8 and 9. For the entire sample estimation (Models 1 and 2), the number of terrorist incidents was negative but insignificant while the number of fatalities and injured was negative and significant. Therefore, hypothesis 1 (H1) is rejected. Savings, FDI and trade openness are positive and significant. The results in Table 8 (Models 3 to 6), also show that both measures of terrorism are negative but do not have a significant impact on business performance in developed and developing countries. Thus, there is enough empirical evidence to reject our hypotheses 2 and 3 (H2 and H3). Although trade openness remained positive and significant across the different categories, savings and FDI only remained positive and significant in the sample of developing countries. Credit to private investors and GDP per capita growth are positive and significant in the sample of developed countries.

The results in Table 8 (Models 7 and 8) show that there is a negative and significant relationship between both measures of terrorism and business performance in fragile countries. Therefore, hypothesis 4 (H4) is accepted. An increase in the numbers of terrorist incidents, and the numbers of fatalities and injured by 1 per 100,000 of population, will significantly reduce business performance by 0.43% and 0.09% points, respectively. Surprisingly, the severity of terrorism does not seem to have any greater impact on business performance. In addition, credit to private investors was negative and significant. The rest of the control variables were insignificant except for inflation, which was only significant in Model 3 of Table 8. Results of the marginal effects analysis with respect to the fragile countries are presented in Table 9. An increase in the numbers of terrorist incidents, and the numbers of fatalities and injured by 1 per 100,000 of population, will significantly reduce business performance by 1.08 and 0.24% points, respectively, for South Asia. While this result is not surprising with respect to SSA, it is for the MENA countries. This is because South Asia records more terrorism per 100,000 of population compared to SSA but less in comparison to MENA.

TABLE 11 Marginal Effects of Fragile Regions—Robustness Checks using Alternative Business Performance Measure

	Model 1 (SSA) Fixed Effects	Model 2 (SSA) Fixed Effects	Model 3 (South Asia) Fixed Effects	Model 4 (South Asia) Fixed Effects	Model 5 (MENA) Fixed Effects	Model 6 (MENA) Fixed Effects
Dependent variables	CA Balance (% of GDP)	CA Balance (% of GDP)	CA Balance (% of GDP)	CA Balance (% of GDP)	CA Balance (% of GDP)	CA Balance (% of GDP)
Independent variables						
Terrorist incidents (per 100,000 of population)	−1.197		−5.092***		0.507	
	(2.351)		(0.679)		(0.333)	
Number of fatalities and injuries (per 100,000 of population)		−0.735**		−0.809***		0.033
		(0.327)		(0.106)		(0.051)
CONTROL VARIABLES	YES	YES	YES	YES	YES	YES
Constant	6.751**	7.548***	8.769***	9.819***	8.907***	10.103***
	(2.857)	(2.786)	(2.529)	(2.542)	(2.551)	(2.501)
F stat	9.820	11.320	18.010	18.060	17.460	19.330
$p > F$	.000	.000	.000	.000	.015	.000
Observations	223	223	223	223	223	223
R-squared within	0.344	0.377	0.491	0.491	0.483	0.508

Note: Values in the table have been approximated to 3 decimal places. For brevity, the control variables are not reported.

Note: This table presents the regression results of the marginal effects of the fragile countries. *Significance at the 10% Level; **Significance at the 5% Level; ***Significance at the 1% Level.

TABLE 12 Robustness checks using lagged values of the independent variables

Dependent variable	Model 1 (All Sample) Business performance	Model 2 (All Sample) Business performance	Model 3 (Developed) Business performance	Model 4 (Developed) Business performance	Model 5 (Developing) Business performance	Model 6 (Developing) Business performance	Model 7 (Failed) Business performance	Model 8 (Failed) Business performance
Independent variables (Lags)								
Terrorist incidents (per 100,000 of population)	−0.315		0.190		−0.357		−0.627**	
	(0.355)		(0.141)		(0.253)		(0.257)	
Number of fatalities and injuries (per 100,000 of population)		−0.080***		1.097		−0.084**		−0.140***
		(0.024)		(0.799)		(0.039)		(0.037)
Control variables	**YES**	**YES**	**YES**	**YES**	**YES**	**YES**	**YES**	**YES**
Constant	53.689***	53.726***	65.834***	68.140***	51.667***	51.755***	53.425***	53.740***
	(2.023)	(2.029)	(5.918)	(5.088)	(1.651)	(1.645)	(2.419)	(2.357)
F stat	13.130	14.510	6.730	6.040	10.120	10.330	6.980	7.860
$p > F$	.000	.000	.000	.000	.000	.000	.000	.000
Observations	857	857	139	139	718	718	210	210
R-squared within	0.198	0.201	0.448	0.482	0.211	0.214	0.401	0.430

Note: Time and year fixed effects were included. Values in the table have been approximated to 3 decimal places. For brevity, the control variables are not reported.

Note: This table presents the regression results of the estimations for the entire sample and sub-samples. Standard errors are in parentheses. *Significance at the 10% Level; **Significance at the 5% Level; ***Significance at the 1% Level.

TABLE 13 Marginal Effects of Fragile Regions—Robustness Checks using Lagged Values of the Independent Variables

Dependent variable	Model 1 (SSA) Business performance	Model 2 (SSA) Business performance	Model 3 (South Asia) Business performance	Model 4 (South Asia) Business performance	Model 5 (MENA) Business performance	Model 6 (MENA) Business performance
Independent variables (Lags)						
Terrorist incidents (per 100,000 of population)	−0.792		−1.431**		−0.450	
	(1.903)		(0.580)		(0.283)	
Number of fatalities and injuries (per 100,000 of population)		0.135		−0.247***		−0.126***
		(0.210)		(0.087)		(0.042)
CONTROL VARIABLES	**YES**	**YES**	**YES**	**YES**	**YES**	**YES**
Constant	53.430***	53.822***	54.111***	54.446***	54.099***	54.048***
	(2.427)	(2.353)	(2.450)	(2.409)	(2.455)	(2.408)
F stat	6.530	7.530	6.770	7.540	6.740	7.390
$p > F$	.000	.000	.000	.000	.000	.000
Observations	210	210	210	210	210	210
R-squared within	0.401	0.436	0.4094	0.436	0.408	0.431

Note: Time and year fixed effects were included. Values in the table have been approximated to 3 decimal places. For brevity, the control variables are not reported.

Note: This table presents the regression results of the estimations for the entire sample and sub-samples. Standard errors are in parentheses. *Significance at the 10% Level; **Significance at the 5% Level; ***Significance at the 1% Level.

The finding that terrorism does not have a robust significant impact on business performance at country level can be interpreted in the light of number of studies on stock market performance (e.g., Arif & Sulemon, 2017; Brounrn & Derwell, 2010; Ramiah et al., 2010) and demand for tourism (e.g., Drakos & Kutan, 2003; Pizam & Smith, 2000; Yaya, 2009) depending on the interpretation. It could be argued that our findings are inconsistent with some existing studies. Nevertheless, these studies often show that terrorism either has a very small negative effect (e.g., Abadie & Gardeazabal, 2008) or the effect actually lasts for a matter of days or a few months (Aslam & Kang, 2015; Becker & Murphy, 2001; Nikkinena, Omranb, Sahlströmc, & Äijöa, 2008). In addition, our findings, that terrorism does not have an effect on both the developed and developing countries' subsamples, contribute to the limited and contradictory evidence on whether developed or developing countries are more affected by terrorism. This could be explained by the fact that consequences of terrorism may be temporal if there are mechanisms and institutional structures in place that can help cushion its negative effects (Oh & Oetzel, 2011). Our findings of no difference in the impact of terrorism between developed and developing countries are inconsistent with some studies (see Llorca-Vivero,- 2008; Procasky & Ujah, 2016).

Our finding of the significant negative relationship between terrorism and business performance only in the sample of fragile countries is because these groups of countries record by far the highest share of global terrorism. The fragile countries are also known to lack institutional mechanisms and structures that can help reduce or cushion the effects of terrorism. Terrorism is known to crowd out businesses' productive activities by raising the cost of capital and labour. In addition, the results could also suggest that the inability to trade across borders or across intra-country regions, lack of competitiveness, and loss of economic activity that can all be associated with terrorism have negatively affected the ability of these countries to be at the frontier of business performance. The findings are consistent with the "institution voids" explanation since, in such countries, there is sustained degradation for markets to exist and lack of governance structures and functioning judiciary (see Fligstein, 2001; La Porta et al., 1998; Rotberg, 2003). Thus, while hypothesis 2 is confirmed, there is not enough empirical evidence for hypothesis 1.

The finding of a consistent positive and significant impact of the savings variable in the sample of developing countries is consistent with Aghion, Comin, Howitt, and Tecu (2016) who suggested that savings, particularly in poorer countries, matter a great deal more for innovation, productivity and growth because catching up with the frontier requires efforts from foreign investors and domestic banks or domestic entrepreneurs. Such efforts promote cooperative ventures; this in turn eases an

TABLE 14 Robustness Checks using Alternative Business Performance Measure and Lagged Values of the Independent Variables

Dependent Variable	Model 1 (All Sample) CA balance (% of GDP)	Model 2 (All Sample) CA balance (% of GDP)	Model 3 (Developed) CA balance (% of GDP)	Model 4 (Developed) CA balance (% of GDP)	Model 5 (Developing) CA balance (% of GDP)	Model 6 (Developing) CA balance (% of GDP)	Model 7 (Failed) CA balance (% of GDP)	Model 8 (Failed) CA balance (% of GDP)
Independent variables (Lags)								
Terrorist incidents (per 100,000 of population)	−0.285		0.716		−0.408		−0.004	
	(0.552)		(0.684)		(0.479)		(0.372)	
Number of fatalities and injuries (per 100,000 of population)		−0.116		−0.091		−0.126*		−0.110**
		(0.123)		(0.855)		(0.074)		(0.054)
CONTROL VARIABLES	**YES**	**YES**	**YES**	**YES**	**YES**	**YES**	**YES**	**YES**
Constant	3.014	3.048	5.593	5.610	1.639	1.733	1.570	2.434
	(3.625)	(3.602)	(5.358)	(5.408)	(3.081)	(3.072)	(3.171)	(4.657)
F stat	7.250	7.150	4.940	4.820	13.330	13.510	2.860	3.190
$p > F$	.000	.000	.000	.000	.000	.000	.000	.000
Observations	843	843	140	140	703	703	202	202
R-squared within	0.236	0.238	0.429	0.423	0.265	0.267	0.222	0.242

Note: Time and Year fixed effects were included. Values in the table have been approximated to 3 decimal places. For brevity, the control variables are not reported.

Note: This table presents the regression results of the estimations for the entire sample and sub-samples. Standard errors are in parentheses. *Significance at the 10% Level; **Significance at the 5% Level; ***Significance at the 1% Level.

TABLE 15 Marginal Effects of Fragile Regions—Robustness Checks using Alternative Business Performance Measure Lagged Values of the Independent Variables

Dependent variable	Model 1 (SSA) CA balance (% of GDP)	Model 2 (SSA) CA balance (% of GDP)	Model 3 (South Asia) CA balance (% of GDP)	Model 4 (South Asia) CA balance (% of GDP)	Model 5 (MENA) CA balance (% of GDP)	Model 6 (MENA) CA balance (% of GDP)
Independent variables (Lags)						
Terrorist incidents (per 100,000 of population)	−0.138		−2.337***		0.354	
	(1.859)		(0.360)		(0.617)	
Number of fatalities and injuries (per 100,000 of population)		−0.178		−0.395***		−0.047
		(0.322)		(0.063)		(0.057)
CONTROL VARIABLES	YES	YES	YES	YES	YES	YES
Constant	2.334	2.407	4.085	4.139	4.075	4.062
	(4.667)	(4.691)	(4.455)	(4.599)	(4.465)	(4.444)
F stat	5.070	4.680	89.350	162.110	29.580	39.930
$p > F$	.000	.000	.000	.000	.000	.000
Observations	202	202	202	202	202	202
R-squared within	0.188	0.213	0.230	0.239	0.227	0.243

Note: Time and Year fixed effects were included. Values in the table have been approximated to 3 decimal places. For brevity, the control variables are not reported.

Note: This table presents the regression results of the estimations for the entire sample and sub-samples. Standard errors are in parentheses. *Significance at the 10% Level; **Significance at the 5% Level; ***Significance at the 1% Level.

agency problem that has the potential to deter foreign investors from participating in them. But in richer countries closer to the frontier, this is less so because they do not need foreign investment to undergo innovation projects that are necessary for productivity and growth. The mixed findings of the relationship between credit to private investors and business performance is consistent with the arguments by Boyreau-Debray (2003) and Tsoukas (2011) that credit might not always positively relate to performance. Inflation is negative but mainly insignificant, but nevertheless confirms the notion that inflation erodes the value of investment and profit, and adds additional cost to a business's operating activities. Lending rate and gross fixed capital were insignificant across all models. Trade openness and FDI were positive but the significance of the FDI was not robust across all the models. The positive relationship confirms the importance of global market links to business performance.

4.3 | Robustness to Alternative Specifications

We carried out some robustness analyses by employing an alternative dependent variable measure and estimation technique. Our measure of business performance (Doing Business) was replaced with the Current Account Balance in country *i* at time *t*. The *Current Account Balance (% of GDP)* measures the difference between a country's trade balance (exports revenue minus imports expenditure) (Holmes, 2006). A positive current account reflects an economy's degree of competitiveness, investment, exports, and increasing terms of trade (Zemanek, Belke, & Schnabl, 2010). All of these have important implications and direct positive relationships with business performance. For example, Sousa, Martínez-López, and Coelho (2008) carried out an extensive review of the relationships between competitiveness, exports and business performance. Empirical studies by Singh (2009) also support the link between competitiveness, performance and export propensity or intensity.

Also, there is a potential that our results may suffer from reverse causality (endogeneity). The lack of entrepreneurial activities and incidents of poor business performance can lead to high unemployment rates, which, in turn, can lower the opportunity costs of joining terrorist organizations. Thus, the relationship can also run from business performance to terrorism. To help address endogeneity concerns, we estimated our data using the General Method of Moments (GMM). Unfortunately, these were not reported because the estimates were

inconsistent due to the inefficiency of the instruments. This is not particularly surprising because GMM is best suited for panels with large cross-sections and small time-series (Baltagi, 2013). Econometrically, the 2SLS can also address problems of endogeneity. However, it was not feasible to get instruments that impact on business performance only through the channel of terrorism. Thus, we used the lagged explanatory variables to estimate our models. This approach has been supported and used by several studies such as Afonso and Jalles (2013) and Bellemare, Masaki, and Pepinsky (2017). This is because Y_t cannot possibly cause X_{t-1} so, by replacing X_t with X_{t-1}, we can eliminate the concerns that X is endogenous to Y.

Tables 10 and 11 show estimations of the alternative dependent measure (current account balance, percentage of GDP). The results are mainly similar and consistent with those of the baseline regression although the number of fatalities and injured is now negative and significant for the SSA region. Tables 12–15 are estimates of the lagged regressors. Interestingly, the number of fatalities and injured is negative and significant except for the sample of developed countries. These results may confirm the better institutional structures and mechanisms available in developed countries that can help cushion the severity of the impact of terrorism although, similar to the baseline regression, there also is no evidence to suggest that the severity of terrorism will have a greater impact on business performance. From the data, it will be difficult to investigate why this is the case. However, a speculative reason may be that terror incidents that recorded fewer numbers of fatalities and injured could have had a more direct impact on business activities.

5 | CONCLUSION AND POLICY IMPLICATIONS

This study investigated the impact of terrorism on global business performance. To achieve this, we used a panel data fixed-effect regression model on a global sample of 173 countries over the period 2009–2017. To proxy for business performance, we used a measure of the distance to the frontier score that captures the best performance observed on each area of *Doing Business* across all economies. The results of the fixed-effects estimations showed that, for the full sample, terrorism is not significantly related to business performance. We then partitioned our sample into developed, developing and fragile countries on the basis of existing literature that terrorism may affect these categories of countries differently. The findings suggest that terrorism does not have a significant effect on business performance in both developed and developing countries, but we found that terrorism does have a significant effect on business performance in fragile countries. However, the marginal effects showed that this significance is only sustained for the South Asian countries. Our results are robust and considerably consistent to (a) severity of terrorism (number of fatalities and injured), (b) an alternative measure of business performance and (c) an estimation technique that controls for potential endogeneity.

Our results contribute to the existing academic literature on the impact of terrorism on business performance in many ways. For example, the study contributes by showing that terrorism does not affect business performance equally across different country classifications. Thus, these results contribute to the limited and contradictory evidence on whether terrorism affects developing or developed countries more (e.g., Llorca-Vivero, 2008; Piazza, 2008; Procasky & Ujah, 2016). Finally, we also contribute to the existing literature by showing that terrorism does have a negative effect on business performance in fragile countries. This is because, in fragile countries, there are usually problems with institutional structures and mechanisms that may help cushion the negative impact of terrorism.

In terms of policy implications, the findings suggest that businesses need not overly avoid countries due to terrorism and there is no evidence to suggest that it significantly impacts on business performance. However, this is different for fragile countries that are terror-prone. Such countries should take necessary steps to minimize the incidents of terrorism including pursuing institutional structures and mechanism that can help cushion the negative effects of terrorism. Since the results of this study suggest and seem to confirm that terrorism has no significant negative effect except in the case of fragile countries, future research may need to focus on how long the effect of terrorism may last on overall business performance in those countries and how different institutional structures and mechanisms may help moderate its impact. Although there is anecdotal evidence of how long the effects of terrorism last in terms of stock markets and tourism there seems to be no consensus.

DATA AVAILABILITY STATEMENT

N/A

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ENDNOTES

[1] These areas of topics are ease in starting a business, getting permits, getting electricity, registering property, getting credit,

protecting investors, paying taxes, trading across borders, enforcing contracts and resolving insolvency.

[2] See the FSI, 2019 report for fragile countries' ranking.

[3] Calculating the distance to frontier score for each economy involves two main steps. In the first step, individual component indicators are normalised to a common unit where each of the component indicators y (except for the total tax rate) is rescaled using the linear transformation (worst-y)/(worst-frontier). In the second step, the scores obtained for individual indicators for each economy are aggregated through simple averaging into one distance to frontier score, first for each topic and then across all the topics of the areas of *Doing Business*. For more information, please see World Bank (2017c).

[4] Hausman is a general test for specification of an econometric model that is applied to test for the appropriateness between the random and the fixed-effects models (Nerlove, 2005).

[5] An interaction is formed as a product of two (or more) variables. An important application of the interaction variables is that it allows for differences in the slopes of two regression lines. For further reading, see Dielman (2005).

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