

## **TERRORIST ATTACKS AND CORPORATE INVESTMENT IN INDONESIA**

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### **ABSTRACT**

Using yearly data from 1997 to 2017, this paper studies the effect of terrorism (number of attacks) on corporate investment in Indonesia. Applying an investment-type model, we show that firms reduce their capital expenditure due to an increase in the number of terrorist attacks. On average, a one standard deviation increase in the number of terrorist attacks reduces corporate investment by 9.23%. We also find heterogeneous reactions of firms to terrorism across different sectors and different panels based on firm characteristics. Finally, our main results remain consistent after performing several robustness tests.

*Keywords: Terrorism; Corporate investment; Sectoral analysis; Firm characteristics; Economic significance.*

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## I. INTRODUCTION

Terrorism is of great concern as it disrupts economic growth and development in general. It has undeniable negative effects, such as loss of human life and property destruction. Besides these effects, terrorist attacks adversely affect economic outlook and financial markets through reduced consumer and investor confidence (see Johnston and Nedelescu, 2006; Frey et al., 2007). A prime example is the attack in Bali in 2002, which killed 202 people. This attack disrupted the Indonesian economy. The stock market, for example, plunged 10.4%, the rupiah fell significantly against the dollar and many industries suffered losses, both directly and indirectly, due to the loss of consumer and investor confidence (Bradsher and Banerjee, 2002).

Due to the prevalence of terrorism in recent years, a growing literature has been devoted to studying the effect of terrorism on the economic and financial systems. These studies focus on: macroeconomic variables (Abadie and Gardeazabal, 2003; Eckstein and Tsiddon, 2004; Blomberg et al., 2004; Nitsch and Schumacher, 2004; Llussa and Tavares, 2011; Narayan et al., 2018); stock prices (Eldor and Melnick, 2004; Karolyi and Martell, 2005) and stock market returns (Carter and Simkins, 2004; Drakos, 2004; Ito and Lee, 2005; Arin et al., 2008; Chesney et al., 2011; Goel et al., 2017); and stock market sentiment (Burch et al., 2003; Glaser and Webber, 2005; Nikkinen, and Vahamaa, 2010).

Regarding the literature on the effect of uncertainty on investment, there are studies that identify types (namely, input and output price uncertainty) of uncertainty that can potentially impact investment (see Pindyck, 1991; Bloom et al., 2007). Other studies also point out macroeconomic uncertainty (Bloom, 2009), policy uncertainty (Gulen and Ion, 2015; Setiastuti, 2017), political uncertainty (Julio and Yook, 2011, 2012; An et al., 2016) and oil price uncertainty (Uri, 1980; Bernanke, 1983; Mohn and Misund, 2009; Elder and Serletis, 2010a, 2010b; Henriques and Sadorsky, 2011, Wang et al., 2017; Phan et al., 2019) as important to determining investment.<sup>1</sup>

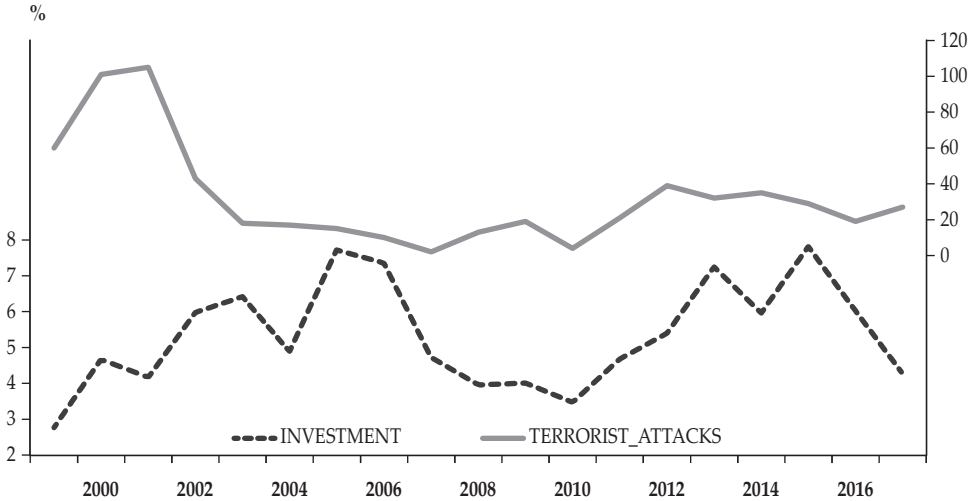
In Indonesia, terrorism is also a matter of great concern. According to the 2019 Global Terrorism Index, Indonesia ranks 35<sup>th</sup> among countries with a high index score. In terms of the deaths from terrorism during 2017-2019, Indonesia ranks 5<sup>th</sup>. Among the Asia-Pacific countries that have been consistently affected by terrorism, Indonesia is the only one with an index score that deteriorated in 2018. Looking at Figure 1, which plots the number of terrorist attacks in the country from 1999 to 2017, we observe a worrying trend. Although the number of attacks dropped significantly from over 100 cases in 2001 to only 2 in 2007, the number of terrorist incidents started to increase again, which averaged 20 cases per year from 2007 to 2019.

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<sup>1</sup> Some recent papers investigate the uncertainty by COVID-19 on financial markets, such as Al-Awadhi et al. (2020), Ali et al. (2020), Devpura (2020), Fang & Zhang (2021), Fu & Shen (2020), Gil-Alana & Monge (2020), Haroon & Rizvi (2020), Hoang & Syed (2021), Liu et al. (2020), Narayan (2020a, b, c), Qin et al. (2020), Phan & Narayan (2020), Narayan et al. (2021), Sha & Sharma (2020), Sharma & Sha (2020), Sharma (2020), Zhang et al. (2020), Wang & Su (2021). See also recent survey paper by

**Figure 1.**  
**Terrorist Attacks and Corporate Investment in Indonesia**

This figure plots the number of terrorist attacks (right axis) and the average of corporate investments (left axis) in Indonesia from 1999-2017



This paper aims to empirically examine the relationship between terrorist attacks and investment decision at the corporate level in Indonesia. In particular, we aim to answer the following question: Does terrorism negatively influence Indonesian firm operations, especially investment activities? The answer to this question is of particular importance as terrorism can affect firms in various industries both directly and indirectly.

The underlying rationale of this hypothesis is simple. Because terrorist attacks are unforeseen catastrophic events, terrorism is believed to have a strong adverse impact on market sentiment and significantly increase uncertainty (Nikkinen and Vahamaa, 2010). The effect of uncertainties caused by terrorism on corporate investment can be explained by two strands of the literature. First, the real option theory suggests that faced with surging uncertainty, firms may choose to postpone their investment and wait for new information (see Bernanke, 1983; McDonald and Siegel, 1986; and Pindyck, 1988, 1991). Moreover, terrorism can also affect corporate investment via the demand channel as it lowers consumer and investor confidence. As a result, there may be a shock to firms' demand which induces firms to become more cautious and reduce their irreversible investment (Bloom *et al.*, 2007). The second strand of the literature is motivated by financial frictions theory. The risk of default, as well as the equity risk premium, are arguably increased by uncertainty (see Greenwald and Stiglitz, 1990; Gilchrist *et al.*, 2011). This, in turn, increases the cost of external financing and hence reduces firm investment level.

We test the relationship between terrorism and corporate investment using a data set which includes around 5000 firm-year observations from 1997 until 2017. Our study contributes to the terrorism and corporate investment literature in the following ways.

First, whilst a lot of attention has been given to the effect of terrorism on investment at the aggregate level, such as national private investment (Abadie and Gardeazabal, 2003; Eckstein and Tsiddon, 2004; Blomberg *et al.*, 2004; Nitsch and Schumacher, 2004; Llussa and Tavares, 2011), foreign direct investment (Enders and Sandler, 1996) or at the industry level, such as farming (Singh, 2013) and tourism (Choyakh, 2008), our understanding of the effect of terrorism on investment at the firm level is limited. One notable exception is Oh and Oetzel (2011). Oh and Oetzel (2011) employ a data set of 71 multinational corporations in Europe from 2001 to 2006 with 31,285 observations to study the effect of major disasters on subsidiary investment levels of these corporations. They discover that terrorist attacks have a negative impact on the number of foreign subsidiaries of these multinational firms. This study aside, none consider the effect of terrorism on a firm's capital expenditure. Therefore, we contribute to the literature by presenting the first evidence on this relationship at the firm level.

Second, we provide a broader picture of the impact of terrorism on corporate investment by examining this relationship across different industries, namely basic materials (BM), consumer discretion (CD), consumer staples (CS), energy (EN), financials (FI), health care (HC), industrials (IN), real estate (RE), technology (TE), and telecommunications (TEL). Moreover, we also examine whether the effect of terrorism on corporate investment is subject to firm characteristics. To do this, we divide our sample into different panels, including low market capitalization (MV0), high market capitalization (MV1), low book-to-market ratio (BM0), high book-to-market ratio (BM1), young firms (FA0), mature firms (FA1), low trading volume (TV0), high trading volume (TV1), low volatility (VO0), and high volatility (VO1).

Our findings are as follows. First, we document a negative impact of terrorism on corporate investment (capital expenditure) in Indonesia. Second, both the sign and size of the effect of terrorism on firm investment vary across different sectors as well as across different firm characteristics. Finally, our main results hold under some robustness tests, including using different model specifications and different sub-sample periods.

The remainder of this paper is structured as follows. Section II describes the data set used for our analysis and the empirical model. Section III presents the main findings and robustness tests. Finally, the paper is concluded in section IV.

## II. DATA AND METHODOLOGY

### A. Data

Table 1 provides specific details of the variables used in this study. All firm-specific data were downloaded from Datastream, while Indonesia's GDP growth rate and the number of terrorist attacks in Indonesia were collected from the World Bank and Global Terrorism database, respectively. Our sample has annual data that start from 1999 and end in 2017.

**Table 1.**  
**Variables Description**

This table reports the description and data source of variables

Variable	Description	Database
<i>INV</i>	Capital expenditure scaled by total assets in a previous year	Datastream
<i>TERRORISM</i>	Natural log of the number of terrorist attacks in Indonesia	Global Terrorism Database
<i>Q</i>	Ratio of the market value of assets to the book value of assets	Datastream
<i>CF</i>	Earnings before interest and taxes minus taxes and interest expense plus depreciation and amortization, scaled by total assets	Datastream
<i>GDP</i>	Indonesia GDP growth rate	World Bank
<i>GROWTH</i>	Change in sales scaled by sales of the previous year.	Datastream
<i>LEVERAGE</i>	Total debt scaled by total assets.	Datastream

To gain more insights on the hypothesis test, we group our sample into various panels based on their sectors and firm characteristics. First, we have an aggregate panel that includes all firms in our sample. For sectoral analysis, the dataset is portioned into 10 sectors and 10 panels formed on firm characteristics, as explained above.

### B. Methodology

Our main regression follows a typical investment type model specification:

$$INV_{i,t} = \alpha + \beta_1 TERRORISM_t + \beta_2 Q_{i,t-1} + \beta_3 CF_{i,t} + \beta_4 GDP_{t-1} + \varepsilon_{i,t} \quad (1)$$

where  $i$  and  $t$  are index firm and time, respectively. This regression model follows previous studies, such as Blundell et al. (1992), Blundell et al. (1999), Agung (2000), Hidayat (2010), Julio and Yook (2012), Henriques and Sadorsky (2011) and Phan *et al.* (2019). Our dependent variable, *INV*, is defined as the firm's capital expenditure as a percentage of total assets in the previous year. The main independent variable, *TERRORISM*, is measured by the natural log of the number of terrorist attacks in Indonesia. *Q* is the Tobin's  $q$ , which is measured by the asset market value to book value, in ratio form. Cashflow, *CF*, is earnings before interest and taxes, minus interest and tax expenses, plus depreciation and amortization. Following the previous literature (see Julio and Yook, 2012; Gulen and Ion, 2015; Phan *et al.*, 2019), we control for general economic conditions by using the growth rate of GDP. As conventional practices, a panel data model with fixed firm and year effects are used, and the standard errors are clustered at the firm level.

## III. EMPIRICAL RESULTS

### A. Preliminary Results

Table 2 reports some selected descriptive statistics, including the number of observations, mean, median, standard deviation, 25<sup>th</sup> percentile and 75<sup>th</sup> percentile

values. Consider the third column of Table 2, where we report the mean values. The Indonesian firms, on average, spend an amount valued about 5.589% of prior year's total assets on their capital expenditure. During the period from 1999 to 2017, the yearly average number of terrorist attacks in Indonesia is 23.67. The mean values of *Q* and *CF* are 2.008 and 10.098, respectively. In term of GDP, Indonesia experienced an average growth rate of 5.043% per year during the sample period. *GROWTH* and *LEVERAGE* are the two variables that are used later in our robustness tests. While the former is measured by the sales growth rate, which is the change in sales scaled by sales in the previous year, the latter is firm leverage ratio measured by the ratio of total debt to total assets. In the 1999-2017 period, Indonesian firms had a high sales growth rate, which averaged 12.06% per annum. Finally, the average leverage ratio of Indonesian firms during this period is 0.284.

**Table 2**  
**Descriptive Statistics**

This table reports selected descriptive statistics for the variables.

Variable	Observation	Mean	Median	Std. Dev.	25th	75th
<i>INV</i> (%)	5774	5.589	2.376	8.631	0.539	6.760
<i>TERRORISM</i>	7942	3.164	3.091	0.864	2.773	3.689
<i>Q</i>	5620	2.008	1.120	3.291	0.590	2.218
<i>CF</i> (%)	5751	10.098	9.256	12.620	3.630	15.713
<i>GDP</i> (%)	7942	5.043	5.033	1.209	4.780	6.014
<i>GROWTH</i> (%)	5765	12.060	11.230	38.003	-1.296	24.042
<i>LEVERAGE</i>	6072	0.284	0.215	0.298	0.047	0.426

Next, we turn to Table 3, which reports results of the unconditional correlations among variables in our main regression model. Note that the correlation coefficients are quite low, except the one between *GDP* and *TERRORISM*, which is -0.584. However, it is still acceptable, and we can safely infer that our model is free from the multicollinearity problem.

**Table 3.**  
**Unconditional Correlation**

This table reports the unconditional correlations and their *p*-values (in parentheses) among variables in our regression model.

	<i>INV</i>	<i>TERRORISM</i>	<i>Q</i>	<i>CF</i>
<i>TERRORISM</i>	-0.038*** (0.004)			
<i>Q</i>	0.132*** (0.000)	-0.043*** (0.001)		
<i>CF</i>	0.218*** (0.000)	-0.064*** (0.000)	0.245*** (0.000)	
<i>GDP</i>	0.118*** (0.000)	-0.584*** (0.000)	0.033*** (0.012)	0.009 (0.481)

## B. Regression Results

### B1. Aggregate Panel

We report the results of the determinants of corporate investment in Table 4. The second column of Table 4 presents value coefficients and standard errors of our main regression, while the third column presents results without *TERRORISM*. The results can be summarized as follows. First, the coefficient of the terrorist attack variable is negative (-0.597), which means that if the number of attacks increases by 1% then firms will reduce their capital expenditure – total assets ratio by 0.597 basis points. This result supports our hypothesis that terrorism, measured by the number of attacks, has a negative impact on corporate investment. In other words, firms tend to invest less in response to an increase in the number of terrorist attacks in Indonesia. This result is also statistically significant.

Furthermore, we examine the effects of other determinants, such as *Q*, *CF* and growth rate of *GDP*. As per our expectations, the results from both regressions (1) and (2) show that the coefficients of these variables are statistically significant and have consistent signs across the two models. Finally, the adjusted *R*-squared in both regressions takes a value of 33.3%.

**Table 4.**  
**Regression Results**

This table reports the results of determinants of corporate investments with and without terrorist attack variable in Model (1) and (2), respectively. The regression models take the following forms:

$$INV_{i,t} = \alpha + \beta_1 TERRORISM_t + \beta_2 Q_{i,t-1} + \beta_3 CF_{i,t} + \beta_4 GDP_{t-1} + \varepsilon_{i,t} \quad (1)$$

$$INV_{i,t} = \alpha + \beta_1 Q_{i,t-1} + \beta_2 CF_{i,t} + \beta_3 GDP_{t-1} + \varepsilon_{i,t} \quad (2)$$

The coefficients and their *t*-statistics are reported. \*, \*\*, and \*\*\* denote significance at the 10%, 5% and 1% levels, respectively.

	(1)	(2)
<i>TERRORISM</i>	-0.597*** (-7.210)	
<i>Q</i>	0.263** (2.781)	0.263** (2.781)
<i>CF</i>	0.032*** (4.263)	0.032*** (4.263)
<i>GDP</i>	-0.457*** (-11.446)	-0.275*** (-5.673)
<i>Constant</i>	6.874*** (15.879)	3.967*** (15.430)
<i>Observations</i>	4,854	4,854
<i>Firm effect</i>	Controlled	Controlled
<i>Year effect</i>	Controlled	Controlled
<i>Adjusted R<sup>2</sup></i>	0.333	0.333

To examine the economic significance of terrorism on corporate investment, we calculate the effect of a one standard deviation increase in the number of terrorist

attacks. On average, when the number of attacks in a year increase by one standard deviation, i.e. 0.864, firms reduce their capital expenditure by nearly 9.23%.<sup>2</sup>

### B2. Sectoral Analysis

This section investigates the effect of terrorist attack on investment of firms in different sectors. Given that corporate investment projects are partially irreversible, the effect of uncertainty is expected to be stronger for firms with a higher level of irreversible investments (see Gulen and Ion, 2015). In addition, the cost of delaying investment is expected to be different across firms and industries. Specifically, firms in more competitive industries experience lower expected costs of waiting due to the larger advantage of being the first-mover. Therefore, it is of interest to investigate the heterogeneity in the investment-terrorism relationship across different sectors.<sup>3</sup>

The regression results for each of the 10 sectors are presented in Table 5. Results are as follows. First, the effect of terrorism on corporate investment is statistically significant in six sectors (60%), including basic materials, consumer staples, healthcare, industrials, technology and telecommunications. Second, regarding the sign of the effect, while terrorism has a negative impact on basic materials, consumer staples, industrials and technology, it positively influences investments of firms in healthcare and telecommunications. Third, the magnitude of the effect are different across sectors. The absolute values of the terrorism coefficient are in the 2.122 to 10.150 range. Out of six panels that are statistically significant, capital expenditure of firms in the consumer staples sector is affected least by terrorism and telecommunications sector reacts most strongly to terrorism.

Similar to the previous subsection, we also calculate the economic significance of terrorism on firm investment. For those firms that react negatively to terrorism, we find that when the number of attacks decreases by one standard deviation, firms in basic materials increase their capital expenditure by 113.27% and firms in consumer staples, industrials and technology raise their investments by 32.80%, 41.96% and 68.73%, respectively. In contrast, a one standard deviation increase in the number of terrorist attacks leads to 101.74% and 156.91% increases in capital investment of firms in healthcare and telecommunications sectors, respectively.

Finally, the effects of other determinants, i.e.  $Q$ ,  $CF$  and  $GDP$ , are statistically significant in many panels, and the adjusted  $R$ -squared varies in the 0.174 to 0.487 range.

<sup>2</sup> The economic significance is calculated by taking one standard deviation of *TERRORISM* multiply by the value of its coefficient in Model (2) of Table 4 and divide by its mean value.

<sup>3</sup> Note that due to low number of observations, utility sector is dropped.



**Table 5.**  
**Sectoral Analysis**

This table reports the effect of terrorism attack on corporate investment for ten sectors: Basic Materials (BM), consumer discretion (CD), consumer staples (CS), energy (EN), financials (FI), health care (HC), industrials (IN), real estate (RE), technology (TE), telecommunications (TEL). The utility sector is excluded in our analysis due to a low number of observations. The coefficients are their *t*-statistics are reported. \*, \*\*, and \*\*\* denote significance at the 10%, 5% and 1% levels, respectively.

Sector	BM	CD	CS	EN	FI	HC	IN	RE	TE	TEL
TERRORISM	-7.327*** (-11.314)	-0.276 (-1.448)	-2.122*** (-20.351)	2.022 (1.544)	0.775 (0.460)	6.581*** (7.608)	-2.714*** (-4.982)	1.313 (0.836)	-4.446*** (-5.477)	10.150*** (11.042)
Q	0.822* (2.016)	-0.029 (-0.386)	0.394* (2.040)	-0.015 (-0.052)	0.009 (0.209)	0.089 (0.474)	0.665** (2.657)	0.130 (1.400)	2.137* (2.040)	1.330 (1.681)
CF	0.032 (1.103)	0.037** (2.287)	0.000 (0.003)	0.072 (0.982)	0.026 (0.750)	-0.082 (-1.573)	0.057 (1.200)	0.058* (1.821)	0.068 (1.650)	-0.348* (-1.874)
GDP	-2.409*** (-11.306)	-0.651*** (-7.020)	-1.476*** (-12.818)	-0.330 (-0.562)	0.061 (0.096)	3.015*** (7.948)	-0.952*** (-3.287)	0.522 (0.855)	-1.963*** (-7.410)	5.957*** (11.033)
Constant	37.817*** (14.135)	8.236*** (8.803)	17.859*** (30.604)	-3.063 (-0.524)	-1.854 (-0.228)	-28.344*** (-7.063)	15.633*** (4.305)	-5.191 (-0.671)	22.456*** (8.778)	-52.356*** (-8.592)
Observations	593	1,006	635	245	877	162	559	502	119	123
Firm effect	Controlled	Controlled	Controlled	Controlled	Controlled	Controlled	Controlled	Controlled	Controlled	Controlled
Year effect	Controlled	Controlled	Controlled	Controlled	Controlled	Controlled	Controlled	Controlled	Controlled	Controlled
Adjusted R <sup>2</sup>	0.315	0.278	0.304	0.214	0.174	0.487	0.209	0.366	0.347	0.479

### B3. Firm Characteristics Analysis

This section aims to investigate whether firms with different characteristics react differently to terrorism. Table 6 reports the effect of terrorist attacks on corporate investment for panels sorted on firm characteristics. There are some interesting observations that stand out. First, the coefficient of *TERRORISM* is statistically significant in eight (80%) out of 10 panels; the exception are the MV0 and VO1 panels. Like the sectoral analysis, we see heterogeneity in both sign and size of the effect of terrorism on corporate investment across panels. Regarding the sign of terrorism effect on investment, the results show that the capital expenditure of firms with MV1, BM0, FA0, TV1, TV0 and VO0 are affected negatively by an increase in the number of terrorist attacks. In contrast, BM1 and FA1 firms respond positively, i.e. raise capital expenses, to an increase in the number of attacks. Furthermore, among firms which are affected negatively, terrorism has the weakest impact on capital expenditure of TV1 firms: the coefficient is -0.283, and the strongest impact is on FA1 firms (-2.123). For those firms that react positively to terrorist shocks, the strongest impact is on FA1 firms which is followed by BM1 firms. The values of the *TERRORISM* coefficient of these two panels are 1.283 and 0.842, respectively.

Turning to the economic significance results, we find that BM1 and FA1 firms raise their capital expenditure by 13.02% and 19.83%, respectively, in response to a one standard deviation increase in the number of terrorist attacks. Across MV1, BM0, FA0, TV1, TV0, and VO0 firm panels, firms reduce their capital investment by between 5.91% to 32.82% when the number of attacks increases by one standard deviation. The biggest cut in capital expenditure is found for FA0 firms, while the modest cut belongs to TV1 firms.

Finally, consistent with our expectations, the effect of other determinants, namely, *Q*, *CF* and *GDP*, is statistically significant in most of the panels. Moreover, the value of adjusted *R*-squared varies from 23.4% to 41.7%.

### C. Robustness Tests

We apply a number of robustness tests. In particular, we use different model specifications as well as different sub-sample to see whether our main results hold.

#### C1. Different Regression Model Specifications

We test the consistency of our main findings by adding two control variables, namely the growth rate of sales, *GROWTH*, and the leverage ratio, *LEVERAGE*, into our main regression. This approach is also used by An *et al.* (2016) and Wang *et al.* (2017).

**Table 6.**  
**Firm characteristics**

This table reports the effect of terrorism attack on corporate investment for panels sorted based on firm characteristics. We have 10 characterized panels: low market capitalization (MV0), high market capitalization (MV1), low book-to-market ratio (BM0), high book-to-market ratio (BM1), young firms (FA0), mature firms (FA1), low trading volume (TV0), high trading volume (TV1), low volatility (VO0), and high volatility (VO1). The coefficients are their *t*-statistics are reported. \*, \*\*, and \*\*\* denote significance at the 10%, 5% and 1% levels, respectively.

<b>Firm characteristics</b>	<b>MV1</b>	<b>MV0</b>	<b>BM1</b>	<b>BM0</b>	<b>FA1</b>	<b>FA0</b>	<b>TV1</b>	<b>TV0</b>	<b>VO1</b>	<b>VO0</b>
<i>TERRORISM</i>	-1.201*** (-36.178)	0.016 (0.089)	0.842*** (7.408)	-1.936*** (-17.738)	1.283*** (13.338)	-2.123** (-2.278)	-0.382*** (-5.102)	-0.937*** (-6.116)	-0.089 (-1.615)	-1.115*** (-6.534)
<i>Q</i>	0.307*** (3.986)	0.241 (1.673)	0.172 (1.527)	0.284** (2.571)	0.203*** (3.030)	0.390 (1.420)	0.340*** (3.651)	0.188 (1.651)	0.244* (2.067)	0.315*** (3.140)
<i>CF</i>	0.007 (0.435)	0.042*** (4.650)	0.019 (1.439)	0.044** (2.536)	0.022** (2.230)	0.070** (2.344)	0.026 (1.353)	0.029*** (2.899)	0.038*** (2.966)	0.017 (0.676)
<i>GDP</i>	-0.694*** (-9.665)	-0.181* (-2.083)	0.171*** (2.972)	-1.053*** (-21.470)	0.342*** (7.170)	-1.885 (-0.911)	-0.509*** (-7.920)	-0.430*** (-6.823)	-0.294*** (-6.878)	-0.555*** (-11.169)
<i>Constant</i>	10.266*** (78.472)	3.469*** (3.260)	-0.979* (-1.841)	14.246*** (21.595)	-2.722*** (-5.305)	18.433** (2.476)	6.503*** (21.870)	7.849*** (9.319)	4.501*** (11.060)	8.974*** (15.799)
<i>Observations</i>	2,295	2,559	2,520	2,334	3,367	1,487	2,414	2,440	2,845	2,009
<i>Firm effect</i>	Controlled	Controlled	Controlled	Controlled	Controlled	Controlled	Controlled	Controlled	Controlled	Controlled
<i>Year effect</i>	Controlled	Controlled	Controlled	Controlled	Controlled	Controlled	Controlled	Controlled	Controlled	Controlled
<i>Adjusted R<sup>2</sup></i>	0.417	0.234	0.258	0.351	0.305	0.362	0.373	0.286	0.276	0.408

**Table 7.**  
**Different regression model specifications**

This table reports the results of the robustness test using different model specifications. We include additional control variables that have been used in previous literature to our baseline regression model. The coefficients are their *t*-statistics are reported. \*, \*\*, and \*\*\* denote significance at the 10%, 5% and 1% levels, respectively.

	(1)	(2)	(3)
<i>TERRORISM</i>	-0.391*** (-4.706)	-0.917*** (-11.391)	-0.724*** (-8.924)
<i>Q</i>	0.282*** (2.941)	0.256** (2.764)	0.277*** (2.936)
<i>CF</i>	0.026*** (3.159)	0.029*** (4.356)	0.024*** (2.987)
<i>GDP</i>	-0.237*** (-5.662)	-0.720*** (-12.801)	-0.497*** (-9.703)
<i>GROWTH</i>	0.003 (0.888)		0.003 (0.777)
<i>LEVERAGE</i>		-3.128*** (-3.869)	-2.760*** (-3.351)
<i>Constant</i>	5.091*** (10.825)	9.962*** (23.718)	8.102*** (18.164)
<i>Observations</i>	4,744	4,843	4,733
<i>Firm effect</i>	Controlled	Controlled	Controlled
<i>Year effect</i>	Controlled	Controlled	Controlled
<i>Adjusted R<sup>2</sup></i>	0.341	0.342	0.349

The regression results are reported in Table 7. Our main findings are consistent. Regardless of the model specifications, terrorism has a negative effect on the level of corporate capital expenditure. Moreover, the coefficient of *TERORISM* is statistically significant at the 1% level in all three models.

### *C2. Different Sub-samples*

In general, financial crises led to a shock to the supply of credit, hence firm investment is affected during these periods (Kahle and Stulz, 2013). Existing literature has shown that corporate investment is significantly affected during the financial crisis (see Rousseau and Kim, 2008; Campello et al., 2011; Kahle and Stulz, 2013; Phan *et al.*, 2019). Thus, in this section, we further our robustness test by employing different sub-samples. In particular, we use three different sub-samples: 1999-2007 period; 2008-2017 period; and 1999-2017 period excluding the Global Financial Crisis (2007-2009).

**Table 8.**  
**Different Sub-samples**

This table reports the results of the robustness test using different sub-samples. We divide our sample into two sub-sample periods 1999-2007 and 2008-2017. We also have another sub-sample that the Global Financial Crisis period 2007-2009 is excluded. The coefficients and their *t*-statistics are reported. \*, \*\*, and \*\*\* denote significance at the 10%, 5% and 1% levels, respectively.

	1999-2007	2008-2017	Remove 2007-2009
<i>TERRORISM</i>	-0.245** (-3.278)	-1.575*** (-17.464)	-0.635*** (-6.631)
<i>Q</i>	0.225 (1.538)	0.250* (2.123)	0.287** (2.781)
<i>CF</i>	0.021 (1.443)	0.021 (1.606)	0.033*** (4.374)
<i>GDP</i>	0.103 (1.315)	1.653*** (10.265)	-0.461*** (-10.896)
	4.848*** (6.783)	-0.178 (-0.186)	7.007*** (14.024)
<i>Constant</i>	-0.245** (-3.278)	-1.575*** (-17.464)	-0.635*** (-6.631)
<i>Observations</i>	1,591	3,263	4,079
<i>Firm effect</i>	Controlled	Controlled	Controlled
<i>Year effect</i>	Controlled	Controlled	Controlled
<i>Adjusted R<sup>2</sup></i>	0.430	0.352	0.350

The results of this robustness test are reported in Table 8. Similar to previous findings, the effect of terrorist attacks on the level of corporate investment remains statistically significant and negative across all three sub-samples. Therefore, we can safely conclude that the choice of different sub-samples does not influence the effect of terrorism on the level of firm capital expenditure.

#### IV. CONCLUDING REMARKS

This paper tests the effect of terrorism on corporate investment in Indonesia. The empirical analysis is based on an annual frequency data set, which includes around 5000 observations from 1997 until 2017. Applying the standard investment type regression that is used widely in the literature, the paper offers some important findings. First, the effect of terrorist attacks on corporate investment in the aggregate panel is negative. On average, with a one standard deviation increase in the number of attacks, firms' capital expenditure reduces by 9.23%. Second, firms in different sectors react differently to terrorist shocks. A one standard deviation increase in the number of terrorist attacks causes the level of corporate investment to change from -113.27% to 156.91% across different sectors. Third, similar heterogeneity is found when we divide our sample into different panels based on firm characteristics. Using firm characteristic sampling, the economic significance of a one standard deviation increase in terrorist attacks on firm investment is in the -5.91% to 19.83% range. Finally, results from our robustness tests are similar to our baseline findings.

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