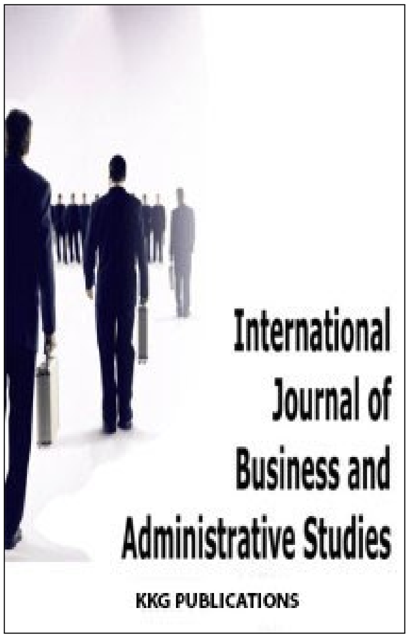

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A COMPARATIVE ANALYSIS OF EFFECTS OF TERRORISM ON WORLD EQUITY MARKETS

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Abstract. The purpose of the current study is to review the key empirical and theoretical papers regarding the impact of terrorism on the equity returns of developed and developing countries. Furthermore, the current study aimed to compare the differences in the effects of terrorism events on developed and developing equity markets and the possible causes of these differences. Regarding the methodology, the current study has reviewed the previous conceptual and empirical studies. The literature review highlights that the impact of terrorism events varies in the developing/emerging markets and developed markets. Furthermore, the possible causes of differential effect are discussed. Also, the relationship between the level of development and the frequency of terrorism events is elaborated. These findings imply that more emphasis has been placed on the effects of terrorism on equity markets rather than the routes by which terrorism enters the equity market. Future research may focus on this issue by examining the linkages between terrorism, poverty, government spending, and budget allocation to health, education, and other necessities that may increase the opportunity cost for individuals to engage with terrorist groups. Likewise, the corporations need to spend more towards society regarding their Corporate Social Responsibility (CSR) and a tool to reduce the frequency of terrorism events as a risk management strategy. Future studies may also study the country-wise CSR spending and the frequency of terrorism events because terrorism requires pre-event risk mitigation strategies. Therefore, the post-event risk evaluation should be given less importance in comparison to pre-event strategies.

INTRODUCTION

Background of Study

The key reasons to justify the existence of state require the absence of terrorism as primary reason. Furthermore, society compares the existence of security with other services provided by the state (Biju, 2016; Frey, Luechinger, & Stutzer, 2009). Therefore, one of the important public goods demanded by the public is their safety from events like violence and terrorism. The risk arising from terrorism varies from other sources of risk in a variety of ways hence calls for more investigation.

For instance, terrorism may cause death of large number of people, whereas, this number might be lower in other incidents. Moreover, these events also differ from other events in that these events create fear at a broader level, i.e., terrorism causing threat to national security and failure to recover from natural disaster and prevention measures as disgrace to a country (Lee, Cheng, Hooy, & Yahya, 2017; Teng, Quoquab, Hussin, & Mohammad, 2016; Viscusi, 2009).

The risk arising from terrorism may affect the public. It affects the public by creating the fear among them which reduces their confidence on the government. Past research has shown the evidences that inability of the government to control these disasters and the inability to provide the public post disaster recovery may threaten the government continuity. The higher the risk of government instability, the lower would be equity returns. For instance, Irshad (2017) reported negative relationship between political instability and equity returns. The provision of safety as a public good may differ in the developed and developing countries. Therefore, the trust of investors in the aftermath of terrorism events may also vary.

Previous studies have examined the impact of terrorism events on the equity returns and provided mixed results. The current study is among first of those studies comparing the effects of terrorism in developed and developing equity markets.

Furthermore, the current study is the pioneer in highlighting the possible causes of differential impacts of terrorism on the developed and developing equity markets. Also, the current study is the first to theoretically review the relationship between level of development and the frequency of terrorism events. The following section provides the methodology of the study.

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METHODOLOGY

The current study has reviewed the related theoretical and empirical papers and compared the results of previous studies conducted on the developed and developing equity markets. Regarding the analysis technique, the current study has theoretically reviewed and compared the previous research studies and elaborated the key findings. Based on those findings, the current study has discussed the key reason behind the differential impact of terrorism on developed and developing equity markets. Also, the current study has highlighted the relationship between the level of development and the frequency of terrorism events.

Terrorism and Equity Markets

Previous studies have focused on the impacts of terrorism events on the equity returns in world equity markets. The impact of the events on the world equity markets is significant in most of the studies. However, the findings show that effects are longer in the case of developing/ emerging equity markets as compared to the developed equity markets. Table 1 provides the list of studies conducted on the impact of terrorism events in the developed equity markets. Following table provides the some of the key papers on the effects of terrorism.

TABLE 1
Terrorism in Developed Markets

No.	Author	Country	Data	Methodology	Findings
1	Arin, Ciferri, and Spagnolo (2008)	Israel, Spain, UK	2002-2006	GARCH	Terrorism has significant impact on equity returns and volatility
2	Graham and Ramiah (2012)	Japan	Five major attacks	Event Study, Regression	US, Madrid and Bali attacks significantly affected the Japanese equity market
3	Brounen and Derwall (2010)	International financial markets	1990-2005	Event-study	Negative impact of terrorism on equity market
4	Chesney, Reshetar, and Karaman (2011)	Global, European, Swiss and American Markets	January 4, 1994 until September 16, 2005	Event-study, Filtered GARCHEVT	Negative impact of terrorism on equity market
5	Drakos (2010)	22 countries	1970-2004	Pooled Regression, ARCH	Terrorist has significant impact on daily equity market returns
6	Essaddam and Mnasri (2015)	USA	19952011	Event-study, Bootstrapping technique	Terrorist attack experience abnormal volatility on the day of the attack, developed countries have not taken into consideration terrorist risk. New terrorist events do not increase the uncertainty of the equity markets in developing countries
7	Kumar and Liu (2013)	Twenty developed and developing countries	1990-2010	Event study, Logit regression	Negative impact of terrorism on equity market
8	Kollias, Papadamo, and Stagiannis (2011)	Spain and London	March 2004 attack in Madrid and July 2005 in London	Event Study	Negative impact on majority of sectors in Spanish equity market whereas London equity market recovered soon after attacks
9	Rigobon and Sack (2005)	USA	January 2003-April, 2003	Heteroscedasticity-Based estimator	Negative impact of terrorism on equity market
10	Eldor and Melnick (2004)	Israel	1990-003	Regression	Negative impact of terrorism on equity market

TABLE 2
Terrorism in Developing/Emerging Markets

No.	Author	Country	Data	Methodology	Findings
1	Hassan and Hashmi (2015)	Pakistan	2003-2012	Event study	Terrorism has significant impact on equity returns only for severe attacks otherwise market is insensitive to attacks
2	Bora-Ramiah (2012)	Malaysia	1999-2008	Events study	Shows that equity markets are insensitive to most terrorist events
3	Arin et al. (2008)	Indonesia, Thailand, Turkey	2002-2006	GARCH	Terrorism has significant impact on equity returns and stock volatility
4	Holwerda and Scholtens (2016)	Global Oil and Gas Companies	2001/2010 and 2012/2012	Event study	No evidence that shareholders respond in a significant manner to these attacks
5	Kutan and Yaya (2016)	Colombia	2002-2012	Event study, GARCH	Negative impact of terrorism on equity returns
6	Mnasri and Nechi (2016)	MENA Region	2000-2015	Event study	Impact of terrorist attacks on equity returns remains for longer days as compared to developed counties
7	Aslam and Kang (2013)	Pakistan	2000-2012	Event study	Terrorism has significant impact on equity returns
8	Aslam, Kang, Mohti, Rafique, and Salman (2015)	Bangladesh, Philippines, Sri Lanka, India, Indonesia	1997-2011	Event study	Terrorism has significant impact on equity returns
9	Tavor (2016)	Twenty-two developed and developing countries	108 incidents in twenty-two countries	Regression	Terrorism has negative relationship with equity returns and developing countries showed steeper decline as compared to the developed countries
10	Ramiah and Graham (2013)	Indonesia	1999-2008	Event study	Negative impact of terrorism on equity returns

Likewise, the previous studies have examined the impact of terrorism events on equity returns of developing countries. For instance, Gul, Hussain, Bangash, and Khattak (2010) examined the impact of terrorism on equity market of Pakistan using the Ordinary Least Square (OLS) method. Their results demonstrated that equity market of Pakistan is negatively affected by the terrorism events. Furthermore, Drakos (2010) studied the impact of terrorism attacks on twenty-two developing and developed countries and reported that terrorism negatively influences the share prices. Following Table 2 provides the key papers on the impact of terrorism events in developing countries.

Comparison Between Terrorism Effects in Developed and Developing Equity Markets

Overall the results of previous studies show mixed results regarding effects of terrorism events on the equity returns of developed and developing equity markets. However, most research examining the reaction of financial markets to terrorist attacks suggests that the impact of these events on equity markets is limited and lasts for a short period (Chen & Siems, 2004; Chesney et al., 2011; Essaddam & Mnasri, 2015). However, these studies did not addressed the equity markets of developing countries, whereas, the effect of terrorism events on equity markets lasts longer in the emerging countries in sharp contrast to the developed countries (Mnasri & Nechi, 2016).

Likewise, Essaddam and Karagianis (2014) reported that effect of terrorism events on equity market is stronger in wealthier countries or more democratic countries. Their study also stated that volatility in stock returns due to terrorism events was low. Arin et al. (2008) stated that European markets are less affected by the terrorism shocks as compared to the other markets. Moreover, they suggest that equity market investors of European countries tend to show resilient behavior to the terrorism events. It indicates that effect of terrorism on equity market may differ based on country. Furthermore, interaction of finance and terrorism was studied by Essaddam and Karagianis

(2014) considering the US firms. Analysis of return volatilities of firms reveals that terrorism affects equity markets differently depending on the country where terrorist events are happening. Moreover, it also differs based on the specific firms that are targeted. According to Sandler and Enders (2008), equity markets of developed countries demonstrate minor response to terrorism events.

In addition, Karolyi and Martell (2010) reported that there is no steady long term response of equity markets to terrorism events. Developed countries offer sectors' substitution in which sectors more vulnerable to terrorism are substituted by safe alternatives, resulting in lower negative shocks. Similarly, Arin et al. (2008) stated the results of terrorist events on financial markets of six different countries i.e., UK, Turkey, Israel, Indonesia, Spain, and Thailand. The authors examined the effect of terrorist events on equity market and measured the volatility. Results of their study reported that terrorism has significant impact on equity market returns and equity market volatility and it was found that this impact is even stronger in the case of emerging markets.

Possible Causes of Differential Effects of Terrorism in Developed and Developing Countries

Given the differential market reactions towards the terrorism events in developed and developing equity markets as postulated by previous studies, the current study provides the review of key reasons highlighted. Developing economies are characterized by lower level of diversification which shortens the substitution areas. Furthermore, developing countries achieve less gross domestic product as compared to the developed countries in the period of prolonged campaigns because it increases the chances of more terrorism events in the future. It may affect in terms of increase in the premium expected by the investors and reduces the investment to those sectors which are more vulnerable to terrorism. Foreign and local investment flew away to other safer countries that are less prone to terrorism (Kamran, & Zhao, 2016; Sandler & Enders, 2008).

It implies that economic consequences of terrorism may also vary in developed and developing countries. For instance, Tavor (2016) stated that negative effect of terrorism is higher in developing countries as compared to developed countries due to difference of ability of government institutions to cope with these events. Developed and developing countries may handle terrorism events differently in numerous ways. For instance, developing countries are equipped with lesser disaster management systems. Moreover, developing countries, unlike developed countries, may possess less capable governmental institutions. These less capable government institutions may not be capable of applying monetary, fiscal, and other policies to tackle with the wide ranging or a protracted terrorism (Al-shannag, Basah, & Khairi, 2017; Sandler & Enders, 2008).

In addition, level of development and economic consequences of terrorism are related in variety of ways. According to Eldor and Melnick (2004), severity of the incident's effect depends on the type of financial regime in the country. For instance, they stated that financial liberalism benefits a market's stability against terrorism effects, as competitive and open markets can display more agility and efficiency in adapting to changes in demand and the influence of terrorism on supply. Moreover, there are other reasons that may explain why developing countries equity markets are more prone to terrorism events. For instance, Sandler and Enders (2008) stated that the reasons might be their internal conflicts, lack of decisive and effective security measures and dependence of developing countries for goods and services. Based on these arguments, the current contends that the frequency of terrorism events is high depending of their level of development. The following section reviews the previous studies highlighting the relationship between level of development and frequency of terrorism events.

Level of Development and Frequency of Terrorism Events

The extent of terrorist attacks in any country may depend on the level of development of the country. There might be numerous causes of terrorism in any country. For instance, Nizami, Rana, Hassan, and Minhas (2014) stated that wealth, income, and education reduces the terrorism in any country. Similarly, Estrada, Park, Kim, and Khan (2015) analysed the impact of income per capita and GDP per capita on the incidents of terrorist attacks in Pakistan. Their results demonstrated that growth of economy is negatively related to the terrorism in the country.

Given the income as one potential reason for the terrorism events, the chances for any individual to indulge in such activities is high having low level of income. As emphasized by Becker (1968), individuals apportion their time in working at their jobs or to engage in the criminal activities in a way, which provides them maximum level of utility. Furthermore, the low chances of being caught and less penalty, widened gap between rich and poor and high unemployment raise the number of people attached with militant groups.

Furthermore, Mitra (2008) stated that although poverty increases the level of terrorism activities but considering only poverty may not suffice. The other factors are also necessary that may contribute to high terrorist activities and the high frequency may persist only in case of contribution of other factors with the poverty. However, the economic well-being of any individual and family plays the key role since the opportunity cost to indulge in the terrorism activities changes with the income level. For instance, Asal, Fair, and Shellman (2008) reported that choice of individuals to indulge in terrorism activities also depends on their families. According to their survey, materially better-off families do not allow their children to join militant groups. Since, the economic well-being of individuals is high in the developed countries. Therefore, the opportunity cost to engage in criminal activities is also high. Thus, the lower level of development increases the chances of individuals to engage in these activities.

These findings support the notion that developing countries due to high poverty ratios might face more incidents of terrorism as compared to the developed countries. In addition, role of government towards spending is also important. The terrorism and government spending are related in that governments allocate lower budgets towards education, health and basic infrastructure and more to the defense to reduce these events. However, it may reduce the life satisfaction among the public, create violence and street crimes because terrorism diverts the focus of economic activity away from investment spending towards government spending (Blomberg, Hess, & Orphanides, 2004).

CONCLUSION AND FUTURE DIRECTION

The current study reviews the previous theoretical and empirical studies examining the impact of terrorism on the equity returns. The review shows that the impact of terrorism events stays longer in case of developing equity markets. Furthermore, the current study highlighted the possible reasons behind the differential impact of terrorism on the equity returns of developing and developed equity markets. Also, the relationship between level of development of country and the frequency of terrorism events is discussed. The current study emphasizes that only certain aspects of terrorism risk are addressed by the previous research whereas much is required. More focus has been given to the direct impact of terrorism on the equity returns instead of the reasons for this relationship and the ways in which terrorism travels to the equity market.

The current study emphasizes that impact of terrorism on equity returns may not only be described by the investor sentiment, fear, and information-related perspectives. This perspective captures only part of it. Therefore, the level of development may also change the effects of terrorism on equity returns because phase of economy decides the spending on poverty reduction, employment, education, and support after the terrorism events. Future research may focus the cross-country analysis by the impact of level of spending on education, poverty, health, and the events of terrorism and their impact on equity returns. Likewise, the corporations need to spend more on the society in terms of their CSR as well as a tool to reduce the frequency of terrorism events as a risk management strategy. Future studies may also study the country-wise CSR spending and the frequency of terrorism events because terrorism requires the pre-event risk mitigation strategies. Therefore, the post-event risk evaluation should be given less importance in comparison to pre-event strategies. Since the current study used the review methodology, the future research may examine the same issue by conducting the empirical research methods.

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