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Naukhaiz Chaudhry and David Roubaud and Waheed Akhter and Muhammad Shahbaz

University of Central Punjab (Faisalabad Campus), Pakistan, Montpellier Business School, Montpellier Research in Management, France, COMSATS Institute of Information Technology, Lahore, Pakistan

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Naukhaiz Chaudhry[a], David Roubaud[b], Waheed Akhter[c], Muhammad Shahbaz[d]

[a]*University of Central Punjab (Faisalabad Campus), Pakistan*

E-mail: naukhaiz_g786@msn.com

[b]*Montpellier Business School, France*

E-mail: d.roubaud@montpellier-bs.com

[c]*Center of Islamic Finance, Department of Management Sciences,*

COMSATS Institute of Information Technology, Lahore, Pakistan

E-mail: drwaheed@ciitlahore.edu.pk, wakhter007@hotmail.com

[d]*Montpellier Business School, Montpellier Research in Management, France*

Email: m.shahbaz@montpellier-bs.com, muhdshahbaz77@gmail.com

Impact of terrorism on stock markets: empirical evidence from the SAARC region

This study investigates the impact of terrorism on stock markets in SAARC countries during 2000–2015. An event-study analysis and fixed-effect regression technique are employed to assess whether the impact of various terrorist attacks on the stock market returns of 'highly affected' countries differs from that of 'less affected' countries in the SAARC region. This study has important implications for policy-makers in relevant countries to combat terrorism and build investor confidence.

Keywords: event study; SAARC; stock market; terrorism

JEL classifications: G14, P48, D53

1. Introduction

The purpose of this research is to investigate the impact of terrorism on the stock markets of various South Asian Association of Regional Cooperation (SAARC) countries and to establish the relationship between the type of terrorist attacks and stock market returns. In addition, this study examines whether human loss (killing) causes any significant difference in stock market returns, an issue studied by Yehuda and Hyman (2005). Terrorist activities constitute an outer shock for economies and markets. They often lead to the massive destruction of economies in both the short and long terms. However, several researchers suggest that this relationship must be corroborated by empirical evidence (Drakos 2010; Eldor and Melnick 2004; Peleg et al. 2011; Rosenfeld 2011). Therefore, it is relevant to consider the impacts of terrorism on the overall stock markets of countries.

Before 9/11, little research was available on the effect of terrorist activities in the field of financial affairs. Crain and Crain (2006) estimated that terrorism cost 3.6 trillion U.S. dollars of world GDP in 2002. Moreover, Abadie and Gardeazabal (2003) estimated a

loss of 10% of GDP in the Basque territory due to the last two decades of terrorism. Bouchet, Clark, and Groslambert (2003) explained that changes in asset prices reflect the economic costs, risk, and uncertainty that terrorism generates.

Several studies have found that acts of terror intimidation cause direct losses to a nation's financial capital and make the country more vulnerable to potential terror intimidation (Aksoy 2014; Arin, Ciferri, and Spagnolo 2008; Eruygur and Omay 2014; Nikkinen and Vähämaa 2010). Likewise, Tavares (2004) examined the financial effect of terrorism on development. Similarly, Crain and Crain (2006) indicated that terror campaigns negatively affect GDP. Blomberg, Hess, and Orphanides (2004) showed that terror intimidation and counter-activities negatively affect exchange flows. Nitsch and Schumacher (2004) examined three components through which terrorism negatively affects exchanges and found that terror-based events decreased individual trade by 4%. Eckstein and Tsiddon (2004) concluded that terror intimidation decreased the Israeli stock exchange by approximately 4% every year. Nearly exactly the same results are obtained by Blomberg and Hess (2006), Ford (2001), and Walkenhorst and Dihel (2002). In 2000–2003, U.S. investment figures show a decline in the proportion of foreign investment (U.S. gross fixed capital formation), and conversely, present an increase in U.S. foreign direct investment, according to Abadie and Gardeazabal (2007). However, Enomoto and Nguyen (2009) established the impact of seven large terror-based events on the stock markets of Iran and Pakistan, finding that terrorist activities in Indonesia, London, Madrid, and Iraq had noteworthy harmful effects on the stability of market returns.

Terrorism has significantly negative consequences for the economy (Stiglitz 2003). Government spending on security measures against attacks results has decreased employment and GDP growth (Arin, Ciferri, and Spagnolo 2008; Blomberg, Hess, and

Orphanides 2004; Drakos 2010; Eldor and Melnick 2004; Peleg et al. 2011; Rosenfeld 2011). Similarly, Brown et al. (2004) suggested that government intervention disrupts the market by preventing the private sector from adjusting to the 'terrorist risk'.

Several srudies have ivestigated the impact of terrorist attacks on stock market performance in different countries (Brounen and Derwall, 2010; Chen and Siems, 2004; Eldor and Melnick, 2004; Aslam and Kang, 2013; Hassan et al., 2014; Drakos 2004; Enomoto et al., 2009)

In this research, terrorist attacks and their types are classified as independent variables and daily stock returns are classified as the dependent variable. Daily stock returns for the 15 years from 2000 to 2014 are collected from the finance.yahoo.com website. In consideration of time constraints, 400 terrorist attacks are considered through stratified random sampling. These terrorist attacks are considered for study from the Global Terrorism Database (GTD 2015). This comparative study of the '*highly affected*' and '*less affected*' countries of the SAARC region aims to establish the relationships between terrorist activities and stock market returns. Fixed-effect regression is used to obtain conclusions from the results via the statistical software Stata.

Our results show that the attack day is significant in both less affected and highly affected countries in the SAARC region. In addition, the negative impact continues into the next day in less affected countries. Bombing attacks in highly affected countries have a negative impact on stock market returns. Meanwhile, in less affected countries, armed assault and hostage-taking have negative impacts on stock markets. We also find that the control variable of earthquake remains insignificant with respect to the stock market returns in all SAARC countries.

This paper is divided into six sections: after the introduction of the topic, the second section provides an overview of the SAARC region. The third section covers a relevant review of literature related to terrorism and attempts to find its link with stock market performance. The fourth section discusses the methodology adopted, and the results are discussed in the fifth section. The last section provides this study's concluding remarks.

2. Overview of the SAARC region

Nearly all SAARC countries have suffered from terrorism, especially after the 9/11 attacks (Ahmer 2015). SAARC countries faced approximately 20,000 terrorist attacks of different types from 2000 to 2014 with massive destruction (GTD 2015). Pakistan received the largest number of terrorist attacks in this timeframe (6,664) whereas Bhutan faced only six (GTD 2015). By taking the mean of the number of terrorist attacks, we divide countries into two categories, namely, *highly affected* and *less affected*.

[Table 1 near here]

We consider the stock exchanges of only the following four countries from the SAARC region[1] in our study: Bangladesh, India, Pakistan, and Sri Lanka.

3. Data and Methodology

Spanning a period of 15 years from 2000 to 2014, this study used three types of data: the stock indices of SAARC countries, terrorist attack news and data on earthquake news. Stock index data were collected from the stock market online databases of each

[1] Afghan financial markets are undergoing a transition phase because the entire country is being reconstructed. Because no formal stock exchange exists, Afghanistan cannot be included in this study. Moreover, the Maldives Stock Exchange and the Royal Stock Exchange of Bhutan are not considered in this study because these countries had only 20 and 6 terrorist attacks, respectively, between 2000 and 2014. Finally, data for the Nepal Stock Exchange are not available, and thus this exchange cannot be considered in the study.

country and from finance.yahoo.com. The details of terrorist events were collected from the Global Terrorism Database website (GTD 2015), which is maintained by the U.S. Department of Homeland Security based at the University of Maryland.

The event study methodology adopted for this study was explained by Corrado (2011). Event studies review both long-term and short-term time horizons. Furthermore, the economic influence of an incident can be calculated using security prices over a certain time period, which is divided into three separate time windows: '*pre-event'*, *'day of event'*, *and 'post-event'*.

This study captures the effect of significant terrorist activities of different types that occurred in SAARC countries by investigating the single-day returns of stock markets from 'day −1' to 'day +1' around the terrorist attack. We examined the association between the types of attacks by categorising them into four major categories: bombing/explosions, assassinations, armed assaults, and hostage-taking (kidnapping). If an incident occurred after the trading hours of the stock market, its effect was considered the next working day.

A stratified random sampling technique was used for this research, keeping in view the constraints of the study (Cohen, Manion, and Morrison 2000; Sekaran 2006). We used fixed-effect regression analysis to analyse the relationship between terrorist activities and their impact on the stock markets returns of the SAARC countries in the presence of a control variable. In addition, we examine the influence of eight dummy variables on the index return of the SAARC countries. The regression was also used for analysing the impact of human loss (killing).

To check the overall impact, we run the following multiple regression model.

$$R_{it} = \alpha + \beta_1 Attack_t + \beta_2 Earthquake_t + e_i \quad (2)$$

Attackt = 1 if there is any terrorist attack on day t; and 0 otherwise.

Earthquaket = 1 if there is any earthquake on day t; and 0 otherwise.

Therefore, this tool assists researchers in ascertaining whether these variables have any relationship.

We distinguish the following four types of dummy variables to determine the significance of the type of the terrorist activity: *Di* = 1 if a terrorist attack of type *I* occurs, and 0 otherwise, where *i* = bombing/explosion, assassination, armed assault, and hostage-taking (kidnapping). Equation (5) is used to estimate the impact of the type of terrorist attack on the index returns of different SAARC countries.

$$R_{it} = \alpha + \beta 1\,(\text{Bombing}) + \beta 2\,(\text{Armed Assault}) + \beta 3\,(\text{Assassination}) +$$

$$\beta 4\,(\text{Hostage-taking}) + \beta 5\,(\text{Earthquake}) + e_i \qquad (5)$$

where α and β are parameters to be anticipated, and $\boldsymbol{e_i}$ is a random error.

4. Empirical Results

Regression results

Table 3 shows the results for all divisions of countries of the SAARC region. The interpretation of this table is presented in the subsections hereafter.

[Table 3 near here]

Effect of terrorism with respect to type of attack

Referring to Table 3, the results show that bombings are the only type of attack that negatively affects the stock market returns of highly affected countries. This finding indicates that bombing-type attacks have particularly adverse effects on highly affected countries in the SAARC region. The coefficient for bombing-type attacks in highly affected countries ($\beta = -0.0116462$) indicates that stock market returns decline by

1.164% for every additional attack of this type, which is significant at the 1% level. Conversely, positive stock market returns are observed in highly affected countries for other types of attacks.

Notably, the high frequency of terrorism in highly affected countries causes them to learn how to recover from these incidents immediately, which results in reduced uncertainty for investors. Thus, we conclude that better recovery arrangements developed in highly affected countries create certainty for investors that timely operations will lead to recovery of the situation (e.g., assassination, armed assault, and hostage-taking). That finding explains why returns are not negative in highly affected countries during these types of attacks.

Results of less affected countries indicate that assassination and hostage-taking bring particularly adverse effect. The coefficient for assassination-type attacks in less affected countries ($\beta = -0.0004961$) indicates that stock market returns decline by 0.05% with every additional attack of this type, which is significant at the 1% level. Similarly, the coefficient for the hostage-taking attack type in less affected countries ($\beta = -0.0029479$) indicates that stock market returns decline by 0.3% for every additional attack of this type, which is significant at the 1% level.

Effect of control variable

We consider the news of ‘earthquake’ as a control variable to check whether the negative returns are linked to terrorism or to the earthquake. In Table 3, the p-value for the control variable ‘earthquake’ is greater than the desired significance level, suggesting that the earthquake does not have an impact on the stock market returns of highly affected countries. For less affected countries, control variable is omitted from the table as simultaneous events of ‘terrorism’ and ‘earthquake’ did not occur on the same day even once in the sample period.

Comparative analysis

We run the regression separately for all groups, including highly affected, less affected, and all countries, to check the comparative significance of the predictors.

[Table 4 near here]

The attack day negatively affects stock market returns in all groups, whereas the post-day negatively affects only the less affected countries. Conversely, when considering all the affected countries of the region, bombing is the attack type that produces negative stock market returns. In addition, assassinations, armed assaults, and hostage-taking are positively significant in highly affected countries whereas bombing is positively significant in less affected countries. Moreover, killing remains insignificant in all the groups. This phenomenon is repeated for the control variable 'earthquake' in all study groups.

Our findings show that terrorism negatively affects the stock market returns of both highly affected and less affected parts of the SAARC region. Aksoy (2014), Aslam and Kang (2013), and Bashir, Haq, and Gillani (2013) also suggest the negative impacts of terrorism on stock markets.

The stock exchanges of less affected countries (Sri Lanka and Bangladesh) and those of highly affected countries (Pakistan and India) respond differently to different types of terrorist attacks. The stock markets of highly affected countries respond negatively only to bombings. However, the stock markets of less affected countries are negatively affected by assassinations and hostage-taking. Our findings are supported by the literature. Hassan et al. (2014) showed that the venue and target type of attack are important contributors to the impact of terrorist activity on stock market performance. Similarly, Alam (2013) explained that the ranking venue and target of attack are the most significant factors contributing to the performance of stock market returns. Certain

activities and sectors are more vulnerable to attacks than others are, as explained by Brück and Wickström (2004). Enders and Sandler (2006) noted that small nations are more sensitive to terrorist activities, given that their financial condition is not sufficiently strong to facilitate the reallocation of resources to decrease the wastefulness brought by terrorist intimidation. Thus, we conclude that better rescue arrangements developed in Pakistan and India compared to Sri Lanka and Bangladesh create certainty for investors and that timely operations will result in a recovery from the situation (assassinations, armed assaults, and hostage-taking). For these reasons, the stock market returns are not negative in highly affected countries during these types of attacks.

5. Conclusion

Clearly, terrorism produces adverse effects in the stock markets of the SAARC countries and affects the investors and regulatory authorities of these countries. We recommend that less affected countries (Sri Lanka and Bangladesh) should nevertheless enhance their intelligence and recovery efforts from these incidents to stop continuous losses in stock markets, as this approach would raise the confidence of foreign and local investors. Moreover, policies should be developed by the governments of highly affected countries (Pakistan and India), such as improving intelligence and regulatory enforcement, to eliminate or decrease the risks of terrorist attacks. Better intelligence could prompt a sharp decline in terror-based incidents, thereby improving peace and security situations in the country and thus building investor confidence.

Other events could contribute to negative stock market returns in the presence of terrorism. Political news, financial news, and the announcement of annual budgets could be considered as alternative control variables. Second, the event window used in this study could be extended to 5 or 7 days to determine the influence of terrorism in the days after the attack. Moreover, our study provides a comparison within the SAARC

region, whereas a future study could be conducted to obtain comparisons among different regions.

References

Abadie, A., and J. Gardeazabal. 2003. "The Economic Costs of Conflict: A Case Study of the Basque Country." *American Economic Review* 93 (1): 113–132. doi:10.1257/000282803321455188.

Abadie, A., and J. Gardeazabal. 2007. *Terrorism and the World Economy*. Mimeo, Harvard University and University of the Basque Country.

Ahmer, M. 2015. "South Asian Response to the War on Terror." Accessed November 22 2015. http://pu.edu.pk/images/journal/pols/Currentissue-pdf/MOONIS.pdf

Aksoy, M. 2014. "The Effects of Terrorism on Turkish Stock Market." *EGE Academic Review* 14 (1): 31. doi:10.21121/eab.2014118065.

Alam, A. 2013. "Terrorism and Stock Market Development: Causality Evidence from Pakistan." *Journal of Financial Crime* 20 (1): 116–128. doi:10.1108/13590791311287364.

Arin, K. P., D. Ciferri, and N. Spagnolo. 2008. "The Price of Terror: The Effects of Terrorism on Stock Market Returns and Volatility." *Economics Letters* 101 (3): 164–167. doi:10.1016/j.econlet.2008.07.007.

Aslam, F., and H.-G. Kang. 2013. "How Different Terrorist Attacks Affect Stock Markets." *Defence and Peace Economics* 26 (6): 634–648. doi:10.1080/10242694.2013.832555.

Bashir, U., M. I. U. Haq, and S. M. A. H. Gillani. 2013. "Influence of Terrorist Activities on Financial Markets: Evidence from KSE." *Financial Assets and Investing* 4 (2): 5–13. doi:10.5817/fai2013-2-1.

BBC News. 2007. "Bhutto ‘Wounded in Suicide Blast’." Accessed August 18 2015. http://news.bbc.co.uk/2/hi/south_asia/7161489.stm

Blomberg, S. B., and G. D. Hess. 2006. "How Much Does Violence Tax Trade?" *The Review of Economics and Statistics* 88 (4): 599–612. doi:10.1162/rest.88.4.599.

Blomberg, S. B., G. D. Hess, and A. Orphanides. 2004. "The Macroeconomic Consequences of Terrorism." *Journal of Monetary Economics* 51 (5): 1007–1032. doi:10.1016/j.jmoneco.2004.04.001.

Bouchet, M. H., E. Clark, and B. Groslambert. 2003. *Country Risk Assessment: A Guide to Global Investment Strategy*. Hoboken, NJ: John Wiley & Sons.

Brounen, D., and J. Derwall. 2010. "The Impact of Terrorist Attacks on International Stock Markets." *European Financial Management* 16 (4): 585–598. doi:10.1111/j.1468-036X.2009.00502.x.

Brown, J., J. D. Cummins, C. Lewis, and R. Wei. 2004. "An Empirical Analysis of the Economic Impact of Federal Terrorism Reinsurance." *Journal of Monetary Economics* 51 (5): 861–898. doi:10.3386/w10388.

Brück, T., and B.-A. Wickström. 2004. "The Economic Consequences of Terror: Guest Editors' Introduction." *European Journal of Political Economy* 20 (2): 293–300. doi:10.1016/j.ejpoleco.2004.03.004.

CFTC. 2002. *Report on Futures Industry Response to September 11th*. Chicago, IL: Commodity Futures Trading Commission.

Chen, A. H., and T. F. Siems. 2004. "The Effects of Terrorism on Global Capital Markets." *European Journal of Political Economy* 20 (2): 349–366. doi:10.1016/j.ejpoleco.2003.12.005.

Clark, P., C. Crawford, F. Steele, and A. Vignoles. 2010. "The Choice between Fixed and Random Effects Models: Some Considerations for Educational Research." IZA Discussion Paper No. 10/240. University of Bristol, UK.

Cohen, L., L. Manion, and K. Morrison. 2000. *Research Methods in Education*. 5th ed. London: Routledge Falmer.

Corrado, C. J. 2011. "Event Studies: A Methodology Review." *Accounting & Finance* 51 (1): 207–234. doi:10.1111/j.1467-629x.2010.00375.x.

Crain, N. V., and W. M. Crain. 2006. "Terrorized Economies." *Public Choice* 128 (1-2): 317–349. doi:10.1007/s11127-006-9056-6.

Doherty, N. A., J. Lamm-Tennant, and L. T. Starks. 2003. "Insuring September 11th: Market Recovery and Transparency." *Journal of Risk and Uncertainty* 26 (2): 179–199. doi:10.1023/a:1024161808231.

Drakos, K. 2004. "Terrorism-Induced Structural Shifts in Financial Risk: Airline Stocks in the Aftermath of the September 11th Terror Attacks." *European Journal of Political Economy* 20 (2): 435–446. doi:10.1016/j.ejpoleco.2003.12.010.

Drakos, K. 2010. "Terrorism Activity, Investor Sentiment, and Stock Returns." *Review of Financial Economics* 19 (3): 128–135. doi:10.1016/j.rfe.2010.01.001.

Eckstein, Z., and D. Tsiddon. 2004. "Macroeconomic Consequences of Terror: Theory and the Case of Israel." *Journal of Monetary Economics* 51 (5): 971–1002. doi:10.1016/j.jmoneco.2004.05.001.

Eldor, R., and R. Melnick. 2004. "Financial Markets and Terrorism." *European Journal of Political Economy* 20 (2): 367–386. doi:10.1016/j.ejpoleco.2004.03.002.

Enders, W., and T. Sandler. 2006. *The Political Economy of Terrorism*. Cambridge [England], New York, NY: Cambridge University Press.

Enomoto, C. E., and A. P. Nguyen. 2009. "Acts of Terrorism and Their Impacts on Stock Index Returns and Volatility: The Cases of the Karachi and Tehran Stock Exchanges." *The International Business & Economics Research Journal* 8 (12): 75–86.

Epstein, L. G., and T. Wang. 1994. "Intertemporal Asset Pricing under Knightian Uncertainty." *Econometrica* 62 (2): 283–322. doi:10.2307/2951614.

Eruygur, A., and T. Omay. 2014. "Terrorism and the Stock Market: A Case Study for Turkey Using STR Models." *Journal of Reviews on Global Economics* 3: 220–227. doi:10.6000/1929-7092.2014.03.17.

Ford, W. F. 2001. "Economic Impacts of the World Trade Center and Pentagon Attacks.(Forum on Emerging Issues)." *Business Economics* 36 (4): 75–77.

GTD. 2015. "National Consortium for the Study of Terrorism and Responses to Terrorism, Global Terrorism Database." Accessed September 11 2015. http://www.start.umd.edu/gtd/search/Results.aspx?country=153

Hassan, S. A., and M. S. Hashmi. 2015. "Terrorism and the Response of Investors at Capital Market: A Case of Pakistan." *Pakistan Journal of Commerce and Social Sciences* 9 (1): 218–227.

Hassan, S. A., D. A. Mahmood, D. Ahmed, and S. F. Abbas. 2014. "Impact of Terrorism on Pakistan Stock Exchange: Pakistan." *Journal of Basic and Applied Scientific Research* 4 (7): 182–191.

Hon, M. T., J. Strauss, and S.-K. Yong. 2004. "Contagion in Financial Markets after September 11: Myth or Reality?" *Journal of Financial Research* 27 (1): 95–114. doi:10.1111/j.1475-6803.2004.00079.x.

IMF. 2001. *World Economic Outlook: The Global Economy after September 11*. Washington, DC: World Economic Outlook, International Monetary Fund.

Lenain, P., M. Bonturi, and V. Koen. 2002. "The Economic Consequences of Terrorism." Working Paper 334. Organisation for Economic Co-operation and Development (OECD), France.

MacKinlay, A. C. 1997. "Event Studies in Economics and Finance." *Journal of Economic Literature* 35 (1): 13–39.

Mukerji, S., and J. M. Tallon. 2001. "Ambiguity Aversion and Incompleteness of Financial Markets." *The Review of Economic Studies* 68 (4): 883–904. doi:10.1111/1467-937x.00194.

Mun, K.-C. 2005. "Contagion and Impulse Response of International Stock Markets around the 9–11 Terrorist Attacks." *Global Finance Journal* 16 (1): 48–68. doi:10.1016/j.gfj.2005.05.002.

Nikkinen, J., and S. Vähämaa. 2010. "Terrorism and Stock Market Sentiment." *Financial Review* 45 (2): 263–275. doi:10.1111/j.1540-6288.2010.00246.x.

Nitsch, V., and D. Schumacher. 2004. "Terrorism and International Trade: An Empirical Investigation." *European Journal of Political Economy* 20 (2): 423–433. doi:10.1016/j.ejpoleco.2003.12.009.

Peleg, K., J. L. Regens, J. T. Gunter, and D. H. Jaffe. 2011. "The Normalisation of Terror: The Response of Israel's Stock Market to Long Periods of Terrorism." *Disasters* 35 (1): 268–283. doi:10.1111/j.1467-7717.2010.01203.x.

Rosenfeld, J. E. 2011. *Terrorism Identity and Legitimacy: The Four Waves Theory and Political Violence*. New York, NY: Routledge.

Sekaran, U. 2006. *Research Methods for Business: A Skill Building Approach*. 5th ed. United Kingdom: John Wiley & Sons.

Stiglitz, J. 2003. "Comment & Analysis: The Myth of the War Economy: Markets Loathe Uncertainty and Volatility, Conflict Brings Both." *The Guardian*, January 22 , p. 18.

Tavares, J. 2004. "The Open Society Assesses its Enemies: Shocks, Disasters and Terrorist Attacks." *Journal of Monetary Economics* 51 (5): 1039–1070. doi:10.1016/j.jmoneco.2004.04.009.

The Times of India. 2008. "Bomb Rocks Islamabad Hotel, at Least 60 Dead." Accessed March 17 2015. http://timesofindia.indiatimes.com/world/pakistan/Bomb-rocks-Islamabad-hotel-at-least-60-dead/articleshow/3507428.cms?

Tikuisis, P. 2009. "On the Relationship between Weak States and Terrorism." *Behavioral Sciences of Terrorism and Political Aggression* 1 (1): 66–79. doi:10.1080/19434470802482175.

Walkenhorst, P., and N. Dihel. 2002. *Trade Impacts of the Terrorist Attacks of 11 September 2001: A Quantitative Assessment*. Berlin: Deutsches Institut fur Wirtschaftsforschung.

Woo, G. 2002. "Quantitative Terrorism Risk Assessment." *The Journal of Risk Finance* 4 (1): 7–14.

Yehuda, R., and S. E. Hyman. 2005. "The Impact of Terrorism on Brain, and Behavior: What we Know and What we Need to Know." *Neuropsychopharmacology* 30 (10): 1773–1780. doi:10.1038/sj.npp.1300817.

Zycher, B. 2003. *A Preliminary Benefit/Cost Framework for Counterterrorism Public Expenditures*. Santa Monica, CA: RAND.

Table 1. Details of terrorist attacks by country and relevant stock exchange.

Status	Countries	Terrorist Attack	Stock Exchange
Highly Affected Countries	Pakistan	6,664	Pakistan Stock Exchange
	Afghanistan	7,600	--------
	India	4,407	Bombay Stock Exchange SENSEX
	Nepal	840	Nepal Stock Exchange
	Sri Lanka	605	Colombo Stock Exchange
Less Affected Countries	Bangladesh	381	Chittagong Stock Exchange
	Maldives	20	Maldives Stock Exchange
	Bhutan	06	Royal Securities Exchange of Bhutan
	Total Attacks	**20,523**	

Source: GTD (2015) Global Terrorism Database, http://www.start.umd.edu/gtd

Table 3. Fixed-effect regression results for highly affected, less affected, and all countries.

Returns	***Highly Affected Countries***	***Less Affected Countries***	***All Countries***
Pre-day (D-1)	*-.000734*	*-.000464*	*-0.0006127*
Attack-day (D0)	*-.0119488****	*-.0027702****	*-0.005977**
Post-day (D+1)	*-.0002401*	*-.0017048**	*-0.0009767*
Bombing	*-.0116462****	*.0031087****	*-0.0060277***
Assassination	*.0116219**	*-.0004961****	*0.0037514*
Armed assault	*.0112695****	*-.0010704*	*0.003884*
Hostage-taking	*.0118827**	*-.0029479****	*0.0037711*
Killing	*-.0000198*	*.0000663*	*-0.0000009*
Earthquake news	*-.0069093*	*(omitted)*	*-0.0072833*

_cons	*.0006871*	*0.0008568*	*0.0007657*

*, **, and *** demonstrate that p-values are significant at the 10%, 5%, and 1% levels, respectively

Table 4. Reports of predictors with negative impacts within the SAARC region.

	Highly Affected Countries	**Less Affected Countries**	**All Countries**
Pre-day (D-1)			
Attack-day (D0)	**- *** **	**- *** **	**- * **
Post-day (D+1)		**- * **	
Bombing	**- *** **		**- ** **
Assassination		**- *** **	
Armed assault			
Hostage-taking		**- *** **	
Killing			
Earthquake News			

*, **, and *** demonstrate that p-values are significant at the 10%, 5%, and 1% levels, respectively