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Terrorism, country attributes, and the volatility of stock returns

Naceur Essaddam*, John M. Karagianis

Department of Management and Economics, Royal Military College of Canada, Canada

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ABSTRACT

This study investigates the interplay between terrorism and finance, focusing on the stock return volatility of American firms targeted by terrorist attacks. We find terrorism risk is an important factor in explaining the volatility of stock returns, which should be taken into account when modelling volatility. Using a volatility event-study approach and a new bootstrapping technique, we find volatility increases on the day of the attack and remain significant for at least fifteen days following the day of the attack. Cross-sectional analysis of the abnormal volatility indicates that the impact of terrorist attacks differs according to the country characteristics in which the incident occurred. We find that firms operating in wealthier, or more democratic countries, face greater volatility in stock returns relative to firms operating in developing countries. Firm exposure varies with the nature of country location, with country wealth and level of democracy playing an important role in explaining the likelihood of a terrorist attack. Our results show that despite significant terrorist events this past decade, stock markets in developed countries have not taken terrorist risk into sufficient consideration.

This paper examines the impact of terrorism on the volatility of American stock returns. Specifically, we examine the impact of 44 terrorist attacks against publicly traded American firms between 1995 and 2010. Several factors argue for such a study. First, terrorism is a worldwide phenomenon that has affected most national stock markets over the past century (Chen and Siems, 2004; Chesney et al., 2011). Second, terrorism represents a new business risk that investors and international

* Corresponding author. Tel.: +1 6135416000/6259.
E-mail address: essaddam@rmc.ca (N. Essaddam).

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managers must now consider (Jain and Grosse, 2009; Luo, 2009). Globalization has increased the danger that terrorism poses to international business activity (Fathi and Shahraki, 2011; Kollias et al., 2011; Czinkota and Ronkainen, 2008; Czinkota et al., 2010; Haque and Kouki, 2009; Jain and Grosse, 2009; Alon and McKee, 2006; Karolyi and Martell (2010)). One specific threat is through financial terrorism (Chesney et al., 2011). Managers and investors should therefore understand terrorism's implications. Third, terrorism is now one of the top concerns of MNEs and national governments (Suder and Czinkota, 2005; Czinkota and Ronkainen, 2008). Thirty-six percent of multinational senior executives indicate terrorism is the largest threat they face (Jain and Grosse, 2009), while many corporate executives believe terrorism-related business risks will increase in future (Lloyd's of London, 2007). Fourth, to the best of our knowledge, this paper is the first to assess the impact of terrorism on the volatility of American firms' stock returns. Previous papers studying terrorism's impact on the stock market have focused on the stock returns of the market indices (Chen and Siems, 2004; Hon et al., 2004; Richman et al., 2005; Chesney et al., 2011) or the stock returns of American and international firms (Carter and Simkins, 2004; Karolyi and Martell, 2010). Fifth, unlike previous research examining the impact of large single events such as 9/11 or London 2005, our paper investigates the impact of multiple and very specific events spread over a 15 year period.[1] Sixth, previous studies have indicated a need to identify and evaluate volatility factors. Indeed, in his seminal paper, Schwert (1989) examines whether stock return volatility is explained by macro-economic variables, financial leverage, and trading volume. These factors, he concludes, explain only a small portion of fluctuations in market volatility. Along the same line, Shiller (1981) argues that the observed volatility is not linked to the variability in dividends and earnings.

Our empirical findings suggest firms targeted by a terrorist attack experience abnormal volatility around the date of the attack. A cross-sectional analysis of the abnormal volatility indicates that, in general, the impact of terrorist attacks differs according to the country in which the incident occurs, and the asset characteristics of the firm. Specifically, firms that operate in wealthier or more democratic countries experience larger volatility in their stock returns. Finally, our research suggests that terrorist attacks are idiosyncratic events that do not propagate to other stocks in the same industry.

This paper proceeds as follows – Section 1 reviews literature on terrorism and the stock market. Section 2 discusses the geopolitical implications of terrorism. Section 3 introduces our testable hypotheses. Sections 4 and 5 respectively describe the methodology and data, while Sections 6 and 7 provide the results and conclusion.

1. Terrorism and the stock market

Our analysis of terrorism's impact on the stock market shows little is known about the economic and financial consequences of terrorism (Karolyi, 2006). Several studies examine the impact of 9/11 on the stock market. For example, Carter and Simkins (2004) study the reaction of American airline stocks following 9/11. Their research finds that major and non-major airlines experienced significant negative abnormal returns after 9/11. Furthermore, the market reacts differently for various air transport firms. Chaudhry (2005) investigates the return and time varying beta effect of 9/11 on 20 American firms and finds the direction of the effect varies according to the firms. In addition, not all firms experience an increase in their beta. Other research focuses on the short-term effect of 9/11 on the world capital markets (Richman et al., 2005; Chen and Siems, 2004; Hon et al., 2004). For example, Chen and Siems (2004) find 9/11 has a significant impact on stock markets around the world. Hon et al. (2004) investigated the contagion effect of 9/11 and report an increased correlation across global stock markets in its aftermath.

Homan (2009) analyzed the effects of the terror attacks of 9/11 on a set of listed marine operator equities. He finds that the persistence of volatility increased following 9/11 attacks. Drakos (2010a) examined terrorism's negative impact on daily stock market returns in a sample of 22 countries. He

[1] To the best of our knowledge, very few studies have assessed the impact of multiple and firm specific events on stock returns (Karolyi and Martell, 2010; Chesney et al., 2011).