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Stock returns and volatility following the September 11 attacks: Evidence from 53 equity markets

Jussi Nikkinen[a], Mohammad M. Omran[b,*], Petri Sahlström[c], Janne Äijö[a]

[a] Department of Accounting and Finance, University of Vaasa, P.O. Box 700, 65101 Vaasa, Finland
[b] College of Management and Technology, Arab Academy for Science and Technology, P.O. Box 1029 Alexandria, Egypt
[c] Department of Accounting and Finance, University of Oulu, P.O. Box. 4600, Oulu FIN-90014, Finland

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Abstract

September 11 attacks matter, and why not? Given that globalization has integrated financial markets, the magnitudes of the effect of the September 11 attacks on global markets are expected to be pervasive. We used data from 53 equity markets to investigate the short term impact of the September 11 attacks on markets' returns and volatility. Our empirical findings indicate that the impact of the attacks resulted in significant increases in volatility across regions and over the study period. However, stock returns experienced significant negative returns in the short-run but recovered quickly afterwards. Nevertheless, we find that the impact of the attacks on financial markets varied across regions. The implication here is that the less integrated regions (e.g., Middle East and North Africa) are with the international economy, the less exposed they are to shocks.

JEL classification: G12; G14; G15
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1. Introduction

It is well-documented that international capital markets react, in terms of returns and volatility, quickly and simultaneously to major events such as the crash of 1987 and the Asian crises in 1997. However, the timing and magnitude of changes in stock returns and volatility differ across markets around the world (Roll, 1988). Although the periods with high volatility and dramatic

* Corresponding author.
E-mail address: momran@aast.edu (M.M. Omran).

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movements in stock returns are found to be associated with important events in each country rather than global events, the crash of 1987 proved to have a significant impact on several international markets (Aggarwal, Inclan, & Leal, 1999; Goodhart, 1988; King & Wadhwani, 1990; Malliaris & Urrutia, 1992). It is, however, the September 11 attacks that are a new phenomenon, in which there is a need to understand their impact on the international stock market behavior.

It is typical for previous studies on the impact of global events on international stock markets to deal with those events that arise from market forces, i.e., economic and trading factors (see for example, Arshanapalli & Doukas, 1993; Arshanapalli, Doukas, & Lang, 1995; Choudhry, 1996; Patel & Sarkar, 1998; Yang, Kolari, & Min, 2003). However, the September 11 attacks have a different characteristic. It is a new event that is related to terrorist activities but its impact is not limited to the political agenda. The attacks had significant economic repercussions not only in the US, but also across the world (see for example, Ito & Lee, 2004). The stock markets in the US and across the world reverberated in response to this unexpected event.[1] We examine whether these terrorist attacks led to a significant change and shift in stock returns and volatility across different stock markets in the short-run, up to 6 months.

The paper contributes to the existing literature on stock markets' behavior by providing additional evidence of the reaction of markets to unexpected events, such as September 11 attacks (see e.g., Schwert, 1990, for the crash of 1987 among others). In particular, the paper does not confine itself to developed or major emerging markets, but also extends to cover the usually ignored region, i.e., the Middle East and North Africa (MENA). Expanding the focus and targeting different regions allow us to better understand whether the impacts of these kinds of political or terrorist shocks are pervasive across regions or if their impact is limited only to integrated markets.

Using daily stock indices from 53 countries and covering the period from March 10, 2001 to March 12 2002, we compare the behavior of stock markets in six different regions before and after the September 11 attacks to examine whether the impact of this event is pervasive across regions. The empirical findings indicate that only developed and European countries exhibit similar stock returns and volatility behavior before September 11. In contrast, the Middle East and North Africa (MENA), Latin America, and to less extent the transition economies and Asia, tend to have significantly different behavior compared with developed and European countries. In the period after September 11, the results, to some extent, corroborate our pre-September findings in terms of volatility. When we look at the behavior of stock returns, shortly after the attacks (at 5 and 10 days), it is confirmed that all regions, but not MENA, exhibit the same downturn and that no statistically significant differences exist.

We also compare the returns (volatility) of each region in the periods before and after September 11. Our findings show a significant increase in volatility across regions that are consistent with the previous findings, in which volatility increases after shocks (Engle & Mustafa, 1992; Schwert, 1989; Schwert, 1990). Stock returns, however, show a significant decline shortly after the attacks across regions except MENA, and a significant rebound over longer periods (3- and 6-month). The implication here is that the September 11 attacks have a minor effect on MENA compared with the rest of the world.

[1] The effects of the attack to stock markets around the world are expected to vary across economic regions as a result of differences in dependence on international trade, size of the market, foreign ownership and the industrial and economic structures. In addition, while the stock markets were mainly affected through financial integration, some industries like airline and insurance companies were affected through economical integration.