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Contagion effect in financial markets after the South-East Asia Tsunami

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Abstract

Powerful earthquakes may cause heavy damage to the financial markets of individual countries (regions), and may even spillover to other countries (regions). Using 26 international stock indexes and exchange rates, this study examines whether any contagion effect occurred across financial markets after the strong earthquake in South-East Asia on December 26, 2004. Using heteroscedasticity biases based on correlation coefficients to examine the existence of the contagion effect, this study shows that no individual country stock market suffered from the contagion effect, but that the foreign exchange markets of some countries (namely India, Philippines and Hong Kong) did suffer from the contagion effect.
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1. Introduction

Of all natural disasters, earthquakes probably cause the most serious damage to human life, property, and economy. Although numerous earthquakes occur worldwide annually, only a few are sufficiently powerful to threaten human life and property. Powerful earthquakes may also incur heavy damage to the financial markets of the affected countries (regions), and through the contagion effect may even spillover to impact other countries (regions). On December 26, 2004, the west of the Indonesian island of Sumatra experienced a strong earthquake, measuring 9.3

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on the Richter scale. This powerful earthquake, the biggest recorded during the past 40 years, triggered a massive Tsunami that struck coastlines across South Asia, including India, Indonesia, Malaysia, Thailand and Sri Lanka. This powerful earthquake thus caused over 280,000[1] deaths and left millions homeless. Additionally, the earthquake also caused heavy damage to businesses and the economy, particularly in Indonesia. The South-East Asia Tsunami thus was a major event that shook Indonesian financial markets, and potentially this event had effects reverberating across the financial markets of numerous countries. Therefore, the main purpose of this study is to examine whether any contagion effect occurred across financial markets after the South-East Asian Tsunami.

In this paper, we adopt the definition of contagion introduced by Forbes and Rigobon (2002). It is defined as a significant increase in market co-movement after a shock to one country. According to this definition, contagion does not occur if two markets show a high degree of co-movement during both stability and crisis periods. Previous empirical researches on the contagion effect of international stock returns focus on the aftermath of serious financial crisis (such as the U.S. stock market crash of 1987, the Mexican crisis of 1994, the Asian currency crisis of 1997, the LTCM crisis of 1998, the Russian collapse of 1998, and the Brazilian devaluation of 1999) or terrorist attack events (such as the September 11, 2001 attacks in USA). However, no previous study has focused on how contagion effects in international financial markets associated with natural disasters (for example, the South-East Asia Tsunami of 2004), and this study is the first one to examine this area.

According to the previous findings, during international financial crises, financial markets are characterized by large drops in asset prices, increases in market volatility, and hence co-movements in asset price across markets. The size of these co-movements have led many economists to raise the question of whether crises periods are interpreted as different regimes in the international transmission of financial shocks. Many studies have written about the propagation mechanisms of these crises. In particular, they have focused on the question whether the relationships between markets in tranquil periods are different from those in crisis periods.

The funds of the world can freely flow through international trades in the economic globalization periods. Forbes (2002) finds that international trade linkages allow country-specific crises to spread over financial markets elsewhere in the world. Bordo et al. (2001) show that global crises become more frequent since 1973, and they find that one reason for the increased frequency of crises is an increase in capital mobility. Internationally, capital market liberalization facilitates a greater flow of funds to emerging markets around the globe. The wide-ranging financial deregulation makes it much easier for banks and domestic corporations to tap into foreign capital to finance domestic investments. Such an evolution helps agents to reduce the risk of their assets by spreading their portfolios more widely, and creates new markets for domestic investments, which is no more bounded by national saving. Nevertheless, it also induces a rapid rise in financial flows, which lead to a higher risk of financial instability. Therefore, when large international crisis occurs, the international financial markets often influence each other.

This paper investigates whether powerful earthquake crises increase the interdependence among financial assets in different countries. The heteroscedasticity biases based on correlation coefficients are used to examine whether contagion occurred in one to 3 months after the strong earthquake that struck South-East Asia on December 26, 2004, across 26 economies. It was found that no national stock market suffered from the contagion effect, but the foreign exchange

[1] Source: www.tsunamihelp.blogspot.com.

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