The more contagion effect on emerging markets: The evidence of DCC-GARCH model

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ABSTRACT

The paper aims to test the existence of financial contagion between foreign exchange markets of several emerging and developed countries during the U.S. subprime crisis. As a result of DCC-GARCH analysis, we find the evidence of contagion during U.S. subprime crisis for most of the developed and emerging countries. Another finding is that emerging markets seem to be the most influenced by the contagion effects during U.S. subprime crisis. Since financial contagion is important for monetary policy, risk measurement, asset pricing and portfolio allocation, the findings of paper may be interest of policy makers, investors and portfolio managers.

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1. Introduction

During the past years, financial markets have been suffered from U.S. financial crisis triggered by the bursting of the U.S. mortgage bubble. Fig. 1 shows dramatic movements in foreign exchange markets of several developed and emerging countries during the global crisis. While the value of U.S dollar is decreasing, the value of several countries national currency is increasing during crisis period. These cases imply that dramatic movements in one foreign exchange market may have a powerful impact on markets throughout the world. These co-movements of different countries financial markets may arise from contagion or interdependence between financial markets.

Definition of contagion is one of the most debated topic in the literature. In this paper, contagion is defined as a significant increase in the cross-market correlation during the period of crisis (Forbes and Rigobon, 2002). Therefore, it is necessary to compare the correlation between two financial markets during relatively stable period (pre-crisis) to the during a period of turmoil (crisis period). According to this approach, if two markets are moderately correlated during periods of stability and a shock to one market leads to a significant increase in market co-movement, this would generate contagion. However, if two markets are traditionally highly correlated, even if they continue to be highly correlated after a shock to one market, this may not generate contagion. In other words, it is only contagion if the cross-market correlation increases significantly in crisis period. If the correlation does not increase significantly, this co-movement between financial markets is called interdependence which refers to strong real linkages between two economies (Forbes and Rigobon, 2002).

The pattern and severity of of financial contagion depend on markets’ sensitivities to shared macroeconomic risk factors, and on the amount of information asymmetry in each market (Kodres and Pritsker, 2002). Countries do not need to be linked directly by macroeconomic fundamentals in order to transmit shocks. All that is required for transmission of shocks is for macroeconomic variables to be shared indirectly through other countries. Another conclusion from contagion is that information asymmetries increase the effect of contagion. The effect of contagion on asset prices are greater in markets with greater information asymmetries. Large fluctuations in asset prices is experienced in countries with high level of asymmetris information, whereas countries with low levels of asymmetric information do not. Because, emerging markets have higher levels of asymmetric information than do developed markets, it is expected that emerging markets are influenced much more severely by contagion than developed markets (Lhost, 2004).

The issue of contagion in financial markets is of fundamental importance because of its important consequences for the global economy in relation to monetary policy, optimal asset allocation, risk measurement, capital adequacy and asset pricing. Recent important papers focus on contagion includes Longstaff (2010), Aloui et al. (2011) and many others. While some papers focus on history of financial crisis and crisis models (Bordo and Eichengreen, 1999; Kaminsky and Reinhart, 1999), papers focus on theoretical models on contagion also participate in the literature (Calvo and Mendoza, 2000; Kodres and Pritsker, 2002). In the literature, studies mostly concentrate on empirical application of contagion tests. (Bae et al., 2003; Bekaert et al.,
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