Financial integration in emerging market economies: Effects on volatility transmission and contagion ☆

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Abstract

The purpose of this paper is to examine the volatility relationship that exists between emerging and developed markets in normal times and in times of financial crises. The Vector Autoregressive methodology and the Bai and Perron (2003a, 2003b)'s technique are used. The paper results lead to very interesting conclusions. First, it has been found that volatility spillovers are effective across financial markets. Second, it has been proven that geographical proximity is of great importance in amplifying the volatility transmission. Finally, it has been shown that financial liberalization contributes significantly in amplifying the international transmission of volatility and the risk of contagion.
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1. Introduction

Since its implementation by developed countries, financial liberalization has set as its main objective the strengthening of financial integration in order to reap its benefits (risk diversification, reduction of cost of capital, informational efficiency). These benefits will help to strengthen economic growth (Chari & Henry, 2004; McKinnon, 1973, 1993). The implementation of such policy in emerging markets leads to several consequences. Several previous studies have shown, for example, that financial liberalization tends to reduce volatility and improve the level of informational efficiency in emerging markets (Bekaert & Harvey, 1997; Ben Rejeb & Boughrara, 2013, 2014; Kassimatis, 2002; Kim & Singal, 2000; Nguyen, 2010). It is therefore clear that financial liberalization has an important role in improving the financial situation of emerging markets and, consequently, their economic growth. However, despite its many advantages, no one is unaware that in the short-term, financial liberalization is often accompanied by a wave of financial crises, many of which have taken a systemic extent and hit, in particular, the newly liberalized economies. Some studies show that strengthening financial integration as a main objective of financial liberalization, obtained through the progressive abolition of various barriers to international investment as well as the elimination of capital mobility restrictions which was essentially responsible of emerging markets financial turbulences (see among others, Dell'Ariccia, Detragiache, & Raghuram, 2005; Eichengreen & Arteta, 2000; Kaminsky & Reinhart, 1999; Ranciere, Tornell, & Westermann, 2006). According to these

studies, the success of this goal depends heavily on each country's economic conditions at the opening of its market.

The main concepts that have attracted researchers' interest in the finance literature are spillover, contagion and interdependency. Spillovers are changes in returns or volatilities in one market due to a transmission of market specific information from another market (Fleming et al., 1998). Transmission mechanisms through which market specific information propagates, or spillsover, to other markets are referred to as channels of transmission. A specific transmission mechanism tightly connected to the spillover effect, and often highlighted in the literature, is contagion. It stands out from the financial literature that the concept of contagion has many facets and has consequently been defined in different ways. Notwithstanding, there is a lack of consensus about what the term contagion entails, the largest body of theoretical definitions agrees on the idea that it refers to the magnitude of co-movement between asset prices which exceeds what is justified by fundamentals (see among others, Dornbusch et al., 2000; Eichengreen et al., 1996; Forbes & Rigobon, 2002). In this paper, we have built on the two definitions proposed by the World Bank.[1] According to the first definition, qualified as broad, contagion is the transmission of shocks across countries or in general inter-country spillover effects. Contagion may therefore manifest both in good circumstances than in bad circumstances. The second definition, qualified as very restrictive, defines contagion as the increase in correlations between financial markets in times of financial crisis compared to the relative stability periods. In this paper, we assign the first definition to the transmission and the second, qualified as very restrictive, to contagion.

The results of previous research regarding volatility transmission and contagion point to the existence of unidirectional as well as bidirectional spillovers between international stock markets (Caporale, Pittis, & Spagnolo, 2002; Choudhry, 2004; Darrat & Benkato, 2003; Kasch-Haroutounian & Price, 2001; Li, 2007; Olbrys, 2013; Taşdemir & Yalama, 2014; Xu & Fung, 2002). More recently, and with the multiplicity of financial crises in emerging economies, the financial literature has concentrated on studying the volatility transmission in times of crises (contagion) and, especially, on understanding and identifying the transmission mechanisms (Bekaert, Harvey, & Ng, 2005; Forbes & Rigobon, 2001, 2002; Masson, 1999; Pritsker, 2000).

Some studies show that the strengthening of financial integration following the financial liberalization process, which has been mostly characterized by phasing out various barriers to international investment, was particularly responsible of several financial turbulences. Bekaert and Harvey (1995), Phylaktis and Ravazzolo (2002) and Carrieri, Errunza, and Hogan (2007) argue that financial liberalization has made financial markets more integrated into global international financial movements, and therefore more sensitive to external shocks. Other studies make the point that the propagation of volatility is the consequence of financial interdependence between stock markets (Calvo & Reinhart, 1996). Consequently, one may to wonder whether, or not, financial liberalization impacts on emerging markets volatility transmission.

It should be also pointed out that most previous studies which have dealt with this subject have made comparison of the volatility interdependencies over two sub-periods. The first one is before financial liberalization and the other after. See, for example, Nguyen (2005) who has chosen the month of September 1989 to decompose the entire period into two sub-periods (before and after financial liberalization) seeing that that financial liberalization was implemented in the majority of emerging markets in the late of 1980s. As important as it may appear, such decomposition can be criticized on mainly two grounds. Firstly, there are many countries in the sample that have undertaken the liberalization process during 1990−1992 according to official liberalization dates. Secondly, these studies have ignored the evolutionary and gradual character of financial liberalization. Indeed, they have not considered a very important phase in the liberalization process, namely the maturity stage where all countries have completed the financial liberalization process, and they became able to treat any conditions related to their new financial situation. This methodological imperfection is probably responsible of spurious results.

This paper aims to study the interdependencies in terms of stock market volatility between financial markets (emerging and developed) and to assess the impact of financial liberalization on these interdependencies. The empirical methodology this paper uses is based on two main econometric models. Firstly, it makes use of VAR model, combined with a standard GARCH model in order to analyze the causal relationships in terms of volatility across stock markets. The analysis of the impulse response functions (IRFs) and the forecast errors variance decompositions (FEVDs) permit also to capture the volatility interdependencies pattern (magnitude, speed…). Better, to assess the potential of financial liberalization impact on these interdependencies, we implement a completely different strategy compared to previous studies that have dealt with this topic by simply comparing the volatility interdependencies over two sub-periods, before and after the financial liberalization. Our strategy is based on the comparison of the interdependencies on three phases. The third phase is characterized by the maturation of the markets. The rationale behind using such strategy is that financial liberalization, as a newborn process, can contribute to reinforcing the interdependencies depending on the markets integration degree; therefore, we are also interested in identifying the persistence of these interdependencies after the implementation of financial liberalization process.

Secondly, we adopt a more suitable econometric technique in the context of stock markets, which are generally characterized by the presence of multiple regimes in the variance (Bensafta & Semedo, 2011; Nguyen, 2008). This technique,

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[1] The World Bank's definitions of contagion are available in the following link: http://econ.worldbank.org/WBSITE/EXTERNAL/EXTDEC/EXTRESEARCH/EXTPROGRAMS/EXTMACROECO/0,,contentMDK:20889756~pagePK:64168182~piPK:64168060~theSitePK:477872,00.html.