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Financial contagion vulnerability and resistance: A comparison of European stock markets

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Abstract

This paper investigates contagion to European stock markets associated with seven big financial shocks between 1997 and 2002. We apply methods using heteroscedasticity-adjusted correlation coefficients to discriminate between contagion, interdependence and breaks in stock markets relationships. The analysis focuses on a comparison between developed Western European markets and emerging stock markets in Central and Eastern Europe. We find modest evidence of significant instabilities in cross-market linkages after the crises. The Central and Eastern European stock markets are not more vulnerable to contagion than Western European markets.

JEL classification: G15; C12

Keywords: Financial contagion; Financial shocks; Western, Central and Eastern European stock markets; Adjusted correlation coefficient

1. Introduction

There has been great interest in empirical and analytical studies on cross-country and cross-market transmission of financial crises over the last decade. Most of the empirical work has been undertaken to measure the extent of financial spillovers to mature and emerging markets and to find channels of transmission of shocks to foreign countries.

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Earlier studies have often focused on contagion to emerging stock markets in South America and Asia due to the crises in the U.S. in 1987, Mexico in 1994, East Asia in 1997 and Russia in 1998.[1]

Recently, the discussion regarding the enlargement of the European Union (EU) shifted attention to transition countries in Central and Eastern Europe (CEE). However, until now very few empirical studies have concentrated on contagion to CEE markets. Darvas and Szapáry (2000) provide evidence that spillovers from the Russian crisis to CEE were due to shifts in market sentiments and Krzak (1998) argues that the CEE countries have been hit by the Russian crash most heavily through trade rather than through any financial linkages. Gelos and Sahay (2001) outline that the behavior of the emerging CEE markets after the Russian crisis was similar to that of their counterparts in Asia and Latin America during the Asian crisis. Furthermore, they observe increasing correlations across CEE stock markets during the 1994–1999 period. Fries et al. (1999) find that CEE stock markets were generally not as vulnerable to financial contagion during the Asian and Russian crashes as the less developed stock markets from the former Soviet Union.

Contagion has been commonly defined as a transmission of shocks from a crisis-country to other countries, which can be observed through co-movements of different financial indices on multiple markets or rising probabilities of default. In this paper, we apply the definition put forward by Forbes and Rigobon (2002) and distinguish between common shocks and contagion.[2] Accordingly, contagion requires a change in the structure of stock market linkages. The increase in cross-market linkages during the crisis must be significant to be called contagion, not just interdependence. Contagion is then an excessive transmission of shocks from one crisis stock market to others, beyond any idiosyncratic disturbances and fundamental links among them. Fundamental financial links constitute interdependence.

Many empirical methods measuring contagion are based on cross-market correlation coefficient estimates.[3] Forbes and Rigobon (2002) demonstrate that the rise in correlation does not necessarily imply contagion as defined above. The authors propose a test to distinguish between contagion and co-movement of stock index returns driven by bilateral linkages. Their most striking empirical result from using this procedure is that in the majority of countries one cannot observe contagion during the 1987 U.S. crash, the 1994 Mexican collapse and the 1997 Asian crisis. Gelos and Sahay (2001) also apply a simplified version of this methodology and find no contagion from the Czech Republic, Asia and Russia to CEE stock markets. The method is attractive because it does not assume any specific structure of financial spillovers and allows for a straightforward interpretation of empirical results on cross-market interdependence. Furthermore, some recent testing

[1] Surveys on this issue can be found in Claessens and Forbes (2001), Goldstein et al. (1999), Calvo et al. (1996) and IMF (1999).

[2] See also Masson (1998), Kaminsky and Reinhart (2000), Karolyi (2003) and Moser (2003). Discussions on different definitions of contagion may be found in Edwards (2000), Forbes and Rigobon (2001), and Pericoli and Sbracia (2003).

[3] See, for example, King and Wadhwani (1990), Lee and Kim (1993), Longin and Solnik (2001). An overview of most methods can be found in Forbes and Rigobon (2001, 2002), Rigobon (2001), Claessens and Forbes (2001), and Pericoli and Sbracia (2003).