

Contagion in global equity markets in 1998: The effects of the Russian and LTCM crises

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Abstract

The Russian and LTCM financial crises in 1998 originated in bond markets, but rapidly transmitted through international equity markets. A multi-factor model of financial markets with multiple regimes is used to estimate the transmission effects in equity markets due to global, regional and contagious transmission mechanisms during the crises. Using a panel of 10 emerging and industrial financial markets, the empirical results show that contagion is significant and widespread in international equity markets during the LTCM crisis, but is more selective during the Russian crisis. Contagion effects in equities differ to those previously noted in bond markets for this period.

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1. Introduction

The year of 1998 was a time of tremendous turmoil in financial markets. Throughout this year market reports presented evidence of continuous nervousness about the Russian banking and financial sectors culminating with the suspension of payment on sovereign debt and the float of the rouble in August. These events were soon followed by the not unrelated near-default of the

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US hedge fund Long Term Capital Management (LTCM). The shocks during this period had far reaching effects on global financial markets and to some observers the period represented the worst turbulence in international financial markets that had occurred in the past decades (Committee on the Global Financial System, 1999; Upper, 2001).

While the primary shocks in the Russian and LTCM crises began in bond markets, their repercussions were felt throughout the financial sector, and much volatility appeared in international equity markets. This paper looks at the transmission of crises during 1998 in international equity markets and finds results which differ substantially to those for international bond markets. In equity markets the majority of the transmission of the shocks across international borders is attributable to contagion effects whereas in bond markets contagion effects are relatively small, although in both cases contagion effects are significant.

The empirical results also show that the most influential source of contagion effects differs across the two asset types during this period: the majority of the contagion effects in equity markets are sourced through the US equity market, while in bond markets contagion is primarily associated with events in Russia (Dungey, Fry, González-Hermosillo, & Martin, 2006). The importance of the US market in distributing equity market shocks supports the hypothesis of Kaminsky and Reinhart (2003) that large markets act as centres in distributing shocks to the periphery markets.

The empirical results of this paper contribute to the existing literature that focusses on the role of equity markets in acting as a conduit during the Russian bond crisis and the LTCM near collapse, by adopting a more general model that looks at a range of factors linking both industrial and emerging equity markets during the financial crises of 1998. The earlier work of the Committee on the Global Financial System (1999) focusses on industrial countries, whereas, Rigobon (2003) and Hernández and Valdés (2001) concentrate on emerging markets. More recently, Kaminsky and Reinhart (2003) look at the interrelationships between industrial and emerging markets, while Baig and Goldfajn (2001) specifically focus on the transmissions to Brazil. The effects of the Russian and LTCM shocks on international bond markets are studied by Dungey et al. (2006), Jorion (2000) and the Committee on the Global Financial System (1999).

To identify the linkages across international equity markets during financial crises, a factor model is developed that extends the international capital asset pricing model of Solnik (1974) and the multi-factor extensions proposed by King, Sentana, and Wadhvani (1994). A feature of the model is that it allows for not only common and regional factors but also for contagion; see Dornbusch, Park, and Claessens (2000) and Pericoli and Sbracia (2003) for a review of definitions of contagion. An important theoretical extension over these earlier models is the identification of contagion through multiple regime shifts in the factor structures. The approach represents a multivariate extension of the correlation change test of Forbes and Rigobon (2002), and is also related to the recent contagion tests proposed by Favero and Giavazzi (2002) based on threshold models.

The remainder of this paper is organized as follows. A multi-regime factor model of financial crises is specified in Section 2. A number of preliminary empirical issues are discussed in Section 3, including data filtering, identification of equity market shocks, and estimation strategies. The main empirical results are presented in Section 4, while Section 5 contains some concluding comments and suggestions for future research.

2. A model of financial turmoil in equity markets during 1998

In this section, a multi-regime factor model of equity markets is specified to identify the transmission mechanisms of financial crises between international equity markets. The model builds on the earlier work of Solnik (1974) and in particular, the factor model of King et al.

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