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Equity market contagion during the global financial crisis: Evidence from the world's eight largest economies

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ABSTRACT

The global financial crisis (2007–2009) saw sharp declines in stock markets around the world, affecting both advanced and emerging markets. In this paper we test for the existence of equity market contagion originating from the US to advanced and emerging markets during the crisis period. Using a latent factor model, we provide strong evidence of contagion effects in both advanced and emerging equity markets. In the aggregate equity market indices, contagion from the US explains a large portion of the variance in stock returns in both advanced and emerging markets. However, in the financial sector indices we find less evidence of contagion than in the aggregate indices, and this is particularly the case for the advanced markets. The results suggest that contagion effects are not strongly related to high levels of global integration.

1. Introduction

The global financial crisis (GFC), which began when the US real estate bubble burst in 2007, quickly led to a sharp decline in stock market indices in the US and across global financial markets – both

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advanced and emerging. Over the crisis period (from July 2007 to May 2009), the US equity market alone lost about 40 percent of its market capitalization. The loss is even higher for some other countries. For example, the UK equity market lost about 49 percent and the Russian equity market about 52 percent. At a sectoral level, the financial sectors around the world experienced even greater losses (in percentage points). The US financial sector experienced a loss of approximately 60 percent in its market capitalization, the UK financial sector lost about 66 percent, and the Russian financial sector about 70 percent. These facts show the severe impact of the global financial crisis on financial markets around the world. An important question is whether this increased co-movement of global financial markets during the 2007–2009 crisis provides evidence of contagion. Defining contagion as a significant increase in cross-country co-movement of asset returns, we test for the existence of contagion and measure contagion effects running from the US to both advanced and emerging markets. The focus of our analysis is on the aggregate equity market in general and the financial sector in particular.

We take the latent factor approach of Dungey et al. (2005), which nests several other empirical approaches (Bae et al., 2003; Bekaert et al., 2005; Corsetti et al., 2005; Favero and Giavazzi, 2002; Forbes and Rigobon, 2002) in a unifying framework to test for contagion. Our sample consists of the US (as a crisis originating country) and eight other large economies in terms of GDP (the four largest advanced economies – France, Germany, Japan and the UK – and the four largest emerging economies – BRIC: Brazil, China, India and Russia). We use a relatively large sample period (daily returns data from 2004 to 2010) and determine crisis and non-crisis periods using an Iterative Cumulative Sum of Squares (ICSS) approach (Inclan and Tiao, 1994; Sanso et al., 2004).

Our results provide strong evidence of contagion effects from the US equity market to equity markets in both advanced and emerging markets. Contagion from the US explains a large portion of the variance in stock returns in advanced and emerging economies. However, the contagion effect is lower in financial sector stocks than in the aggregate equity market, particularly in advanced economies. The results for the financial sector cast doubt on the financial globalization hypothesis – that is, whether contagion during the crisis has a greater effect on those markets that are highly integrated. Overall, our results are consistent with previous studies on equity market contagion during the GFC (Aloui et al., 2011; Baur, 2012; Bekaert et al., 2011; Hwang et al., 2013). However, unlike Bekaert et al. (2011), we find large contagion effects in equity markets. The literature on cross-country contagion effects measured only in the financial sector is relatively limited. Hasman (2013) provides an overview, pointing out that much of this work is related to the literature on prudential regulation.

The rest of the paper is organized as follows. Section 2 reviews the literature on financial contagion; Section 3 explains the latent factor model, sample and data, and empirical model specification; results and discussion are presented in Section 4; and Section 5 concludes the paper.

2. Literature review

2.1. Defining financial contagion

There is no unanimously accepted definition of financial contagion.[1] The World Bank summarizes three layers within contagion definitions.[2] In a broad sense, contagion is the cross-country transmission of shocks or general cross-country spillover effects. In a restrictive sense, contagion is the transmission of shocks to other countries, or cross-country correlation, beyond any fundamental link among the countries and beyond common shocks. In a very restrictive sense, contagion refers to an increase in cross-country correlations during "crisis times" relative to correlations during "tranquil times." The very restrictive definition is commonly used in recent empirical analysis to identify and

[1] For example, Eichengreen et al. (1996) define contagion as a significant increase in the probability of a crisis in one country, conditional on a crisis observed in an origin country. Hamao et al. (1990) refer to contagion as a volatility spillover from the crisis country to other countries. Jeanne (1997) refers to contagion as cross-country co-movements of asset prices that cannot be explained by economic fundamentals. Forbes and Rigobon (2002), among others, refer to contagion as a significant increase in the co-movements of prices across markets conditional on a crisis occurring in one market or a group of markets.

[2] http://go.worldbank.org/JIBDRK3YC0.