



Are prolonged conflict and tension deterrents for stock market integration? The case of Sri Lanka



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ABSTRACT

This paper investigates stock market interdependencies between Sri Lanka and selected economies in the context of its long civil war using the Dynamic Conditional Correlation (DCC) model with monthly indices (1993–2013) and through bilateral analysis. While correlations are weak, in most cases Sri Lanka's conflict and tensions have not been responsible. China is an exception, coinciding with the common observation that its relationship with Sri Lanka has strengthened. Integrations with the US and Pakistan are also marginally accelerated, although both countries are sensitive to types of risks considered. Finally, the low correlations observed imply diversification benefits to Sri Lankan investors.

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1. Introduction

While portfolio theory suggests that diversifying portfolios internationally may result in optimal risk-return trade-off in investment, there needs to be an understanding of the degree to which asset markets are integrated to determine the benefits of diversification. This will assist investors to make informed portfolio investment decisions. In other words, the correlations between returns of domestic and foreign assets may play an important role in the creation of efficient portfolios.

The extant literature on stock market correlations mainly relies on asset correlations as an appropriate measure of stock market integration (Liow, 2012; Wang & Moore, 2008; Yu, Fung, & Tam, 2010).¹ Further, Moore and Wang (2014), Turhan, Sensoy, Ozturk and Hacıhasanoglu (2014), Tamakoshi and Hamori (2014) and Syllignakis and Kouretas (2011), among many, show evidence that correlations in international equity returns change over time. Therefore, to form a successful international portfolio, capturing the time varying nature of correlations is important.

Further, Harper and Jin (2012) point out that while diversification opportunities across developed markets is well-researched, diversification into emerging markets has received less attention. This study examines the stock market interdependencies between Sri Lanka and its major trading partners in the context of Sri Lanka's civil war. These selected nations (namely China, India, Pakistan, Singapore, Malaysia and the US) have economies that are developed, emerging and developing. In 2013, India contributed 16.2% to total trade of Sri Lanka; China 12.4%; US 8.2%; Singapore 7.2%; and Malaysia 2.2% (European Commission, 2015). Apart from their strong economic ties, some of these countries also have political connections with Sri Lanka. For instance, both China and India

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¹ For this reason, correlation and integration are used interchangeably in the stock market literature. This paper also adopts the general trend.

have contributed to the rebuilding of infrastructure, as well as investing in Sri Lanka, in the post-war period (Destradi, 2012). Pakistan has always had close military ties with Sri Lanka and has particularly been one of the major suppliers of military aid to Sri Lanka (Destradi, 2012).

A few studies (see for instance, Elyasiani, Perera, & Puri, 1998; Narayan, Smyth, & Nanda, 2004 and Patel, 2013) have examined linkages between the stock market of Sri Lanka and its trading partners by testing for Granger causality or causal relationship using the simple vector auto regression (VAR) model. Consistent with such literature, this study also finds that stock market linkages are indeed weak between Sri Lanka and its trading partners. However, unlike other studies, this one demonstrates that these linkages are time-varying. More importantly, it expounds on whether weak associations between the stock markets of Sri Lanka and its trading partners are a result of the Sri Lankan civil war. It appears that the impact of a civil war on stock market linkages between countries, using the DCC model in particular, has not been researched before. None of the three studies (involving Sri Lanka) that have touched on this topic, consider the Sri Lankan conflict in depth (Kumara, Upananda, & Rajib, 2014; Peiris, 2012; Deyshappriya, 2014; see Section 1.3 for a review of these studies).

Overall, the key contributions of this study are as follows. First, this is the first study to examine the correlation dynamics of Sri Lankan returns with that of its major trading partners using a model that allows for correlations to change over time, namely the DCC model. Second, apart from establishing the link between the stock markets of Sri Lanka and its trading partners, this research also examines the implications of the Sri Lankan civil war on investors making international diversification decisions through regression analysis. In doing so, the study allows researchers and policymakers to understand the consequences of civil war on market linkages. In particular, the study applies indicators of conflict (such as ethnic tension, military presence, internal conflict, and religious tension) to examine the effects of civil war.

What follows next is a brief review of the two strands of literature that have been examined: stock market correlations (Section 1.1) and the link between war and stock markets (Section 1.2). Section 1.3 outlines a brief history of the Sri Lankan civil war and its effect on Sri Lanka's stock exchange.

1.1. Stock market integration involving Sri Lanka

Elyasiani et al. (1998), Narayan et al. (2004) and Patel (2013) are among those who have studied stock market linkages between countries, including Sri Lanka. These studies mainly use VAR or the Granger causality testing approach. A few studies including Sri Lanka use the DCC approach. Gupta and Mollik (2008) use an asymmetric DCC model to estimate pair-wise time varying correlations between Australian and emerging markets (including Sri Lanka) and also test volatilities as a factor that may cause the correlations to change over time. They find the relationship between correlations and volatilities is stronger in some country pairs (Australia with Brazil, Chile, India, Malaysia and Philippines) and very weak with Sri Lanka and Turkey. Baumohl and Lyocsa (2014) investigate possible international diversification benefits among 32 worldwide emerging markets (including Sri Lanka) and the Morgan Stanley Capital International (MSCI) World stock market index from January 2000 to December 2012 using the DCC approach. Baumohl and Lyocsa find Ivory Coast, Sri Lanka and Venezuela exhibit low correlations and variability and suggest that these countries are less likely to be selected by foreign investors, pointing out, however, that in the case of Sri Lanka, while domestic volatility is significant, the estimated coefficient is negative, implying that correlations tend to decline during periods of higher volatility (and vice versa).

Elyasiani et al. (1998) investigate the interdependence and dynamic linkages that exist between the emerging capital market of Sri Lanka and the markets of its major trading partners (Taiwan, Singapore, Japan, South Korea, Hong Kong, India and US) using the VAR approach. Elyasiani et al. find no significant interdependence between the Sri Lankan market and the equity markets of the US, or the Asian markets studied and propose low capitalization, lack of liquidity, a high concentration in blue chips and unilateral investment barriers faced by Sri Lankan investors as reasons for the findings reached. However, Sri Lanka's unstable economy resulting from its prolonged civil war is not mentioned, nor is there an investigation of its effect on market linkages.

Narayan et al. (2004) study the dynamic linkages between the stock markets of Bangladesh, India, Pakistan and Sri Lanka using a temporal Granger causality approach within a multivariate co-integration context. Their main finding is that in the long run, stock prices in Bangladesh, India and Sri Lanka Granger-cause stock prices in Pakistan. In the short run there is unidirectional Granger causality running from stock prices in Pakistan to India, stock prices in Sri Lanka to India and from stock prices in Pakistan to Sri Lanka.

In a similar study Patel (2013) finds causality runs from the stock markets of Sri Lanka, Korea, Singapore and China to India, and from India to Pakistan. His study also implies that the Indian stock market is affected by the stock indices of Sri Lanka, Japan, Singapore, and China. Jebran (2014) finds unidirectional causality from India, Malaysia and Indonesia to Sri Lanka.

1.2. Effects of wars on financial markets

As Chen, Loayza, and Reynal-Querol (2008) point out, the empirical literature on the aftermath of civil and international war is scarce. Existing studies mostly focus on the economic impacts of civil war and some on social and political impacts of civil war (Chen et al., 2008; Lee, 2006; Przeworski, Alvarez, Cheibub, & Limongi, 2000). As an exception, using daily stock market data and the rational expectation framework, Schneider and Troeger (2006) investigate how three major international conflicts (i.e. between Israel and Palestine, the first confrontation of a US-led alliance against Iraq, and the wars fought in ex-Yugoslavia) exerted influence on the core financial markets of the Western world. Schneider and Troeger conclude that these conflicts negatively affect core stock market interactions, if they had any systematic influence at all. In another notable study, Frijns, Tourani-Rad, and Indriawan (2012) investigate the role of political crises in explaining the degree of stock market integration in emerging markets in South and East Asia, Latin America, and Central and Eastern Europe. Using a Capital Asset Pricing Model (CAPM) framework, Frijns et al. find that crises with

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