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Impact of financial market uncertainty and macroeconomic factors on stock–bond correlation in emerging markets[☆]



Nebojsa Dimic, Jarno Kiviaho, Vanja Piljak*, Janne Äijö

Department of Accounting and Finance, University of Vaasa, Finland

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ABSTRACT

This paper examines the impact of global financial market uncertainty and domestic macroeconomic factors on stock–bond correlation in emerging markets. In particular, by applying the wavelet analysis approach, we are able to examine stock–bond correlations over different time horizons in ten emerging markets. We find that stock–bond correlation patterns vary significantly between the time horizons. In particular, the correlation in short horizon changes the sign rapidly showing sustainable negative episodes while the correlation in long horizon stays positive most of the time. The most important factor influencing stock–bond correlation in short horizon is the monetary policy stance, while the factors with the greatest long-term impact are inflation and stock market uncertainty. Finally, global stock market uncertainty plays a more significant role than global bond market uncertainty in explaining stock–bond correlations in emerging markets.

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1. Introduction

This article focuses on the impact of global financial market uncertainty and domestic macroeconomic factors on stock–bond correlation in emerging markets on short and long time horizons. Examining the dynamics of the time-varying co-movements between stocks and bonds is important for several reasons. The stock–bond correlation is one of the most influential inputs to investors' asset allocation decisions. Moreover, investors' portfolio optimization, risk management, and hedging choices may be vastly improved by taking into consideration the relationship between two main asset classes. Finally, policymakers are increasingly using the information about the joint behavior of stocks and bonds in determining the market views on the inflation and the economic activity of a country. The issue of stock–bond correlation in emerging markets has recently been gaining considerable attention due to increasing demand for the emerging market assets by international investors seeking the benefits of portfolio diversification. In particular, government bonds of emerging markets have become an attractive investment target in recent decades due to the following reasons: (i) emerging markets are among the world's fastest growing economies in which government bonds represent the second largest source of financing

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* Corresponding author at: P.O. Box 700, FI-65101 Vaasa, Finland.

E-mail addresses: nebojsa.dimic@uva.fi (N. Dimic), jarno.kiviaho@uva.fi (J. Kiviaho), vanja.piljak@uva.fi (V. Piljak), janne.aijo@uva.fi (J. Äijö).

since the 1990s; and (ii) increasing market liquidity and transparency in emerging bond markets (see e.g., [Bunda et al., 2009](#); [Piljak, 2013](#)).

The purpose of this study is two-fold. By applying the wavelet analysis approach, we are able to examine stock–bond correlations over different time horizons in ten emerging markets during the period 2001–2013.¹ Assessment of stock–bond correlation dynamics at different time horizons is important for international investors in the context of portfolio rebalancing decisions.² In addition, the advantage of applying wavelet analysis to examining co-movement dynamics between asset classes is related to simultaneous consideration of time and frequency domains in one integrated framework. Second, we investigate the impact of global financial market uncertainty (both stock and bond market uncertainty) and domestic macroeconomic factors on the stock–bond correlations on short- and long-term horizons. In line with earlier studies on the relationship between the stock–bond correlation and macroeconomic factors ([Ilmanen, 2003](#); [Yang et al., 2009](#)), we include inflation, business cycle patterns, and the monetary policy stance in our analysis.

The literature on stock–bond correlations has traditionally focused on developed markets ([Andersson et al., 2008](#); [Campbell and Ammer, 1993](#); [Cappiello et al., 2006](#); [Ilmanen, 2003](#)). The most prominent issue within this stream of literature is related to examining various factors driving the stock–bond correlations. The debate on this issue remains open, given the mixed evidence in the literature on the role of macroeconomic factors in driving stock–bond correlations. In particular, one segment of the literature documents the importance of macroeconomic fundamentals, specifically inflation, business cycle environment, and monetary policy stance, in explaining stock–bond correlations ([Ilmanen, 2003](#); [Li, 2004](#); [Yang et al., 2009](#)). [Yang et al. \(2009\)](#) provide convincing evidence of time-varying stock–bond correlations over macroeconomic conditions (the business cycle, the inflation environment, and monetary policy stance) by using data from the US and the UK covering the past 150 years. [Ilmanen \(2003\)](#) proposes inflation as a key driver of the stock–bond correlation. High inflation periods lead to changes in common discount rates that dominate the cash-flow expectations and lead to a positive correlation between the two asset classes. Further findings demonstrate that stocks tend to outperform bonds during business cycle expansions, while bonds outperform stocks during business cycle contraction periods. Finally, easing the monetary policy has a positive effect on both stocks and bonds exhibiting a positive relation with the correlation of those two asset classes.

[Andersson et al. \(2008\)](#) use data from the US, the UK, and German markets and find that inflation expectation is an important determinant of the stock–bond correlation, while economic growth expectation is not a relevant factor. Specifically, their result shows that stock and bond prices move in the same direction when inflation expectations are high. In contrast, [Baele et al. \(2010\)](#) argue that macroeconomic factors play only a minor role in explaining stock–bond correlations in the US market. A more recent study by [Aslanidis and Christiansen \(2014\)](#) provides new insights into the role of macroeconomic fundamentals in explaining stock–bond correlations. They find that macroeconomic factors have only little explanatory power when the stock–bond correlation is largely positive; but when the stock–bond correlation is largely negative, then macroeconomic fundamentals are most useful explanatory variables. The rationale behind this finding is that macroeconomic factors are important for bonds in all periods, while for stocks they are important only in extremely volatile periods.

One additional segment of the related literature provides evidence that stock market uncertainty plays an important role in explaining stock–bond correlations ([Andersson et al., 2008](#); [Connolly et al., 2005, 2007](#); [Kim et al., 2006](#)). These studies use implied volatility from equity index options as a proxy for stock market uncertainty, and suggest that implied volatility changes have an impact on market participants' risk aversion, therefore affecting the stock–bond correlation. Considerable attention in these studies has been paid to the “flight-to-safety” phenomenon, in which the correlation between stocks and bonds becomes significantly negative during periods of high market uncertainty ([Gulko, 2002](#); [Connolly et al., 2005](#); [Andersson et al., 2008](#); [Baur and Lucey, 2009](#)). In particular, the financial equity markets crashes make investors more risk averse, as they shift their funds from stock to bond markets.

In the literature on stock–bond correlation, studies examining emerging markets are relatively scarce. [Panchenko and Wu \(2009\)](#) use a sample of 18 emerging markets to investigate how stock–bond co-movement is affected by emerging stock market integration, while [Boyer et al. \(2006\)](#) examine correlations between stocks and bonds in emerging markets within the context of financial crisis contagion. More recently, [Christopher et al. \(2012\)](#) address the issue of the effects of sovereign credit ratings on time-varying stock–bond correlations in emerging countries worldwide. Finally, [Bianconi et al. \(2013\)](#) examine the behavior of stock and bond return volatility and the correlation for the BRIC countries conditional on a measure of US financial stress.

Our study contributes to the literature in three ways. First, we add to the literature on the stock–bond correlation by providing new evidence of the impact of macroeconomic factors and global financial market uncertainty from the perspective of emerging markets. Second, by using the advantageous methodological framework of the wavelet analysis, we are able to examine differences in the importance of macroeconomic and financial market uncertainty factors for the stock–bond correlations in long and short horizons. Third, we extend the literature on financial market uncertainty by examining

¹ A wavelet analysis approach has been applied in several studies to analyze financial time-series. For example, [Rua and Nunes \(2009\)](#), [Kiviahho et al. \(2014\)](#), and [el Alaoui et al. \(2015\)](#) apply wavelet squared coherency to analyze international co-movement of stock market returns. [Kim and In \(2007\)](#) apply wavelet analysis to examine the relationship between changes in stock prices and bond yields in G7 countries, while [Aloui et al. \(2015\)](#) utilize wavelet approach to examine co-movement between Islamic stocks and bonds in the Gulf Cooperation Council (GCC) countries.

² The true long-term relationship between stock and bond returns can be altered in a short horizon due to short-term noise: investors' immediate consumption needs and portfolio optimization (see [Harrison and Zhang, 1999](#)).

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