



Asymmetry in return and volatility spillover between equity and bond markets in Australia

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ABSTRACT

We document asymmetry in return and volatility spillover between equity and bond markets in Australia for daily returns during the period 1992–2006 using a bivariate GARCH modelling approach. Negative bond market returns spillover into lower stock market returns whereas good news originating in the equity market leads to lower bond returns. Bond market volatility spills over into the equity market but the reverse is not true. Transmission of bond volatility into equity volatility depends in a complex way upon the respective signs of the return shocks in each market.

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1. Introduction

Integration of financial markets facilitates complex interdependencies in the returns and volatilities of related markets. Spillover effects between equity and bond markets arise when information transmission between these markets is neither instantaneous nor complete. Consider the impact on equity prices of the release of macro-economic news that produces an unexpected fall in bond prices. This may result in a corresponding decline in equity prices if it signals that corporate cash flows will be lower in the future because the higher interest rates are expected to inhibit economic growth. In this case, spillover flows from the bond market into the equity market. Another scenario is when falling equity prices are associated with increased market uncertainty and rising discount rates for all assets including bonds whose prices fall in response. Here the spillover is from the equity market into the bond market. Understanding the nature of

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these kinds of spillovers is important for diverse purposes such as asset allocation, portfolio management, financial risk management and capital market regulation.

To explore the interdependence of stock and bond markets, our empirical analysis estimates a bivariate GARCH model with spillover and asymmetric effects. It identifies asymmetries in the nature of return and volatility spillovers between the equity market and the government bond market in Australia. Negative bond market returns spillover into lower stock market returns in the subsequent trading day. In contrast, good news originating in the equity market leads to lower bond returns. We also find that while bond market volatility spills over into the equity market, the reverse is not true. Further, the impact of bond market volatility on future equity volatility is contingent upon the respective signs of the news in each market. For instance, the spillover is greatest when the equity shock is negative and the bond shock is positive.

These results provide evidence relevant to the ongoing debate about the comparative importance of several competing explanations for financial market interdependence. In particular, the main views covered in the literature are: asset substitution; financial contagion (e.g., King and Wadhvani (1990)); hedging demand shifts (e.g., Fleming et al. (1998)); news specificity; news decomposition (e.g., Campbell and Vuolteenaho (2004)) and asymmetric price adjustment (e.g., Koutmos (1999)). For example, in terms of our findings, the spillover of positive equity returns into lower bond returns is compatible with the idea that good news in the equity market is interpreted as a signal that investors should substitute equities for bonds in their portfolios in order to capture improved cash flows in the corporate sector. Alternatively, while the news specificity hypothesis is able to explain our two observed significant return spillovers, it fails to predict the absence of the other potential spillover effects.

Numerous studies have investigated the linkages between returns and volatilities of international equity markets.¹ A smaller number of papers have recently begun to examine these relations among global bond markets.² In contrast, comparatively little attention has been given to exploring spillover effects between stock and bond markets within individual nations.³ We find this somewhat puzzling as the debt capital markets provide an important and rich information set for equity market participants. Bond pricing dynamics have obvious implications for the pricing of equities. For instance, simple present value models capture the notion that equity prices respond to changes in discount rates which are due, inter alia, to interest rate changes.

Our paper proceeds as follows. Section 2 conceptually analyses why and how spillovers in return and volatility arise within the stock and bond markets. Section 3 motivates and specifies the empirical models we estimate. Section 4 describes the data and Section 5 presents the empirical findings. Section 6 briefly concludes.

2. Sources and types of equity-bond market spillover

Several explanations can be advanced for the existence of spillover effects in return and volatility within the stock and bond markets. Some of these also predict spillover behaviour that is asymmetric in nature. We use the following labels to identify these explanations—(i) asset substitution, (ii) financial contagion, (iii) hedging demand shifts, (iv) news specificity, (v) news decomposition and (vi) asymmetric price adjustment.

Asset substitution views equities and bonds as competing assets. Information disclosures affect the perceived attractiveness of these asset classes to investors. News that favours bonds over stocks motivates investors to buy bonds and sell stocks whereas news favouring stocks means investors switch into equities. The asset substitution hypothesis therefore predicts that positive return shocks in one market will spillover as negative return shocks in the other. For example, bond market returns should fall subsequent to good news being released in the equity market. Moreover, the effect is symmetric.

¹ Influential early papers in this category include King and Wadhvani (1990), Hamao et al. (1990), Theodossiou and Lee (1993) and Lin et al. (1994).

² For example, see Skintzi and Refenes (2006) and In (2007).

³ While time variation in the correlation between stock and bond returns has attracted some attention in papers such as Ilmanen (2003) and Connolly et al. (2005), this branch of the literature does not analyse return and volatility spillovers. One paper relevant to our research that does study equity(bond market spillover is Fleming et al. (1998) who develop and test a model in which volatility spillover occurs between stock and bond markets in response to information flows and hedging demands.

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