


Chapter 8

Market Dynamics and Risk Management: A Holistic Examination of Global Financial and Commodity Markets Amid the 2007–2009 Financial Crisis

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ABSTRACT

This chapter investigates the dynamic interactions between seven global stock markets and commodity markets during the Global Financial Crisis (GFC) of 2007–2009. The research focuses on transmission mechanisms and volatility spillovers, applying the Vector Autoregressive Dynamic Conditional Correlation Multivariate Exponential Generalized Autoregressive Conditional Heteroscedasticity (VAR-DCC-MEGARCH) model. The analysis examines indices such as S&P 500, GSPTSE, DAX 30, CAC 40, Nikkei 225, SSE Composite, and HSI, alongside commodities including Brent Crude Oil, West Texas Intermediate (WTI), and Gold. The study emphasizes the safe haven properties of Gold and Brent oil, offering guidance on optimal portfolio construction during crises. Additionally, the chapter assesses hedging ratios and volatility to provide insights for risk management and portfolio diversification in

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times of financial instability. The findings enhance the understanding of market dynamics, offering valuable guidance for policymakers and investors navigating economic turbulence.

1.0 INTRODUCTION

Over the past three decades, global markets have experienced increasing volatility due to financial liberalization and the opening of economies. This trend has sparked a growing interest in the analysis of market volatility. The heightened integration and substantial volatility in major financial markets have made both commodity and stock prices more sensitive to various factors, including deregulation, weather conditions, geopolitical events, economic policies, investor sentiment, revolutions, and unforeseen occurrences (Yu et al., 2008). In recent years, commodity markets, particularly Gold and oil, have witnessed a surge in liquidity, attracting investors who view commodities not only as essential for “real” economic activities such as risk hedging but also as financial assets and securities (Vivian and Wohar, 2012). The sharp fluctuations in Gold and oil prices have been closely tied to financial crises, geopolitical conflicts, and adverse climatic conditions. For example, Gold prices commenced trading at \$460 in January 2000 and peaked at \$1286.96 in September 2009. Similarly, Brent crude oil prices exhibited a comparable trajectory, starting at \$44.8 per barrel in January 2000 and reaching \$114 per barrel in December 2010.

The observed volatility pattern poses a perplexing challenge for researchers, academics, and portfolio managers. Understanding time-varying volatility and the transmission processes across various market types is crucial for international investors and policymakers. Previous research has predominantly examined the impact of volatility among major stock markets or between the crude oil market and financial markets (e.g., Du et al., 2011; Kumar et al., 2012; Hassan and Malik, 2007; Lien and Yang, 2008; Malik and Ewing, 2009; Sadorsky, 2012; Arouri et al., 2012; Singh et al., 2010; He and Chen, 2011; Yilmaz, 2010; Syllignakis and Kouretas, 2011). Various empirical methodologies have been applied in these studies, including the use of a multivariate generalized autoregressive conditional heteroscedasticity model (MGARCH) to analyze the relationship between economic and political uncertainty on the conditional volatility of financial variables (Fornari et al., 2002). Singh et al. (2010) employed the vector autoregressive-generalized conditional heteroscedasticity model (VAR-GARCH) to examine time spillovers of volatility between emerging and developed stock markets. The relationship between equity and oil markets has become a focal point for both market participants and researchers (e.g., Arouri et al., 2012; Chang et al., 2013; Ewing and Malik, 2016; Sadorsky, 2012). With the heightened global integration between oil and financial markets and the substantial

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