

Financial Integration and Volatility Decay: Analyzing Equity and Bond Markets of G5 Nations Using the GARCH Approach

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ABSTRACT

This study examines the financial linkages of equity and bond markets of the Group of 5 (G5) economies—USA, China, Germany, India, and Japan—through their volatility patterns based on the "Generalized Autoregressive Conditional Heteroskedasticity" GARCH (1,1) model. Volatility clustering in financial time series is well-known, but cross-sectional persistence differences across asset classes within the same economy are not. This research focuses on the decay in volatility ($1 - \alpha - \beta$) to assess how quickly market shocks dissipate across equity and bond indices. Daily closing prices from April 2011 to September 2024 were transformed into log returns, and stationarity and heteroskedasticity were confirmed through ADF and ARCH-LM tests. The results show consistent volatility clustering across markets and asset classes. Importantly, relative volatility in both equities and bonds declined similarly in each country, indicating a qualitatively high degree of cross-asset integration. These findings suggest that both asset classes behave similarly in response to macroeconomic shocks, which reduces the benefits provided by cross-asset diversification during times of systemic risk. This study emphasizes how crucial volatility decay is to portfolio design alongside what it means for investors and policymakers who wish to understand how assets behave in the face of uncertainty.

Keywords: Financial Integration; Macroeconomic Shocks; Financial Market; G5 Nations

JEL Classification: G12, G15

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