

The Effects of an Asymmetric Momentum Threshold on the Basis Volatility – Tranquil versus Turbulent Periods

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This study explores the differential impacts of unexpected residual relative to momentum threshold on the basis volatility, and attempts to construct a hybrid momentum threshold GARCH econometric model (HMTAR-GARCH model) by examining two issues. The first issue is to review whether the proposed HMTAR-GARCH model is superior to the traditional TAR-GARCH model by studying the basis volatility prediction and to solve the inefficiency problem of separate estimation when using TAR or MTAR models. The second issue is to improve the limitations of traditional GJR-GARCH model by designing an HMTAR-GARCH model with two random thresholds and to carry out a three-layer do-loop procedure for simulating and testing the algorithm with random thresholds. The empirical result shows that the newly proposed model is superior to the GJR-GARCH model and could better capture the historical residual-shock feedback effects of asymmetry and nonlinearity derived from the inter-period basis volatility. This finding might help basis volatility forecasting and arbitrage investment decisions, especially during severe market fluctuation periods (for example, the financial tsunami period).

Key Words: Basis, Volatility, Asymmetric Effect, HMTAR-GARCH Model.

「政策與管理意涵」

本研究探討基差波動度受到未預期殘差相對於動能門檻之差異影響效果，建構一個新的混合動能門檻自我迴歸模型(HMTAR-GARCH Model)，以改善傳統 GJR-GARCH 模型之限制，並解決個別估計 TAR 及 MTAR 模型，所產生模型估計效率性不佳的問題。實證結果顯示此新模型能更有效地偵測出殘差資訊對基差波動度之不對稱和非線性影響關係，有助於在市場高震盪期間(例如金融海嘯期間)之基差波動度預測及套利投資決策。

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不對稱動能門檻效應對基差 波動度之影響 —市場平穩與震盪期間之比較

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本研究探討基差波動度受到未預期殘差相對於動能門檻之差異影響效果，並試圖建構一個新的混合動能門檻自我迴歸模型(HMTAR-GARCH Model)來檢視兩個議題。第一個議題是藉由基差波動度預測之研究，檢視本研究所設計之 HMTAR-GARCH 模型，是否優於過去傳統的 TAR-GARCH 模型，並解決個別估計 TAR 及 MTAR 模型，所產生模型估計效率性不佳的問題。第二個議題是試圖新創一個 HMTAR-GARCH 雙隨機門檻模型，並進行三層迴圈隨機門檻之模擬演算和測試，以改善傳統 GJR-GARCH 模型之限制。實證結果顯示新建構的模型優於傳統 GJR-GARCH 模型，且此新模型能更有效地偵測出殘差資訊對基差波動度之不對稱和非線性影響關係，有助於在市場高震盪期間(例如金融海嘯期間)之基差波動度預測及套利投資決策。

關鍵詞：基差、波動度、不對稱效果、混合動能門檻自我迴歸模型。

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