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# A bivariate Markov regime switching GARCH approach to estimate time varying minimum variance hedge ratios

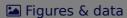
Hsiang-Tai Lee & Jonathan K. Yoder 

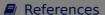
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### **Abstract**

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Essential Only To solve the GARCH

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BEKK-GARCH is not statistically significant for either data set at conventional confidence
levels.
Notes
$^1$ Alizadeh and Nomikos ( $2004$ ) also propose a Markov regime switching approach
(Hamilton, <u>1989</u> ) for hedging stock indices. Instead of estimating the hedge ratio by
estimating the conditional second moments as all GARCH methods do (including RS-
BEKK-GARCH), they treat the hedge ratio as a time-varying regression coefficient, which
conditions on the state of market volatility with transition probabilities a function of
lagged time-varying basis and estimate the coefficient directly. The rationale behind
their model is that the dynamic relationship between spot and futures returns, and
hence the hedge ratio, can be characterized by regime shifts (Sarno and Valente,
2000). Other articles that apply regime-switching models to financial data include
Schaller and Van Norden ( <u>1997</u> ), Katsimi ( <u>2000</u> ), Caporale and Spagnolo ( <u>2004</u> ), Kuo
and Lu ( <u>2005</u> ) and Kasuya ( <u>2005</u> ), among others.

<sup>2</sup> For ease of comparison and reference, we follow the notation of White (2000) as closely as possible in this section. The values referred to be the symbols f and R in this section are unrelated to those in previous sections of this article.

 $^3$  To apply the stationary bootstrap method of Politis and Romano (1994), we set the x ation. smoothi Testing 1 e differences is relativ the hedged hedge portfolio hedge method /hite's meth realit ıg performa

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