

Co-Movement and Volatility Analysis of Sugar: Spot and Future

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Abstract— Co-movement and volatility analysis between variables are an important considerations in investment related decisions. The relationships of spot and two future priced sugar contracts are examined against the currency and main index of Brazil, China, Colombia, India, Indonesia, Mexico, Pakistan, Philippines and Thailand. Sugar which is produced in many countries around the world is the world's largest crop by production in metric tons. Co-movement and volatility analysis includes correlation, vector autoregression, Johansen cointegration test, impulse responses, pairwise Granger causality test and three GARCH models. The three GARCH models are the GARCH, GJR-GARCH and EGARCH models. A long run relationships exists between the three sugar variables, the three sugar variables and the Shanghai SE A Share Index; as well as between the tree sugar variables and the Thai Bhat. Co-movement results indicate that unidirectional and bidirectional relationships exist among the variables. A bi-directional relationship exists between sugar spot and CSCE sugar 11 future as well as between sugar spot and Liffe sugar future. Sugar spot and sugar future have a uni-directional relationship with the indices of Bangkok, Indonesia, Philippines, China, and India. Sugar spot and sugar futures Granger causes the currencies of Brazil, Colombia, Indonesia, Philippines, Thailand and India. The volatility analysis done shows that the AIC and SIC results of the GARCH models which indicates that the original GARCH model fits the data the best for sugar spot and the CSCE sugar 11 future. The EGARCH model fits the data the best for Liffe sugar future.

Index Terms— Causality, Cointegration, co-movement, GARCH, Sugar, volatility.