

RELATIONSHIP BETWEEN CRUDE OIL PRICE WITH FOREIGN EXCHANGE RATES AND INTEREST RATES OF SOUTH EAST ASIAN COUNTRIES

(Hubungan antara Harga Minyak Mentah dengan Kadar Pertukaran Asing serta Kadar Faedah Asia Tenggara)

HUMAIDA BANU SAMSUDIN* & YAP CHIOU SHIN

ABSTRACT

This study measures long run relationships and short run relationships between crude oil price, foreign exchange rates and interest rates by using monthly data of Brent crude oil prices with foreign exchange rates and interest rates for seven Southeast Asian countries from January 2010 to October 2017. The long run relationship is tested using the Johansen cointegration test, while the short run relationship is tested using the Granger causality test. The Vector Error Correction Model (VECM) is built for the country with cointegration between variables. The results of the study show that cointegration is only present for Vietnam and not for six other countries. The Granger causality test found that no causal relationship could be detected between crude oil prices and foreign exchange rates for all tested countries. Unidirectional causalities detected in this study are from interest rates to foreign exchange rates for Brunei and Vietnam and from crude oil prices to Singapore's interest rates

Keywords: crude oil price; foreign exchange rate; interest rates; Johansen cointegration; Granger causality

ABSTRAK

Dalam kajian ini diukur hubungan jangka panjang dan hubungan jangka pendek antara harga minyak mentah, kadar pertukaran asing dan kadar faedah dengan menggunakan data bulanan harga minyak mentah Brent dengan kadar pertukaran asing serta kadar faedah bagi tujuh negara Asia Tenggara dari Januari 2010 hingga Oktober 2017. Hubungan jangka panjang diuji menggunakan ujian kokamiran Johansen, manakala hubungan jangka pendek diuji menggunakan ujian kebersebaban Granger. Model vektor pembetulan ralat (VECM) dibina bagi negara yang memiliki hubungan kokamiran antara pemboleh ubah. Keputusan kajian menunjukkan hubungan kokamiran hanya wujud bagi negara Vietnam dan tidak bagi enam negara yang lain. Ujian kebersebaban Granger mendapati tiada hubungan kebersebaban dapat dikesan antara harga minyak mentah dengan kadar pertukaran asing bagi semua negara yang diuji. Hubungan kebersebaban sehalu yang dikesan dalam kajian ini adalah dari kadar faedah kepada kadar pertukaran asing bagi negara Brunei dan Vietnam serta dari harga minyak mentah kepada kadar faedah Singapura.

Kata kunci: harga minyak mentah; kadar pertukaran asing; kadar faedah; kokamiran Johansen; kebersebaban Granger

References

- Akaike H. 1973. Information theory and an extension of the maximum likelihood principle. In *Proc. 2nd International Symposium on Information Theory*, pp. 267-281.
- Brahmasrene T., Huang J-C. & Sissoko Y. 2014. Crude oil prices and exchange rates: Causality, variance decomposition and impulse response. *Energy Economics* **44**: 407-412.
- Buetzer S., Habib M. M. & Stracca L. 2016. Global exchange rate configurations: Do oil shocks matter? *IMF Economic Review* **64**(3): 443-470.

- Dawson J.C. 2007. The effect of oil prices on exchange rates: A case study of the Dominican Republic. *Undergraduate Economic Review* **3**(1): 23-30.
- Golub S. 1983. Oil prices and exchange rates. *The Economic Journal* **93**: 576-593.
- Johansen S. & Juselius K. 1990. Maximum likelihood estimation and inferences on cointegration with approach. *Oxford Bulletin of Economics and Statistics* **52**(2): 169-209.
- Krugman P. 1983. Oil and the dollar. In Bhandari J. & Putnam B. (eds.) *Economic Interdependence and Flexible Exchange Rates*: 179-190. Cambridge: MIT Press.
- Mohd Shahidan S., Nor Ermawati H. & Hafizah A.R. 2013. The effects of oil price changes and exchange rate volatility on unemployment: Evidence from Malaysia. *International Journal of Research in Business and Social Science* **2**(4): 72-83.
- Pershin V., Molero J. C. & Gracia F. P. 2016. Exploring the oil prices and exchange rates nexus in some African economies. *Journal of Policy Modeling* **38**: 166-180.
- Suharsono A., Aziza A. & Pramesti W. 2017. Comparison of vector autoregressive (VAR) vector error correction models (VECM) for index of ASEAN stock price. In *AIP Conference Proceedings 1913 (020032)*, pp. 1-5.
- The World Factbook. 2018. World. <https://www.cia.gov/library/publications/the-world-factbook/geos/xx.html> (1 April 2018).
- Tiwari A. K. & Albulescu C. T. 2016. Oil price and exchange rate in India: Fresh evidence from continuous wavelet approach and asymmetric, multi-horizon Granger-causality tests. *Applied Energy* **179**: 272-283.

Department of Mathematical Sciences
Faculty of Science and Technology
Universiti Kebangsaan Malaysia
43600 UKM Bangi
Selangor DE, MALAYSIA
E-mail: humaida@ukm.edu.my, p90312@siswa.ukm.edu.my*

*Corresponding author