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Impact of Oil Price and Its Volatility on CPI of Pakistan: Bivariate EGARCH Model

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Abstract

Oil is becoming as an important determinant which affects the macroeconomic activities in unusual patterns among various parts of the world particularly since the first oil crisis in 1973. Petroleum products are recognized to be the essential source of energy and power throughout the world and gaining massive importance as a tool for survival and security of developed nations. The current research study targets to explore the impact of oil price and its volatility on CPI in case of Pakistan from the period 1980:M1 to 2018:M12. In this study we used the financial time series econometrics techniques; first applied the Box-Cox transformation on the data which suggested log transformation is required for all series. As data used will be monthly, Beaulieu and Miron (1992) seasonal unit root test is applied to test stationarity of the data. All variables hold unit root at zero frequency and become stationary at first difference. Further to confirm if co-integration relationship exists between the variables, we have estimated Engle and Granger (1987) two-step method. Finally Bivariate EGARCH model is applied to scrutinize the impact of oil price volatility on CPI. This model is estimated by using Maximum Likelihood Method proposed by Bollerslev and Wooldridge (1992). The results of Bivariate EGARCH model concluded that positive relationship between oil prices and CPI. We have also found the asymmetrical impact of news on the change in consumer price index. In case of Pakistan, it is positive and significant statistically, which suggests that positive news tends to intensify the CPI volatility more than the negative news.

Keywords: Oil prices, Volatility of oil prices, CPI, Box Cox Transformation, Co-integration, EGARCH Model, Pakistan.