ESSAYS ON FLUCTUATIONS OF THE CRUDE OIL PRICE AND THE ECONOMY

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ABSTRACT

This dissertation studies two major topics related to the crude oil price and the economy. The first topic studied is about the relationship between speculation and the crude oil price and the related implications on the macroeconomic growth and inflation. We use a structural vector autoregression (VAR) model to decompose the shocks of the crude oil price and use the gold price as a proxy for the speculative information. Our results show that speculative information plays a very important role in driving crude oil price shocks; it accounts for about 20% of the variation of the oil price. Furthermore, we show that speculative shocks to the crude oil price are correlated to future macroeconomic downturns. We also show that speculative shocks may create inflation pressure.

The second topic is about the relationship between the oil price volatility and the US stock market. It includes two subtopics: i) the volatility spillovers between the crude oil market and the US stock market and ii) the relationship between oil price volatility and real stock returns on the US market. We use a generalized autoregressive conditional heteroskedasticity (GARCH) specification to model the volatility on both the oil and stock markets and then utilize an extension of the GARCH-M (GARCH in mean) vector autoregression (VAR) model to capture the volatility spillover relationship between the two markets and the relationship between the volatility of the oil price and stock returns at the same time. Further, we detect a structural change of the oil price-stock returns relationship near the middle of 1987. A unidirectional volatility spillover from the stock market to the oil market is found to be statistically significant before the break, while a negative relationship between oil price volatility and the conditional mean of stock returns is more pronounced afterwards.