

# TIME-VARYING OIL PRICE VOLATILITY AND MACROECONOMIC AGGREGATES: WHAT DOES THEORY SAY?

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**ABSTRACT.** We illustrate the theoretical relation between output, consumption, investment, and oil price volatility in a real business cycle model. We estimate a stochastic volatility process for the real price of oil using the Particle filter and Bayesian methods over the period 1986-2011 and use the estimated process in an otherwise standard real business cycle model. A third order approximation of the model is used to investigate the effects of time-varying oil price volatility on macroeconomic aggregates. For realistic calibrations, an increase in volatility produces a temporary decrease in the spending of durable goods but counterfactual increases in investment spending and real GDP. The increases in investment and GDP, which are not in line with empirical evidence on the effects of increases in oil price volatility, are driven by precautionary savings motives. We demonstrate that the model is able to qualitatively match empirical evidence once multi sectors or irreversible investment decisions are introduced.

**Keywords:** oil price, stochastic volatility, durable goods

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