Discussion of "Time-varying Oil Price Volatility and Macroeconomic Aggregates: What Does Theory Say"

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- Purpose: Expose the responses of consumer and producer decisions to an increase in oil price volatility.
- Put oil in the production function, discuss the effect of elasticity of complementarity/substitution for oil and other inputs in production.
- Put oil in the utility function along with durable goods, discuss the effect of elasticity of substitution between oil and durables.
- Reasonable calibrations:
  - Investment and output rise in response to higher uncertainty.
  - Output falls only when focusing on durables (no capital).

- Increase in oil price uncertainty $\rightarrow$ increase in income uncertainty.
- Risk averse consumers:
  - Increase precautionary savings (increase investment)
  - Decrease consumption
  - Increase labor?
- Counter-intuitive result: increase in investment and output.

- Not discussed in the paper, but it is evident from FOCs.
- Increase in oil price uncertainty $\rightarrow$ increase in MP_K uncertainty.
- This increases uncertainty about future income stream ($r_{t+1}K_{t+1}$) from renting capital.
- Risk averse behavior = decrease in investment.

- Saving supply channel outweighs investment demand channel.
- Model: little inherent risk to purchasing capital.
  - Only uncertainty about r_{t+1}.
  - Capital can still be costlessly be converted to consumption.
- Make investment in capital risky.

Investment is Risky

- Capital can only be imperfectly (or not at all) converted to consumption
- Diminishes saving supply channel.
- Investment demand falls, output falls.

Literature

- Theory: Bernanke (QJE, 1983)
- Statistical and economic significance: Chirinko and Schaller (JME, 2009)
- Endogenous time-varying volatility of oil prices and irreversible investment in *oil production*: Kogan, Livdan, and Yargon (Journal of Finance, 2009)

Signal Extraction?

- Paper assumes a shock to the volatility of a shock is perfectly observable.
- Hamilton's (1996) point?
  - Decreases in oil prices were often "market corrections."
  - These became signals of an increase in volatility.
- Expectations constructed as they are, don't expect to match shape of empirical IRFs.
- Perhaps this is another paper.