Discussion of
Oil and macroeconomic (in)stability
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Motivation

• The macroeconomic effects of oil shocks

• Aggregate production function:

\[ Y_t = A_t O_t^\phi (K_t^\alpha L_t^{1-\alpha})^{1-\phi}, \]

and expenditure on oil \( \phi \approx 4\% \) of GDP

• Hulten’s theorem: the local impact of oil price increases on output is \( \phi \). Under CD, \( \phi \) is the exact global elasticity
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- Puzzle #1: Why such a large response to oil shocks in 1970s?
- Puzzle #2: Why a much smaller response to similar oil price increases in 2000s?
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• Extra question: is great moderation due to small oil shocks?
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  - Issue: oil expenditure share in 1970s should have been $> 30\%$
Possible Explanation 2

• Oil shocks are not “exogenous”:
  1. Price of oil decreases due to demand and supply factors, and the response of the economy can be different
  2. Even for supply shocks, the macro policy response can be very different
  3. Also volatility of the oil shocks can be endogenous

• Was the nature of the oil shock different in 2000s?
• Was the monetary policy response to the oil shocks different in 2000s?
Regime-switching Model

1. Productivity process:
\[ a_t = a_{t-1} + g_a + \sigma_a(s_t) \epsilon_t \]

- Vol. of the markup shock (Phillips curve shifter): \( \sigma_{\pi}(s_t) \approx 0 \)
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2. Volatility of oil shocks: \( \sigma_{Oil}^t(s_t) \) increases from 7% to 31%
   Non-structural VAR for oil prices and World GDP
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3. Taylor rule:
   \[ i_t = \rho_i i_{t-1} + (1 - \rho_i)\left[ \kappa_\pi(s_t) \pi_t + \kappa_y(s_t) y_t \right] + \varepsilon_t \]
Estimated Regimes

- Identification issue: Does the high volatility regime capture the breakdown of the model structural relationships?
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Are Oil Shocks about Second Moments?

Figure 1. Percentage change in the real price of oil (WTI)

Second moment oil shocks versus...
Are Oil Shocks about Second Moments?

Figure: Log real oil price