“Lower Oil Prices and the U.S. Economy: Is This Time Different?”

Discussion by James D. Hamilton, UCSD
World oil production surged 2013-2014 after long period of stagnation

Monthly, in 1000 b/d. Excludes natural gas liquids, refinery process gains, and biofuels
Why did oil price fall in 2014-2015?

(1) Technological advances in fracking
   • U.S. oil production up 3.5 mb/d Jan 2012 to March 2015

(2) Postwar investments in Iraq
   • Production up 1.2 mb/d since Jan 2013

(3) Iran sanctions lifted
   • Production up 1 mb/d since Jan 2013

(4) Signs of weak world economic growth (Europe, China)
• Frictionless neoclassical model predicts (1)-(3) should unambiguously be good news for the U.S. economy
  • U.S. imports 6 million more barrels of crude oil and refined products than it exports every day
• Resources devoted to domestic oil production should shift to where they are more productive
• But frictionless neoclassical model is not a good description of short-run economic fluctuations
• Asymmetry hypothesis
  • Oil price increase slows U.S. economic growth
  • Oil price decrease may have no effect
• Costly to reallocate specialized resources
  • Hamilton (1988); Bresnahan and Ramey (1993);
• Empirical evidence of asymmetry
  • U.S. macro data [Loungani (1986); Mork (1989); Lee, Ni and Ratti (1995); Balke, Brown, and Yücel (2002); Hamilton (2003); Forderer (1996); Elder and Serletis (2010); Carlton (2010); Ravazzolo and Rothman (2010)]
  • U.S. micro data [Davis and Haltiwanger (2001); Herrera, Lagalo, and Wada (2011)]
  • International data [Cuñado and Pérez de Gracia (2003), Jiménez-Rodríguez and Sánchez (2005); Engemann, Kliesen and Owyang (2011); Kim (2012); Jo (2014)]
Economic effects of oil price decrease

• Sectoral imbalance interpretation
  • Some sectors see spending ↑ when oil price ↓
  • Other sectors see spending ↓ when oil price ↑
  • Could be close to net wash for whole economy if costly to reallocate resources

• Baumeister and Kilian interpretation
  • Consumption spending ↑ 2014-2015
  • Investment spending ↓ 2014-2015
  • Was close to net wash for whole economy
What were key frictions in 2014-2015?

• Not in reallocating labor
  • Unemployment no different in oil-producing states
  • Not many workers directly in oil and gas
  • But industry has big footprint
  • Feyrer, Mansur, and Sacerdote (2015): fracking boom increased U.S. employment by 725,000 and reduced unemployment rate by 0.5%

• Even if underutilized labor was not a factor in 2014-2015, it still matters a lot in the effects of oil price increase
  • Unemployment in auto and related industries
Key friction was reallocating capital

• In frictionless neoclassical model, favorable oil supply shock should ↑ aggregate MPK and therefore ↑ aggregate investment

• But it does ↓ MPK in the U.S. oil-producing sector

• Empirical observation: lower investment in oil production was not matched by higher investment elsewhere

• Oil-sector capital was not destroyed, but it is highly specialized and is not currently productive
• Interesting example from the paper: transportation sector was actually hurt by lower oil prices
• Reason: rail transport had highly specialized capital for shipping oil
• Specialized rail transport capital is underutilized in current environment
How surprising is the net result?

Hamilton (J. Econometrics, 2003)

\[ y_t = \text{real GDP growth for quarter } t \]

\[ p_t^\# = \text{oil price increase relative to 3-year max} \]

\[ y_t = \alpha_0 + \sum_{j=1}^{4} \beta_j y_{t-j} + \sum_{j=1}^{4} \gamma_j p_{t-j}^\# \]

estimated for \( t = 1949:Q2 - 2001:Q3 \)
Is this time different?

• Using the coefficients in equation (3.8) from that paper exactly as published with no updating
  • Did a good job describing data observed through 2008:Q4 (Hamilton, BPEA 2009)
  • Did a good job describing data observed through 2010:Q1 (Hamilton, Macro Dynamics 2012)
  • Would have predicted that oil price decline of 2014-2015 would have zero net effect on U.S. real GDP growth
• Oil-related investment decline in 1986 was a reason that oil price drop then had little stimulatory effect (Edelstein and Kilian, 2009)
Conclusions

• To interpret economic fluctuations, have to get away from frictionless neoclassical model

• The nature of the key frictions is technological, not nominal

• This view of the economic effects of oil prices is consistent with historical evidence as well as what we observed in 2014-2015