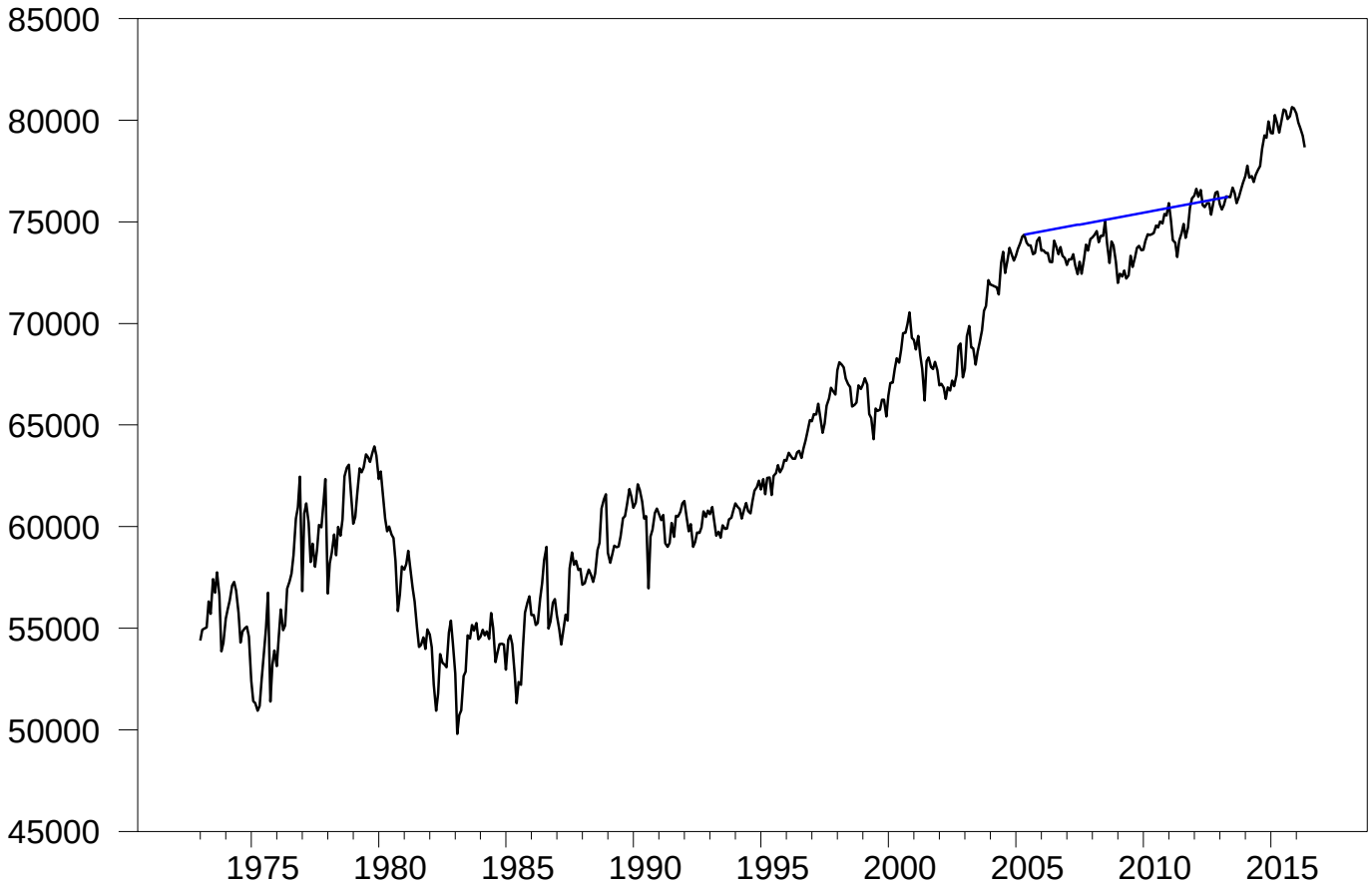
"Lower Oil Prices and the U.S. Economy: Is This Time Different?"

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); Ferderer (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 = real GDP growth for quarter t

$p_t^{\#}$ = 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