

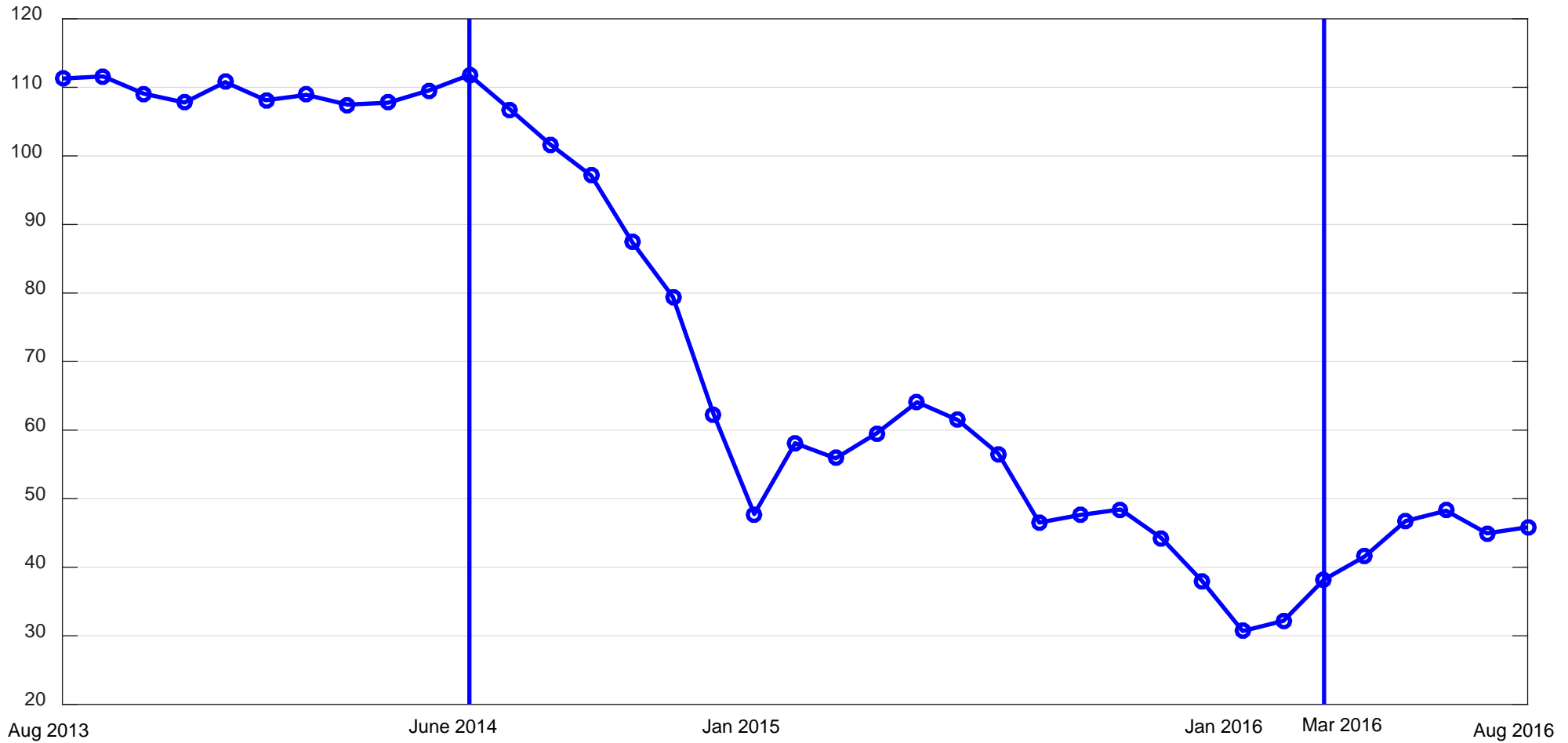
Lower Oil Prices and the U.S. Economy: Is This Time Different?

Christiane Baumeister
University of Notre Dame
CEPR

Lutz Kilian
University of Michigan
CEPR

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Brent Price of Crude Oil: 2013-2016



A Look at the Facts

	2012Q1-2014Q2	2014Q3-2016Q1
Real GDP	1.8	2.2
Private Consumption	1.9	2.9
Nonresidential Investment	5.1	1.5
Exports	3.2	0.7
Imports	2.3	2.9

How Does an Unexpected Oil Price Decline Affect the Economy?

- Reduction in firms' costs of production

Industry-level analysis of excess stock returns:

- Oil-intensive sectors did at best only marginally better
- Sectors sensitive to consumer demand did far better than average

- Changes in spending

- Consumption
- Investment
- Petroleum trade balance

How Much Consumption Stimulus?

- Oil price decline fully passed through to retail gasoline prices
- Regression model:

$$\Delta c_t = \alpha + \sum_{i=1}^6 \beta_i \Delta c_{t-i} + \sum_{i=0}^6 \gamma_i PP_{t-i} + u_t$$

- Cumulative effect of purchasing power shocks on U.S. real private consumption since June 2014: **1.2%**

Breakdown:

1. Operating cost effect: 0.15%

Increase in purchases of new motor vehicles of 6.7% weighted by the share of 2.3% in total consumption

2. Discretionary income effect: 1.05%

How Much Consumption Stimulus?

- Back-of-the-envelope calculation
 - The share of gasoline expenditures in total expenditures was 3.17% in June 2014.
 - Crude oil only accounts for a fraction of the cost of gasoline, so the oil price drop of 66% led to a drop of 44.94% in real gasoline prices.
 - Gasoline consumption increases after price drop given a price elasticity of gasoline demand of -0.37 (Coglianese et al. 2016)

$$\underbrace{(1 - 0.0317)}_{\text{Other items}} \times \underbrace{1 + 0.0317}_{\text{Fuel}} \times \underbrace{(1 - 0.4494)}_{\Delta P^{gas}} \times \underbrace{(1 + 0.37 \times 0.4494)}_{\Delta C^{gas}} = 0.9887$$

⇒ yields an increase in discretionary income of 1.13%

Did Other Forces Hold Real GDP Growth Back?

Asymmetry hypothesis:

- Oil price increases are unambiguously bad for growth
- Oil price decreases may have no effect since stimulus is offset by

1. *Costly reallocation of resources*

(Hamilton 1988, Bresnahan and Ramey 1993)

Evidence:

- Decline in the share of jobs in mining and logging
- Unemployment rate declined in most oil-producing states
- Increase in labor force in 4 of the 7 oil-producing states

2. *Higher uncertainty about future oil and gasoline prices*

(Bernanke 1983, Pindyck 1991)

Evidence:

- Increase in consumers' uncertainty about gasoline prices
- Better current conditions for buying a vehicle in late 2014
- Sales of less fuel-efficient light trucks increased faster than overall vehicle sales

How Much Does the Shale Oil Sector Matter?

- U.S. domestic crude oil production increased as a result of the fracking revolution since late 2008
- How different would growth have been without the oil sector?

	2014Q3-2015Q4
Real GDP (Value Added)	2.4
Excluding Mining Sector	2.4
Mining Sector	2.4
 Real GDP	 2.4
Excluding Oil-Producing States	2.3
Oil-Producing States	2.7

Oil and Investment Spending

	2014Q3-2016Q1
Private Fixed Nonresidential Investment	1.5
Excluding Oil Investment	4.6
Oil Investment Only	-48.2

- Spillovers to investment in other sectors?
 ⇒ Only investment in railroad equipment
- Effect of reduced oil-related investment on real GDP growth

	2014Q3-2016Q1
Real GDP	2.2
Excluding the Change in Investment in Oil and in Railroad Equipment	2.6

Were There Other Structural Changes?

- Financial contagion

- Lending to shale oil producers exposed banks to oil price risks

⇒ No evidence that financial fragility slowed down growth

- Shift in consumers' behavior

- Instead of spending, consumers could use discretionary income to
 - pay off mortgage or credit card debt
 - increase their savings
 - acquire financial assets

⇒ No empirical support for these hypotheses

Effects of Shale Oil on Real GDP through the Petroleum Trade Balance

- Petroleum trade balance improved as exports of refined products were growing faster than oil imports

	2014Q3-2016Q1
Real GDP	2.19
Excluding the Change in the Petroleum Trade Balance	2.16

The Net Stimulus from Unexpectedly Lower Real Oil Prices

Component of Real GDP	Percentage of Cumulative Real GDP Growth (2014Q3-2016Q1)
Discretionary Income Effect on Private Consumption	+0.61
Operating Cost Effect on Private Consumption	+0.09
Oil-Related Private Nonresidential Investment	-0.62
Petroleum Trade Balance	+0.04
Net Stimulus	+0.12

Is This Time Different From 1986?

Overall, more similarities than differences

- U.S. real GDP growth relative to trend is similar
- Pattern of consumption and investment responses is similar

Differences:

- Recent oil price decline twice as large as in 1986
- Composition of investment
 - Now: stronger contraction of oil-related investment
 - 1986: both oil and non-oil investment declined
- Recent oil price decline reflected in part a global economic slowdown which also slowed growth of U.S. real exports