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

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This paper examines the effects on the U.S. economy of the big decline in oil prices in 2014-15. This is an important question and Baumeister and Kilian do a very nice job answering it. The authors conclude that there was little net stimulus. Here I elaborate on why I think they reached the correct conclusion.

Causes of the oil price decline.

Its helpful to begin by commenting on the causes of the dramatic decline in oil prices. Figure 1 documents that global production of crude oil was nearly stagnant from 2005 to 2013. This was a period when consumption of oil by China and other emerging economies was growing rapidly. With higher demand from emerging countries and not much growth in supply, the developed countries were forced to cut back on consumption. These forces kept oil prices around $100 a barrel for a number of years.

The situation changed dramatically with the strong growth in world oil production since 2013. The surge was led by the American fracking revolution, which propelled U.S. production up 3.5 mb/d between 2012:M1 and 2015:M3. U.S. production subsequently fell in response to falling oil prices. But this loss was more than made up for by a 1.2 mb/d increase from Iraq since 2015:M1 as postwar investments finally began to pay off and an additional 1 mb/d increase from Iran as sanctions were lifted. A final factor that contributed to the drop in oil prices is a slowdown in world economic growth since 2014, in particular concerns about the prospects for China and Europe.

Economic effects of the oil price decline.

One might have expected the first three developments just mentioned– the growth in U.S.,

Iraqi, and Iranian oil production– to be unambiguously good news for the U.S. economy. Even with the big gains from fracking, the U.S. is still a big net importer of oil, consuming 6 million more barrels of petroleum and petroleum products every day than we produce. If the U.S. develops new technologies for producing oil with fewer resources, or if Iraq and Iran are now willing to give us more oil in exchange for fewer goods from us, shouldn't that make us better off? True, cheaper foreign imports are bad news for U.S. oil producers. But in a frictionless neoclassical model, the resources that had been devoted to producing oil should now simply shift to other sectors where with the new terms of trade they would be even more productive.

However, there is a mountain of evidence that a frictionless neoclassical model does not do a good job at explaining short-run economic fluctuations. The experience since 2014 offers yet another illustration of why.

The effect of the oil price decline on consumption.

Let's begin by reviewing why we would expect the developments described above to lead to an increase in U.S. consumption spending. In a closed economy, an increase in the productivity of any sector (in this case, domestic oil production) should lead to an increase in total output. In addition, because demand for oil is price inelastic, it would also mean an increase in the share of income going to oil consumers and a decrease in the share going to oil producers. Fuel costs make up a significant fraction of expenditures for many low-income households, who have a much higher marginal propensity to consume than the owners of oil companies. Thus lower oil prices would lead to an increase in consumption spending even

if none of the oil was imported.

When oil is imported, the wealth gain associated with improved terms of trade provides an added reason we'd expect to see higher consumption. Furthermore, the marginal propensity to consume on U.S. goods and services is even lower for producers of foreign oil than for domestic producers.

There is moreover strong empirical confirmation of these effects. Edelstein and Kilian (2009) provided a detailed and convincing analysis of how the separate components of consumption spending responded historically to changes in energy costs. More recently, the development of huge high-frequency datasets of individual consumer behavior has helped us document these effects in great detail. Farrell and Greig (2015) examined debit and credit card transactions of 25 million Americans. They employed a difference-in-difference strategy, looking at how the change in total consumption spending following the big decline in gasoline prices differed between those who had previously been spending a lot on gasoline relative to those who had been spending very little. Gelman et al. (2016) used a related strategy to look at spending of over a million Americans who make their purchases using smart-phone apps. Both these studies found marginal propensities to consume out of windfall savings from lower gasoline prices near unity. Baumeister and Kilian provide a wealth of confirmation that the increase in consumption spending in 2014-15 that they attribute to lower oil prices is accurate and robust.

Reallocative frictions.

There is an old literature suggesting that despite the presence of the above effects, an oil

price decline might have little or no net stimulative effects on the economy. The argument was that while some sectors might see increased spending when oil prices decline, spending in other sectors would decline. Because productive resources can not costlessly relocate, the net effect on the economy could be close to a net wash. Hamilton (1988) demonstrated how this could happen in a dynamic stochastic general equilibrium model, and Bresnahan and Ramey (1993) showed in detail how such factors contributed to the propagation of the oil price shocks in the 1970s.

Baumeister and Kilian try to argue that this is not what we saw in 2014-15. Yet to me their basic story does not seem that different from the traditional account. Baumeister and Kilian's conclusion is that while some sectors (namely consumption goods) saw increased spending, other sectors (oil-specific investment) saw a decrease, with the result that the net effect on the economy was close to a net wash.

Baumeister and Kilian make a convincing case that frictions in reallocating labor out of domestic oil production did not seem to play a big role, insofar as we saw significant declines in unemployment in most of the oil-producing states. I am not sure how this observation reconciles with Feyrer, Mansur, and Sacerdote's (2015) demonstration that the fracking boom had earlier increased U.S. employment by 725,000 and reduced the unemployment rate by 0.5%. Nevertheless, I agree that if labor reallocation played a major role in 2014-15 it should have shown up in the kinds of statistics that Baumeister and Kilian looked at. But even if frictions in reallocating labor did not contribute to what we saw in 2014-15, Hamilton (2009) reviewed abundant evidence that unemployed auto workers have historically been an

important factor in why oil price increases lead to slower U.S. economic growth.

On the other hand, frictions in reallocating capital seem to be a central part of what happened in 2014-15. In the absence of frictions, a drop in the price of oil should raise the aggregate marginal product of capital and should therefore lead to an increase rather than a decrease in investment. But of course the reality is that capital in place is not a homogenous lump of stuff that can be costlessly redirected to new activities. Baumeister and Kilian note for example the 75% drop in utilization of drilling rigs and 30% drop in rail transport of petroleum and products in the U.S. since the Fall of 2014, two examples of expensive capital that had been extremely productive three years ago but is no longer contributing to domestic value added. I take a central lesson from their paper to be that costs in reallocating specialized capital are a key reason why the drop in oil prices was not a big stimulus for the U.S. economy.

On nonlinearity of the effects of oil prices on economic activity.

This conclusion is consistent with a large earlier empirical literature that found that while oil price increases were often followed by significantly slower GDP growth, oil price decreases appear to have little net effect. This was the finding of a number of studies of aggregate U.S. data, including Loungani (1986), Mork (1989), Lee, Ni and Ratti (1995), Balke, Brown, and Yücel (2002), Hamilton (2003), Ferderer (1996) and Elder and Serletis (2010). Ravazzolo and Rothman (2013) confirmed this with a real-time out-of-sample forecasting exercise, and it's also been demonstrated using U.S. micro data (see among others Davis and Haltiwanger (2001) and Herrera, Lagalo, and Wada (2011)). Studies finding a

nonlinear relation in international data include Cuñado and Pérez de Gracia (2003), Jiménez-Rodríguez and Sánchez (2005), Engemann, Kliesen and Owyang (2011), Kim (2012) and Jo (2014). Hamilton (2009) demonstrated that the coefficients in equation (3.8) exactly as reported in Hamilton (2003) did a good job at predicting data subsequently observed through 2008:Q4, while Hamilton (2011) showed that the same relation also held up quite well in data through 2010:Q1. And I can't resist pointing out that same equation would have predicted that the effect of the oil price decline of 2014-15 on U.S. GDP growth would have been exactly zero– essentially the same conclusion that Baumeister and Kilian arrive at in their detailed study.

I was a little surprised to see the paper dismiss this large earlier literature with the statement that "the evidence thus far has not been supportive of models implying strongly asymmetric responses at the aggregate level." All but one of the handful of papers that Baumeister and Kilian cite here rely on the test for linearity developed by Kilian and Vigfusson (2011), which Hamilton (2011) showed has less power than the simple and direct regression tests used by other researchers. My paper also offers a detailed synthesis and reconciliation of the conflicting results.

My own reading of the literature was that the consensus was that we should not have expected to see a big boost to the U.S. economy from the drop in oil prices in 2014-2015. I view Baumeister and Kilian's analysis of that episode as adding further evidence consistent with that consensus. I am in complete agreement with their conclusion that this time really wasn't all that different.

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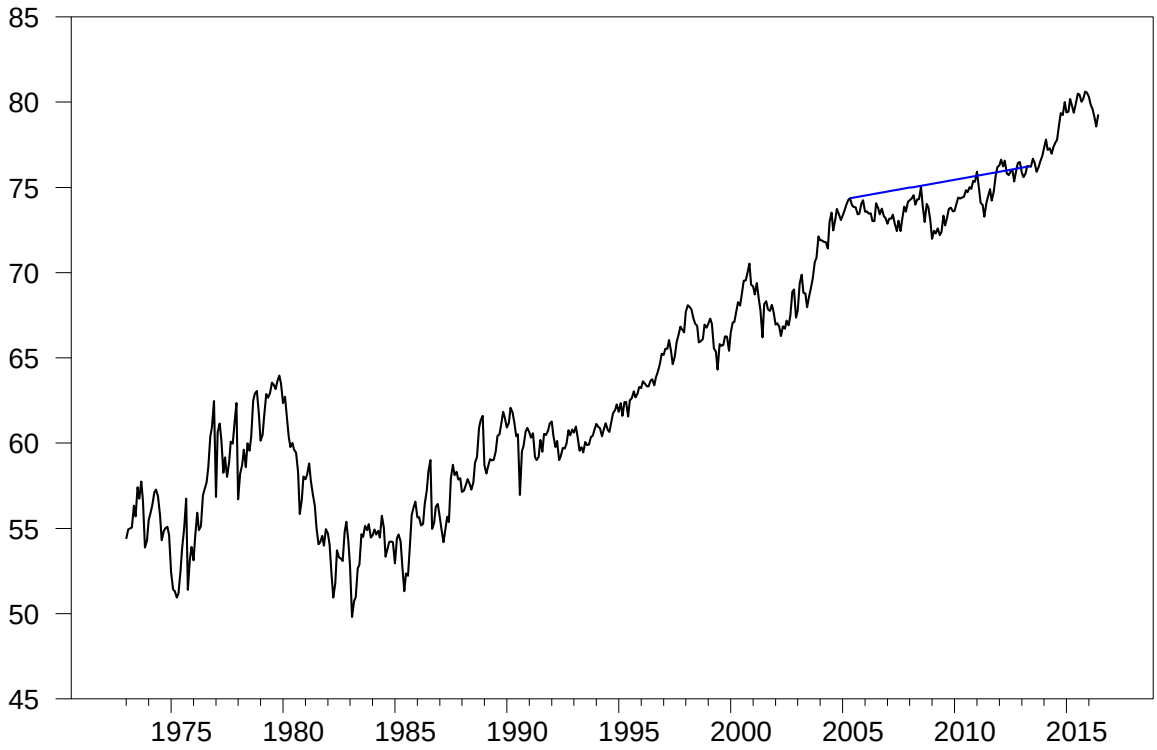
Figure 1. World field production of crude oil.



World field production of crude oil in million barrels per day, monthly 1973:M1-2015:M6. Excludes natural gas liquids, refinery process gains, and biofuels. Line segment denotes trend 2005:M5-2013:M5. Data source: Energy Information Administration, Monthly Energy Review, September 2016, Table 11.1b.