

Brief Response to Referee Report 1

I would like to thank the referee for taking the time and effort to read through the paper. In general I found the comments very helpful, and I believe they highlight specific areas where I can improve the analysis and/or explanation. Below I respond to the main points.

1. *The paper mentions a few times (without reference) that standard macro-economic models find that a 10 percent decrease in the real oil price produces a roughly 0.2 percent increase in real GDP. However, the paper never specifies how much that estimate has changed.*

Good point. I'll add a footnote explaining where that estimate comes from. On the second point, I do come back to how much the estimate has changed towards the end of the paper in the section entitled "Back of the Envelope Calculation":

"But there is little doubt that it is smaller now than it was 5-10 years ago. My best estimate is that it is close to zero, if not negative."

I would guess the referee wants a more specific answer. Frankly, I don't have one, given the admitted uncertainties around the calculations. And this is why I try to use ranges throughout the paper.

2. *In fact, "Oil Prices and the U.S. Economy" ends up (p. 10) using a multiplier for consumer spending that is independent of the level of consumer debt, thus excluding the impact of high debt levels from the results.*

I agree that the impact of high debt levels is not explicit—but the multiplier used for consumer spending does in fact include the impact of high debt levels (and the other factors I discuss). It is just implicit. I should make this clear in the text.

But I think the point the referee is making is about that link; why make the argument if you cannot link it directly? Because I am attempting to get a general idea of what those impacts might be, not necessarily to specify that debt causes consumer spending to go down by x% or access to credit reduces it by y%.

3. *First, the discussion on page 4 assumes that a multiplier for such production defined as the sum of gross oil and gas output plus the inputs to that industry from other industries. That is wrong...Adding inputs to gross output is double-counting. Instead, the multiplier equals the direct impact on production (usually demand) plus indirect impacts as workers in the directly-affected industries spend their increased income and firms in those industries increase investment.*

If I understand the referee's point correctly, I believe this has been taken care of in calculation of the multiplier (outlined as the second step in footnote 8). I apply the method of Steinbeck (2004) to link the demand-driven multipliers with changes in gross output, which should account for any double-counting.¹

¹ Steinbeck Scott R. (2004). "Using Ready-Made Input-Output Models to Estimate Backward-

4. *Second, the calculations of the real change in oil and gas production in 2009 and 2015 are not only incorrect but are of the wrong sign...In 2009, nominal value added fell by \$96 billion, but real value added increased by \$44 billion; real value added then fell in 2010... If those calculations of real output were done correctly, the paper would find that, not only does the drop in oil and gas production in 2015 not offset the rise in consumption, as claimed, but that oil and gas production actually augment the rise in consumption.*

I agree with the referee that the method I used for deflation is not the proper one, and will consider a different approach—but I think the issue is one of magnitude not sign.

The reason I feel this way is illustrated by the remainder of the comments. While it is true that BEA's measure of real value added rose from 2008 to 2009, and then fell from 2009 to 2010, oil and gas production actually across all of those years. So I don't think it necessarily follows that a rise in oil and gas production (as in the May STEO) would augment the rise in consumption—the BEA data show such an increase has been associated with both increases and decreases in real value added for oil and gas extraction.

But the point on the specifics of the calculation is well taken—I need to find a better way to estimate a change in the real value of production from this sector.

5. *A more promising approach to finding a negative impact of lower oil prices on GDP would be to look at investment in mining structures, mentioned on pp.4-5, which fell sharply in the first half of 2015.*

I respectfully disagree. One may find the calculations in the paper flawed or wrong, but I don't think this is an argument for looking only at the expenditure side of the national accounts. In fact, I feel most analysts have been overly reliant on such investment/expenditure data when quantifying the impacts of changes in energy prices. Looking at it from a different angle—the industry accounts—is more comprehensive in my opinion.