Oil Prices, Inflation and U.S. Monetary Policy

James Bullard
President and CEO, FRB-St. Louis

2016 Regional Economic Briefing and Breakfast
Economic Club of Memphis
14 January 2016
Memphis, Tenn.

Any opinions expressed here are my own and do not necessarily reflect those of the Federal Open Market Committee.
Introduction
Recent developments in global oil prices

- Crude oil prices have fallen dramatically since mid-2014.
- Oil price movements are an important component of headline inflation in the U.S.
  - Year-over-year headline inflation in the U.S. is currently very low.
- Fed officials have sometimes argued that once oil prices stabilize, headline inflation will naturally return to 2 percent.
- However, crude oil prices have not stabilized in recent weeks, and instead have fallen substantially further.
- What are the implications for current monetary policy?
First, I will consider the very recent movements in oil prices in historical context.

Second, I will review the argument that stabilization of oil prices implies that headline inflation will return to target.

- This argument still holds, but it now appears that this process will take longer than previously thought.

Third, I will consider the possibility that inflation expectations are falling in the U.S.

Fourth, I will discuss the degree to which lower oil prices are ultimately a bullish factor for the U.S. economy.
Preview of conclusions

- The recent movements in crude oil prices are very substantial in historical context.

- Headline inflation will return to target once oil prices stabilize, but recent further declines in global oil prices are calling into question when such a stabilization may occur.

- Inflation expectations in the U.S. may be falling. If so, this would put downward pressure on inflation.

- Relatively low oil prices remain a net positive for the U.S. economy.
Recent Crude Oil Price Declines
Recent nominal crude oil price declines

- The price of crude oil began to decline in the summer of 2014.
- It fell by more than half by the beginning of 2015, from above $105 per barrel to below $50 per barrel.
- Since early November 2015, the price has fallen an additional 40 percent by some measures.
- Most of the large movements came in the second half of 2014.
The nominal crude oil price per barrel

Recent crude oil price declines in real terms

- The real dollar price of crude oil was arguably stable between 1988 and 2003 at approximately $30 per barrel in 2009 dollars.

- A key event, as yet unidentified in the academic literature, occurred in 2003 and the real dollar price of oil nearly tripled by 2008 to approximately $85 per barrel in 2009 dollars.

- This higher level was maintained for 6 ½ years, until mid-2014, despite the global financial crisis and its aftermath.

- Recent declines have been substantial, but not quite enough to return the real dollar price to its 1988-2003 average value in 2009 dollars.
Real dollar oil price 1988-2016

Last observation: November 2015.
Supply responses

- Nearly tripling the price of any good or service will attract attention.
- Many previously unused forms of oil extraction became economically feasible during the 2008-2014 price regime.
- This supply response has likely led to overcapacity in global oil markets and caused the current downdraft of prices.
- However, financial markets often interpret oil price declines as declines in the global demand for goods and services.
  - Sometimes arguments in this camp cite declines in commodity prices generally.
Commodity prices falling since mid-2014

Source: International Monetary Fund. Last observation: December 2015.
Crude Oil Prices and Headline Inflation
The Fed’s 2 percent inflation goal is stated in terms of headline personal consumption expenditures (PCE) inflation. Large movements in crude oil prices can influence this measure of inflation substantially. This is why year-over-year headline inflation is quite low today.

- One way to control for this is to consider the Dallas Fed’s trimmed-mean PCE inflation rate, which is currently about 1.7 percent year-over-year.
Personal consumption expenditures (PCE) inflation

Headline inflation once oil prices stabilize

- The fall in crude oil prices to lower levels, even if maintained indefinitely, has only a one-time influence on the year-over-year inflation rate.

- Let’s suppose that oil prices had stabilized around the November 2015 level (approximately $40/barrel) and remained at that level for several years.*

- Let’s further suppose that all other prices had continued to increase at the same pace as they did during 2015.

- What would the headline consumer price index (CPI) inflation rate be at the end of 2016 under such a scenario?
  - Answer: More than 2 percent.

* Oil prices, measured by the U.S. crude oil imported acquisition cost by refiners, were at $38.70 per barrel in November 2015.
Headline inflation once oil prices stabilize

Last observation: November 2015.
Has this argument changed?

- The renewed fall in crude oil prices since November 2015 calls into question this line of thinking.
- How would this calculation change given the new downward pressure on crude oil prices?
To assess the new situation, let’s now suppose hypothetically that oil prices continue to fall and only stabilize around $20/barrel by June 2016 and remain at that level for several years.

Let’s further suppose that all other prices continue to increase at the same pace as they did during 2015.

What would the headline CPI inflation rate be at the end of 2016 under such a scenario?

Answer: 0.6 percent, not reaching 2 percent until mid-2017.

Bottom line: The argument is the same, but it takes longer for CPI inflation to return above 2 percent.
Inflation if oil prices fall further, then stabilize

Last observation: November 2015.
Crude Oil Price Declines and Inflation Expectations
Crude oil prices and inflation expectations

- Traditional central banking argues that policymakers should “look through” changes in crude oil and other commodity prices in order to gauge underlying trend inflation.
  - This is the purpose of a measure like the Dallas Fed’s trimmed mean PCE inflation rate.
- However, one circumstance where one may be more concerned is when inflation expectations themselves begin to change due to the changes in crude oil prices.
- Arguably, such a phenomenon is occurring in the current environment.
Market-based measures of inflation expectations

- Market-based indicators of inflation expectations, such as the Treasury Inflation Protected Securities (TIPS) spreads, have fallen in tandem with the fall in crude oil prices since the middle of 2014.

- Longer-term inflation expectations, such as the five-year-five-year-forward breakeven inflation rate, should in principle be independent of movements in crude oil prices.

- Nevertheless, the correlation between the two variables has been very high over the last 18 months.
Crude oil price and expected inflation

Declining inflation expectations

<table>
<thead>
<tr>
<th></th>
<th>July 1, 2014</th>
<th>January 8, 2016</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-year *</td>
<td>188</td>
<td>106</td>
<td>−82</td>
</tr>
<tr>
<td>5-year **</td>
<td>200</td>
<td>123</td>
<td>−77</td>
</tr>
<tr>
<td>10-year **</td>
<td>226</td>
<td>148</td>
<td>−78</td>
</tr>
<tr>
<td>5-year forward **</td>
<td>252</td>
<td>173</td>
<td>−78</td>
</tr>
</tbody>
</table>

* Inflation compensation: continuously compounded zero-coupon yields (basis points).
** Breakeven inflation rates (basis points).

Expected inflation and actual inflation

- Expectations of inflation are a major determinant of actual inflation according to modern macroeconomic theory.

- Low inflation expectations may keep actual inflation lower, all else equal, making it more difficult for the Fed to return inflation to target.

- I have argued that market-based measures of inflation expectations have been unduly influenced by the large movements in crude oil prices.

- Nevertheless, with renewed declines in crude oil prices in recent weeks, the associated decline in market-based inflation expectations measures is becoming worrisome.
Crude Oil Prices and the U.S. Economy
Crude oil prices and the U.S. economy

- Crude oil price declines since mid-2014 are helping to keep headline inflation very low in the U.S.
- For the macroeconomy as a whole, the relatively low crude oil prices the U.S. is enjoying today are likely a bullish factor.
- Automobile sales, for instance, have been strong.
- More generally, real personal consumption expenditures (PCE) growth accelerated during the period of the large drop in oil prices from mid-2014 to mid-2015.
- This could be viewed as mild evidence that the oil price decline is a bullish factor for the U.S.
Consumption growth increased as oil prices declined.

Summary
Summary

- The recent movements in crude oil prices are very substantial in historical context.
- Headline inflation will return to target once oil prices stabilize, but recent further declines in global oil prices are calling into question when such a stabilization may occur.
- Inflation expectations in the U.S. may be falling. If so, this would put downward pressure on inflation.
- Relatively low oil prices remain a net positive for the U.S. economy.