



Economic Letter

Plunging Oil Prices: A Boost for the U.S. Economy, a Jolt for Texas

by Anthony Murphy, Michael Plante and Mine Yücel

ABSTRACT: Economic activity in the U.S. overall will benefit from the oil price collapse. The decline will, however, negatively affect oil-producing states such as Texas and North Dakota.

Just last summer, oil prices exceeded \$100 per barrel and many analysts expected them to remain high for some time to come (*Chart 1*). That didn't happen. Prices plunged, falling by more than 50 percent in just six months (*Chart 2*), the result of weaker-than-expected demand and ample supplies from both the Organization of the Petroleum Exporting Countries (OPEC) and non-OPEC countries. Supply growth was particularly strong in the U.S., with shale oil production booming in 2014.

Sinking prices have implications for economies across the globe. Important oil exporters, such as the OPEC countries, bear the brunt of negative impacts, while oil importers benefit. Overall economic activity in the U.S. will benefit, although lower oil prices will depress activity in many producing states, such as Texas and North Dakota.

Why Oil Prices Plunged

Opinions differ about the relative roles of supply, demand and other factors in the oil price drop. An International Monetary Fund report suggests that increased supply accounts for 60 percent of the plunge.¹ The remainder is attributable to lower-than-expected demand and a November 2014 decision by Saudi Arabia and OPEC to

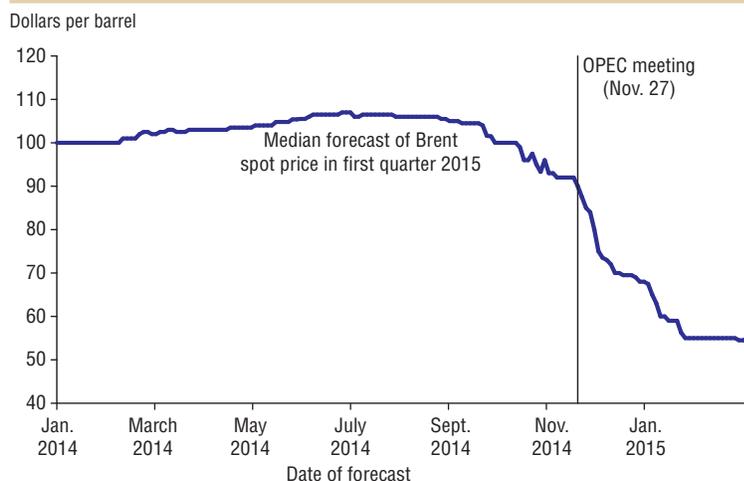
maintain production levels, which changed people's expectations of future supply from the cartel.

Some analysts believe that the appreciation of the dollar also played a role. The decline of other currencies relative to the dollar makes oil more expensive for consumers outside the U.S. For example, between the end of June 2014 and the start of March, the euro lost about 20 percent of its value against the dollar. All else equal, this pushes higher the euro cost of oil relative to its cost in dollars.

We believe the major factor behind the recent price decline is a shift in supply. World oil production grew at a significantly faster pace than demand in 2014 (*Chart 3*), with some of the supply increase largely expected, such as expansion of U.S. shale output.² However, there were some surprises to the upside, particularly OPEC production in the second half of 2014. It included higher-than-anticipated output from conflict-riven Libya and Iraq as well as the cartel's November decision to maintain production levels.

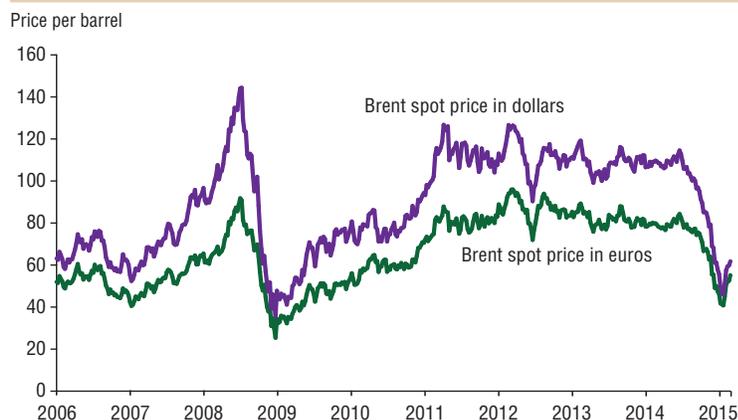
On the demand side, daily world consumption rose by 900,000 barrels per day last year, a hefty increase driven primarily by economic expansion in the developing world. The gain, however, was not quite as large as forecast at the start of 2014. The growth outlook for this year also dimmed

Chart 1 As Late as November 2014, Many Expected High Oil Prices in Early 2015



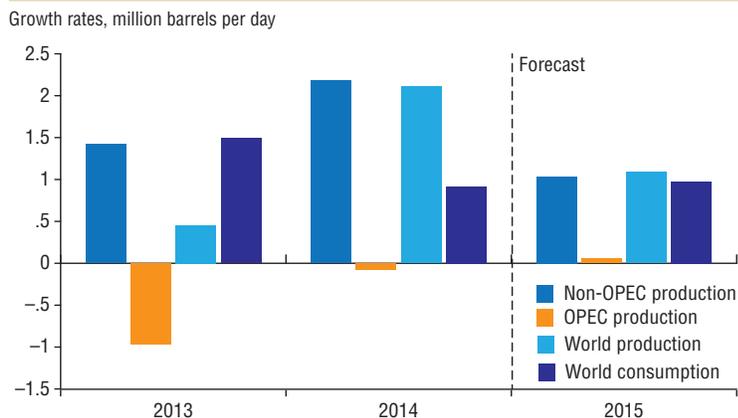
SOURCE: Bloomberg.

Chart 2 Oil Prices Plunge in Second Half of 2014



SOURCE: Bloomberg.

Chart 3 Oil Supply Grew Faster than Demand in 2014



SOURCE: U.S. Energy Information Administration.

in the second half of 2014, particularly in emerging economies that had been the prime source of new demand for oil. Appreciation of the dollar weighed on demand. The growing imbalance between oil supply and demand eventually led to falling prices in the second half of 2014.

Global Growth Boost

The macroeconomic effects of falling oil prices vary by country and over time. They also depend on the persistence of the decline. Importing countries such as China, Japan and the U.S. stand to gain, while oil exporting ones such as Russia, Saudi Arabia and Venezuela will lose. The overall effect on the global economy should be positive since the economies of the oil-importing countries are significantly larger than the oil exporters.

Consumption gains arising from lower oil prices will be smaller than in the past because cars and homes are more energy efficient. In terms of investment, firms in the oil and gas industry are cutting their capital expenditures, while companies that use energy intensively may invest more capital. The degree of additional investment will depend on the persistence of lower oil prices. Firms dependent on energy are more likely to undertake capital projects if they expect oil prices to stabilize at \$60 to \$70 per barrel, rather than reverting rapidly to \$100 per barrel. Overall, the global impact on aggregate investment is ambiguous.

U.S. Economy Benefits

The recent shale boom in the U.S. increased the oil and gas sector's importance, although it remains a relatively small part of the national economy. The share of oil and gas in total employment peaked in the early 1980s at close to 0.8 percent. It declined until 2000, when it started growing again, reaching 0.5 percent recently. The trend of oil and gas output as a share of gross domestic product (GDP) is similar. It fell from a high of 4 percent to less than 1 percent, and stands at about 2 percent now. Despite the sector's growth, the U.S., as a net importer of oil, benefits from lower oil prices because an oil price decline means higher real (inflation-adjusted) incomes for consumers, lower energy costs for firms and lower headline inflation.

With lower oil prices, the consumer

has more disposable income. Gasoline, diesel and heating oil consumption account for about 65 percent of total U.S. oil use. The decline in pump prices provides consumers with more money for purchases elsewhere. For example, the Energy Information Administration (EIA) estimated that households may have more than \$700 extra to spend this year as a result of lower gasoline prices. A large part of the gas savings will likely be spent, since gasoline is a larger share of lower-income households, and these households have a higher propensity to consume.

For firms, less-expensive fuel leads to more capital investment and more hiring. On the other hand, falling oil prices reduce oil profitability, negatively impacting drilling activity. The U.S. rig count has fallen sharply, down more than 850 from December through late March. Many oil and gas exploration firms have announced layoffs and large capital expenditure cuts. Although these reductions will negatively affect economic activity, the impact will likely be more than offset by the economic positives.

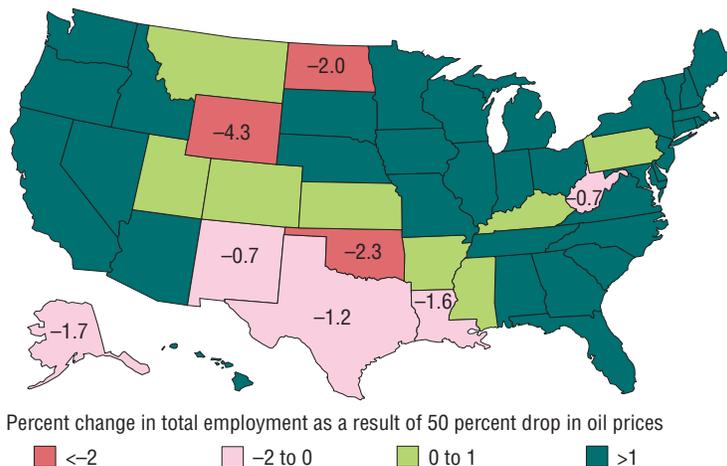
Depending on which economic model is used, a 50 percent oil price decline yields a 0.3 to 1 percent increase in U.S. GDP. The traditional rule of thumb has been that a sustained 50 percent lower crude oil price raises the growth rate by about 1 percentage point. However, since the U.S. produces more oil and uses it more efficiently nowadays, the traditional rule of thumb should probably be halved—the reduction should boost U.S. growth 0.5 percentage point for a year or so.

State Impacts Vary

The costs and benefits of the recent price decline are unevenly distributed across the 50 states. A 2013 study suggested lower oil prices would adversely affect employment in eight states—Alaska, Louisiana, North Dakota, New Mexico, Oklahoma, Texas, West Virginia and Wyoming (*Chart 4*).³ These eight states hold the highest concentration of energy-related employment, typically in oil and gas operations, refining, petrochemicals, oilfield equipment and coal mining. Except for refining, lower oil prices hurt these industries.

The negative numbers on the map are estimates of the percentage change in

Chart 4 Low Oil Prices Benefit Most States



SOURCE: "The Shale Gas and Tight Oil Boom: U.S. States' Economic Gains and Vulnerabilities," by Stephen P.A. Brown and Mine K. Yücel, Council on Foreign Relations, *Energy Brief*, October 2013.

employment associated with a 50 percent oil price decline. Wyoming is affected most, since it has the highest concentration of energy-related employment. Texas, with a more diversified economy, is affected less than many other states.

Falling oil prices also hurt state budgets, some more than others. For example, Alaska derives 80 percent of its tax revenue from oil and gas; North Dakota, nearly 50 percent. Texas, owing to size and diversification, obtains 9 percent of tax revenue from oil and gas. Oil and gas severance tax revenue in Texas totaled \$4.5 billion in 2013. With the halving of oil prices, and potentially lower production, those receipts likely will significantly fall in 2015.

Weaker Outlook

Amid the oil price collapse, some fear that Texas may experience a deep recession like the one in the mid-1980s. This is unlikely. The Texas economy is more diversified now and the energy sector relatively less important. For example, the share of oil- and gas-related employment was 2.6 percent in 2014 compared with 4.7 percent in 1982. The oil and gas sector's share of output peaked at 19 percent in the early 1980s and was 13 percent in 2013.

The banking and savings and loan crisis in the late 1980s also resulted in a major credit crunch, which contributed to the depth and duration of the Texas recession. Banks are better regulated now and more

geographically diversified after interstate banking restrictions were lifted in the mid-1990s.

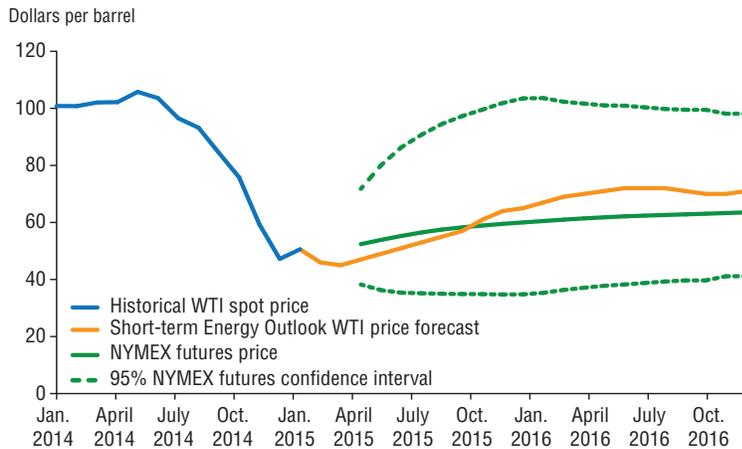
Nevertheless, the Texas economic outlook has weakened over the past six months. The Texas Leading Index sustained a big hit due to the oil price decline, presaging slower job growth.⁴ Last year, the state added more than 384,000 nonfarm payroll jobs (3.4 percent growth). The current forecast is for job growth of 1 to 2 percent, a lower rate than in recent years and below the consensus forecast of 2.1 percent job growth for the U.S. as a whole.

Market Uncertainty Elevated

The eventual impact of lower oil prices will depend upon how long they last. They are forecast to rise gradually, though not back to the \$100 per barrel level anytime soon (*Chart 5*). The EIA anticipates the price of benchmark West Texas Intermediate crude will rise by more than 20 percent, to more than \$60 per barrel by year-end; futures prices are somewhat lower. Significant uncertainty exists, though, with a wide range of prices considered likely in any given month.⁵

The predicted path of prices is influenced by what people think will happen to demand and supply in 2015 and beyond. Continued growth in the global economy means the world will consume more oil this year than last. Demand, which is not very sensitive to price change in the short

Chart 5 | Prices Expected to Increase by 2016



NOTE: WTI is West Texas Intermediate crude oil. NYMEX refers to the price previously pegged to the New York Mercantile Exchange.

SOURCE: U.S. Energy Information Administration.

run, will also rise in response to lower oil prices, although this will take time. For example, consumers are likely to drive more and buy larger cars and trucks, gradually replacing the nation's vehicle inventory.

On the supply side, lower prices should slow supply growth, and the response may be swifter now than in the past due to the growing importance of horizontal drilling and hydraulic fracturing. Initial production rates from horizontal wells are very high, so a decline in the rig count will eventually result in lower output. On the other hand, with prices low, many shale oil producers are drilling but not "fracking" wells, leaving oil in the ground. This implies that when prices rise, oil output can increase relatively rapidly.

Overall Outlook

Oil prices have declined substantially amid burgeoning supplies and weaker-than-expected demand. The oil market will adjust to this new environment. Lower prices will eventually spur more demand. Producers will pare supply growth, although the adjustment will take time and there remains significant uncertainty about the future.

Despite the growing importance of the oil and gas sector in recent years, the U.S. as a whole benefits from lower oil prices because they increase consumer disposable income and decrease firms' energy costs. Both factors should provide modest boosts to economic activity. The benefits of lower oil prices will be distributed unevenly among the states. Those with large

shares of oil and gas—such as Texas—will be hurt, while the majority will benefit.

Murphy is an economic policy advisor and senior economist, Plante is a senior research economist and Yücel is senior vice president and director of research in the Research Department at the Federal Reserve Bank of Dallas.

Notes

¹ See "Seven Questions About the Recent Oil Price Slump," by Rabah Arezki and Olivier Blanchard, *IMF Direct* (blog), Dec. 22, 2014.

² The 43 percent drop in the Goldman Sachs commodity price index for energy since June 2014 is far greater than the declines in the industrial metals index (12 percent) and all commodities index (17 percent) and supports the dominant role of the supply shift narrative.

³ See "The Shale Gas and Tight Oil Boom: U.S. States' Economic Gains and Vulnerabilities," by Stephen P.A. Brown and Mine K. Yücel, *Energy Brief*, Council on Foreign Relations, October 2013.

⁴ For details of the Texas Leading Index, see Data Definitions at www.dallasfed.org/research/basics/definitions.cfm. The Texas nonfarm payroll employment model is described in "An Evaluation of Real-Time Forecasting Performance Across 10 Western U.S. States," by Keith R. Phillips and Joaquin Lopez, *Journal of Economic and Social Measurement*, vol. 34, 2009, pp. 119–32.

⁵ The market puts a 95 percent probability that prices will be between the dashed green lines in Chart 5.

DALLAS FED



Economic Letter

is published by the Federal Reserve Bank of Dallas. The views expressed are those of the authors and should not be attributed to the Federal Reserve Bank of Dallas or the Federal Reserve System.

Articles may be reprinted on the condition that the source is credited and a copy is provided to the Research Department of the Federal Reserve Bank of Dallas.

Economic Letter is available on the Dallas Fed website, www.dallasfed.org.

Mine Yücel, Senior Vice President and Director of Research

Carlos E.J.M. Zarazaga, Executive Editor

Michael Weiss, Editor

Jennifer Afflerbach, Associate Editor

Ellah Piña, Graphic Designer

Federal Reserve Bank of Dallas
2200 N. Pearl St., Dallas, TX 75201