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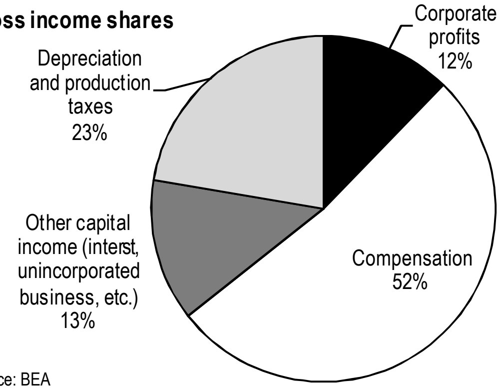
Economic Research Note

US: adding up the impact of lower oil prices

- **We still see declining oil prices as a net positive for the US economy**
- **Confusing the concepts of income, spending and output can lead to a negative net effect**
- **A more methodical approach to the data is unlikely to support the negative conclusion**

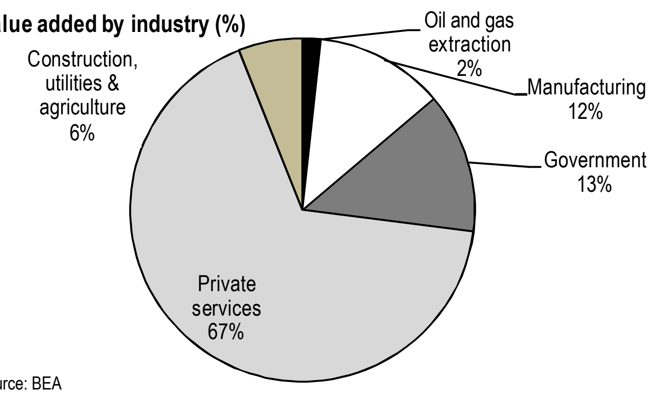
We continue to view the effect of falling oil prices as a net positive for the US economy, though others have not always shared our upbeat assessment. In this note, we argue that these more negative assessments often are the result of mixing up various notions of national income and output, which can lead to double-counting the negative impact of falling oil prices and an overall conclusion that the decline in energy prices is bad for the economy. We then argue that when one takes a more methodical approach to thinking about national income and output, it is harder to arrive at a negative net conclusion about the impact of lower oil prices.

Gross income shares



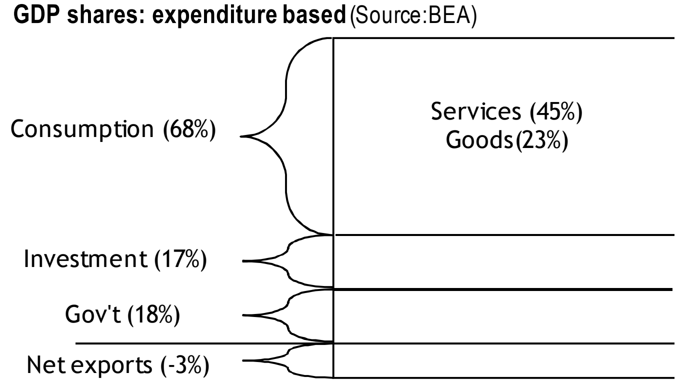
Source: BEA

Value added by industry (%)



Source: BEA

GDP shares: expenditure based (Source:BEA)



Three measures of activity

The National Income and Product Accounts are designed to provide a comprehensive measure of the amount of economic activity in the US. There are three *conceptually equivalent* ways to measure this activity:

Gross Domestic Product (GDP): This is the measure most familiar from your undergrad econ, and arrives at national output by summing spending on the various categories of expenditures for stuff produced here in the US: consumption + investment + government consumption + net exports.

Gross Domestic Income (GDI): This measure sums the income earned in producing the nation's output, which generally falls into two broad categories: capital income—a large share of which is corporate profits—and labor compensation, which is a function of employment.

Gross Value Added by industry (GVA): This measure arrives at the total amount of stuff produced here by summing the value added of each industry in that production chain, such as mining, construction, manufacturing and services.

In the real world the three measures will not align perfectly, as there are bound to be statistical discrepancies when measuring an economy with over 300 million participants. However, it is important to emphasize that conceptually all three measures are equivalent: spending produces income, and that income is earned in the various industries that produce the stuff which was bought. This also means that an economic event which, say, increases GDP by $1 will also increase GDI by $1 and GVA by $1. This does *not* mean economic activity increases by $3, but rather each is a different way of measuring a $1 boost to the economy.

Valid and invalid approaches

With this conceptual framework in mind, it should become apparent that there is a valid way and an invalid way to think through the impact of economic events like a dramatic collapse in oil prices. The valid way is to start with one of the three measures of activity and work through the impact of falling oil prices. As a cross-check, one should see that a reasonably similar answer would be arrived at by starting with either of the other two measures. In practice, economists often start with the GDP measure, as we will do below.

The invalid way is to mix and match elements from the GDP, GDI and GVA concepts and add them up to arrive at some kind of mongrel total oil effect. For example, we have seen analysts add the negative effect on oil & gas capital spending (a GDP concept) to the negative impact on employment in the oil & gas sector (a GDI concept). Similarly we have seen analysis that adds a decline in production in the oil industry or in capital goods manufacturing (a GVA concept) to the above-mentioned declines in capex or employment, neither of which is a GVA concept.

Measuring the expenditure side

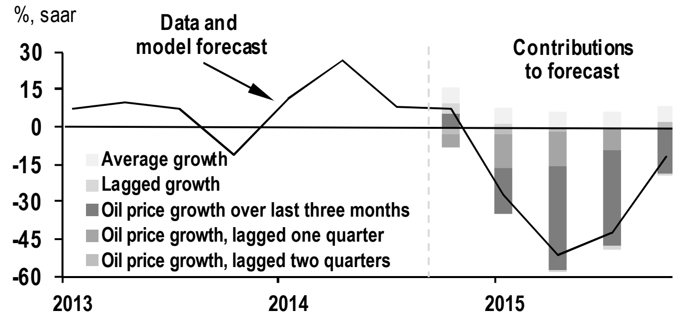
For understanding many kinds of economic shocks, we find that the tried-and-true expenditure method is most straightforward. That is, we look to measure a shock's effects on consumption, investment, government spending, and net exports, and then we add them up to get the total effect on GDP.

In the case of oil price shocks, we think their primary effect still comes through the familiar consumption channel. With gasoline and other fuel expenditures relatively insensitive to prices in the short run, a decline in fuel prices without much change in quantities consumed leads to more money in people's pockets, boosting real income. Of course, not all of this extra income will be spent immediately, and we do expect some rise in the savings rate. But mainstream macroeconomic thinking as embodied in our "rules of thumb" or the Fed's FRB/US model would suggest that oil price declines like the ones we have seen will drive increased consumption spending to add about 1.0%pt to GDP growth over a year.

However, we also expect to see substantial cuts in investment expenditures related to oil mining. Based on an econometric model (which predicts growth in mining structures investment based on its own lag and three lags of oil price growth) we predict a fairly steep 33% decline in mining structures investment in 2015, with the largest declines concentrated in the second and third quarters. As mining capital expenditures (including equipment along with structures) comprise about 1% of GDP, we look for these investment declines to shave about 0.3%pt from GDP growth in 2015. Like any econometric model it is not perfect, but it suggests the drag from cap-ex declines should be a fair bit smaller than the boost to consumption.

What about net exports? If domestic oil production were to contract significantly then the expenditure accounts would

Nonresidential investment in mining exploration, shafts, and wells



Source: BEA, J.P. Morgan

reflect that in a bigger drag on GDP from increased energy imports. However, company reports point to a much smaller effect on domestic oil production than on domestic energy capex. (Indeed, through early January domestic petroleum production has continued to increase). Effects of the oil price shock on the rest of the expenditure components of GDP are likely to be small and offsetting, as increased imports of non-energy consumption goods (a drag on GDP) roughly offset positive "multiplier" effects on remaining components. So a simple first-pass look at the effects of low oil prices on the economy is subtract the 0.3 p.p. drag from mining cap-ex from the 1.0 p.p. boost to consumption, arriving at a net boost to GDP of about 0.7 percentage points. Estimates of profits or jobs lost in the oil and gas extraction industries do not belong in this calculation.

We have argued that viewed from an expenditure perspective, the positive impact of falling oil prices outweighs the negative effects. If this conclusion is correct, then we should see a similar impact on national income and on the value added by domestic industries.

Starting with national income, reduced capital spending in the oil and gas sector will reduce employment in related sectors. However, the boost to consumer spending should show up in higher profits and employment in sectors serving the consumer. From an industry perspective, the negative effect is likely to be felt in industries that supply capital equipment to the oil and gas sector, mainly construction and capital goods manufacturing. Meanwhile we should expect more favorable outcomes for industries oriented toward the consumer: retail, wholesale, consumer goods manufacturing, and a number of service industries. If our estimates of the effect on consumer and investment spending are correct then these latter income and industry output effects must also net to a plus for the US economy.

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