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Budget Model

Continuation of Low Oil Prices Would Hinder Investment and Growth in 2020

Summary: If oil prices remain at current levels through the end of 2020, we estimate that growth in business investment will be 1.9 percentage points lower and growth in GDP will be 0.25 percentage points lower in 2020.

Introduction

The price of crude oil has fallen drastically in 2020, driven by a price war and by collapsing energy demand due to coronavirus. The price of West Texas Intermediate (WTI) crude oil, a benchmark for US production, fell from $61 per barrel at the start of calendar year 2020 to just above $23 per barrel this week.

In a previous post, we showed that oil prices are a strong determinant of nonresidential investment—oil production requires significant investment, and oil serves as an important input for many industries. That analysis suggested that high oil prices accounted for most of the rise in nonresidential investment in 2018.

Updated PWBM Oil Model

Using a revised model that more fully captures the drivers of oil-related investment, we estimate the drag on growth in nonresidential investment and GDP from the current low-price environment.[1] First, for each of the United States' major drilling regions, we estimate the difference between the current price of WTI and the price required for a new drilling rig to be profitable.[2] Second, this estimate feeds into a model of the number of active drilling rigs in each region, aggregated to produce an overall forecast of active US rigs. Third, the model translates this active rig forecast into a forecast of oil-related investment.[3]

Changes to Macroeconomic Variables

Figure 1 presents estimates of the contribution of oil-related investment to growth in private nonresidential fixed investment, along with projections for 2020. This projection assumes that the average monthly price of WTI stays at $23 per barrel for the rest of 2020. From February to December 2020, we project that low oil prices will decrease the number of active drilling rigs by two-thirds, causing oil-related investment to drop by one-third in Q2 2020 and by one-half in Q3 and Q4 2020. By Q4 2020, we project that this decline in oil-related investment will lower year-over-year growth in nonresidential fixed investment by 1.9 percentage points.

Figure 1. Contribution of oil-related investment to nonresidential investment

Contribution to percent change year-over-year

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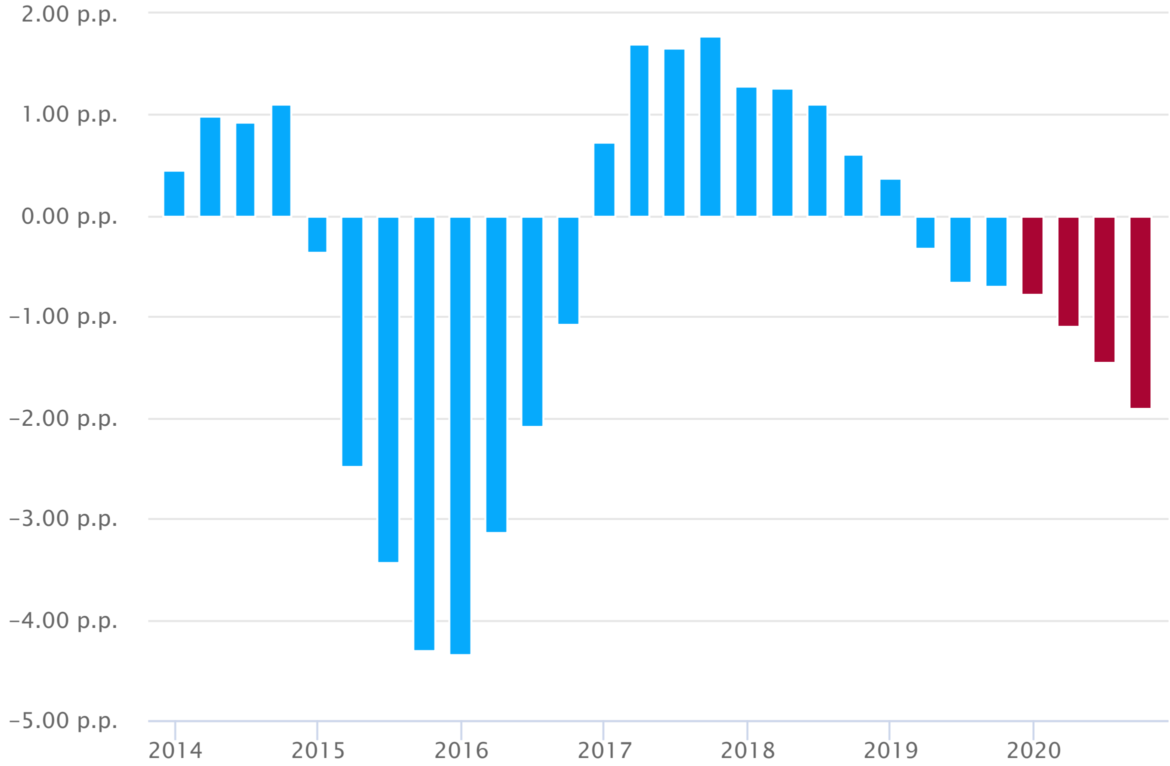

This decline in investment corresponds to a 0.25 percentage point decrease in GDP growth by Q4 2020. Figure 2 presents estimates of the contribution of oil-related investment to GDP growth.

Figure 2. Contribution of oil-related investment to GDP

Contribution to percent change year-over-year

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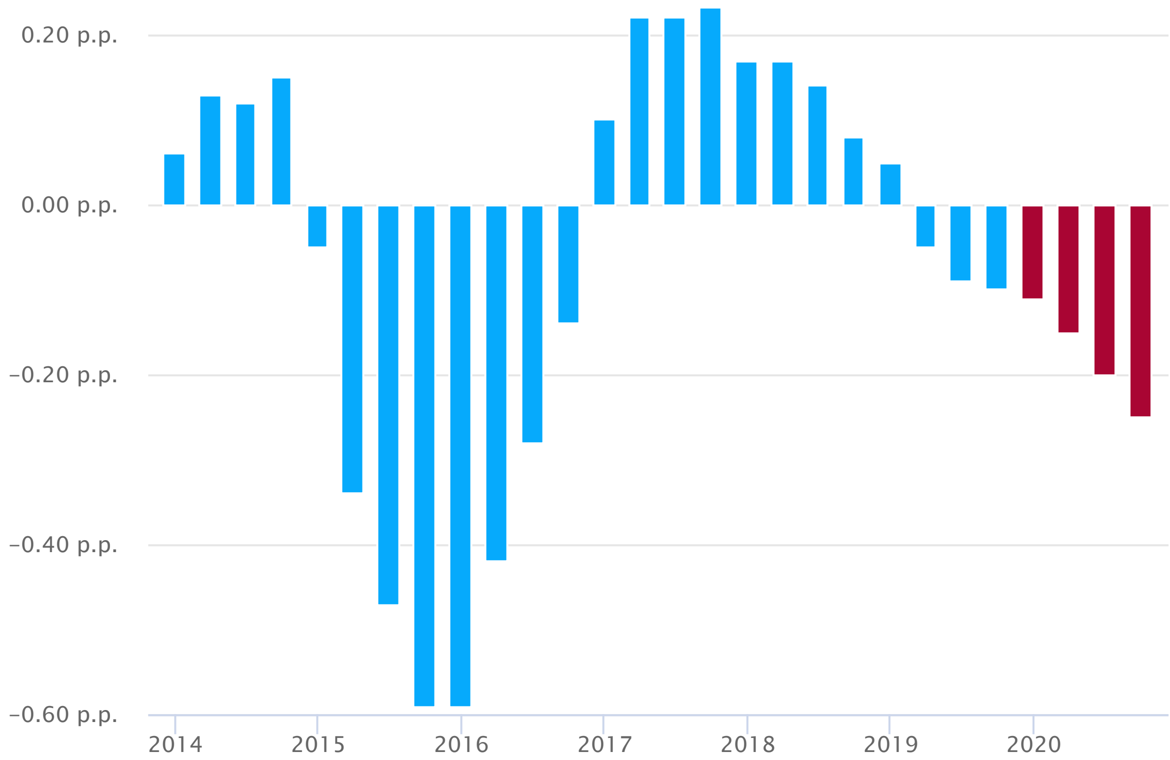

Alex Arnon conducted this analysis with writing support from Kody Carmody. Mariko Paulson produced the charts for the PWBM website.

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1. Oil-related investment consists of petroleum and natural gas structures and exploration, mining and oilfield machinery, and railroad equipment. ↩
2. This "break-even" price is especially important for investment in shale oil, which accounts for the majority of US production. ↩
3. Details for these parts of the model and validations will be made available in a future blog post. ↩