

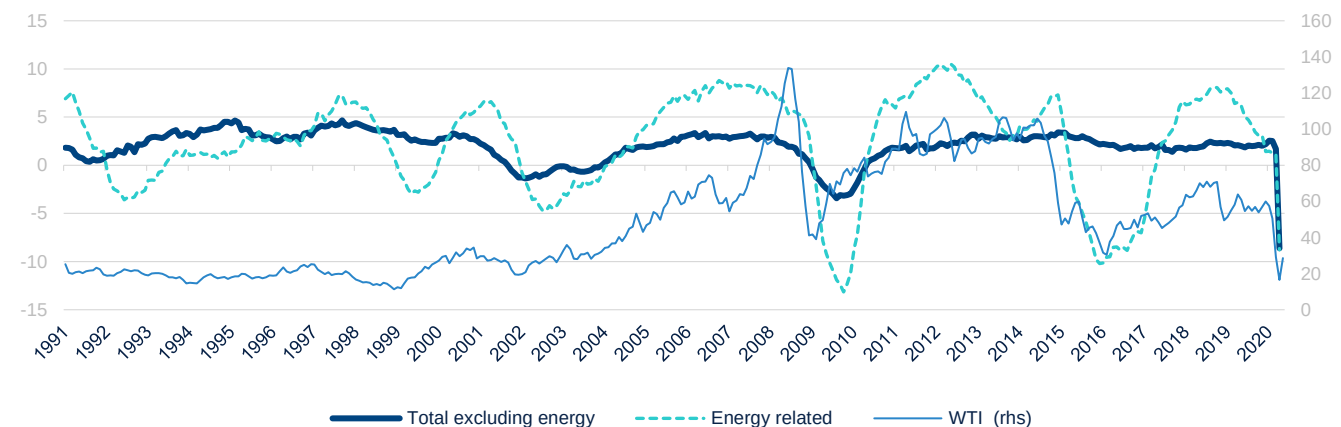
Economic Analysis

Measuring the pulse of Texas energy sector through employment and drilling activity

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The oil and gas (O&G) sector was severely impacted by the lockdowns around the globe and the price war between Saudi Arabia and Russia that triggered a sharp decline in oil prices. Recent data on employment, financial markets, bankruptcies and drilling activity shed some light on the impact that this crisis has had on the sector, and provide some insight into how the recovery may look like. Given the significance of the energy sector to the Texas economy, this data also provides some insights on the overall health of the Lone Star state.

Figure 1. **Nonfarm payroll and WTI (yoy % change and USD per barrel)**



Source: BBVA Research and Haver Analytics

Employment

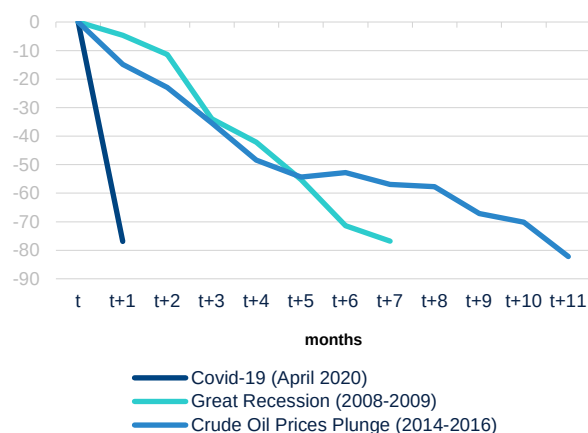
Using data from the Bureau of Labor Statistics, we built an aggregated measure of Texas' employment from industries linked to the oil and gas value chain: exploration, production, transportation and refining. The sum of employment in these industries is not exclusive to oil and gas due to lack of disaggregation beyond 4Q19, however, it represents a reliable approximation to Texas' "energy" jobs. Although in strict sense the word "energy" also encompasses sources other than O&G, our analysis focuses only on the latter given its relative importance to the Texas economy —about 14% of GDP and 6% of non-farm employment. Figure 2 shows the list of industries included in the aggregation.

Figure 2. **Monthly change in energy-related employment categories (April 2020)**

NAICS	Industry	MoM change (thous.)
211	Oil and gas extraction	-3.5
2131	Support activities for mining	-22.3
2371	Utility system construction	-10.8
2389	Other specialty trade contractors	-9.7
324	Petroleum and coal products manufacturing	-1.4
4842	Specialized freight trucking	-1.6
486	Pipeline transportation	-0.2
5413	Architect, engineering and related services	-1.5
811	Repair and maintenance	-25.9
Energy related		-76.9
Total excluding energy related		-1,191.7
Total nonfarm payroll		-1,268.6

Source: BBVA Research and Haver Analytics

Figure 3. **Energy-related employment (Cumulative losses, thousands, t = beginning of sustained contraction on a month to month basis)**

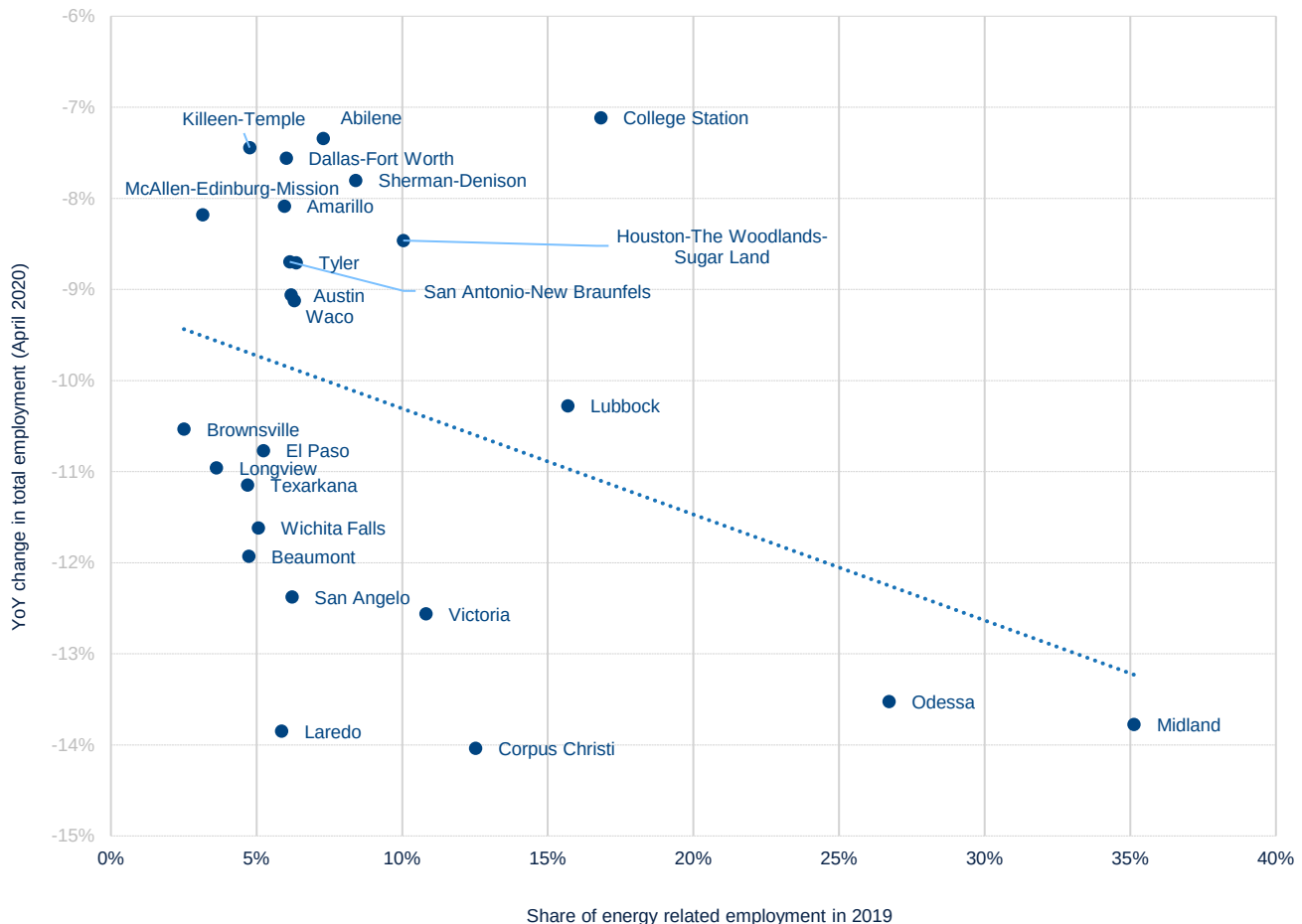


Source: BBVA Research and Haver Analytics

In the current crisis, the decline in energy employment started in April when 76.9K jobs were lost (figure 2). The speed of this adjustment is unprecedented. To put it in perspective, it took seven and eleven months to accumulate similar losses during the Great Recession of 2008-2009, and the Oil Prices Plunge of 2014-2016, respectively (figure 3). A plausible explanation for this difference lies in the nature of the ongoing recession, which was triggered by simultaneous supply (Saudi and Russia prices war) and demand (Covid-19) shocks, as well as extraordinary levels of uncertainty. In particular, the lockdowns resulted in a drastic and sudden decline in crude oil demand that was not seen in the previous two crises. Since lowering production takes time, the situation left many companies with few options other than severe adjustments to their workforce.

Another feature of the ongoing crisis is that the share of energy in total employment is the lowest since 2007 despite robust readings in production, refining and exports between 2017 and 2019. This is because, in order to survive the impact of the Oil Prices Plunge (2014-2016) companies not only reduced their workforce but consolidated and invested in technology to become more efficient. As a result, the share of energy to total employment went down from a peak of 7.1% in 2014 and stabilized around 6.4%. The 0.7pp difference represented nearly 77K fewer jobs in the sector in 2019. A portion of these jobs may have gone to other industries as non-energy employment expanded throughout the period.

Figure 4. **Employment by Texas metropolitan statistical areas**



Source: BBVA Research and Haver Analytics

A lower share of energy jobs in the economy has different implications for the state's recovery. If oil prices remain low for a long period, the share of energy in total employment may decline once again. Based on the experience from the Oil Prices Plunge of 2014-2016, companies could implement strategies to increase the productivity of the remaining workers at the expense of new hires. This could lead to consolidation and the adoption of state-of-the art technologies.

Under such circumstances, the state's total employment recovery will have to rely more on non-energy industries. This may already be the case as illustrated by the elasticity of non-energy to energy jobs, an indicator of spillover effects that has weakened recently. Between November 2001 and June 2009, a one-percentage point increase in energy employment led to a 0.41% increase in non-energy employment. This elasticity remained almost unchanged in the cycle between July 2009 and June 2016, but diminished to 0.36% between July 2016 and February 2020. This implies

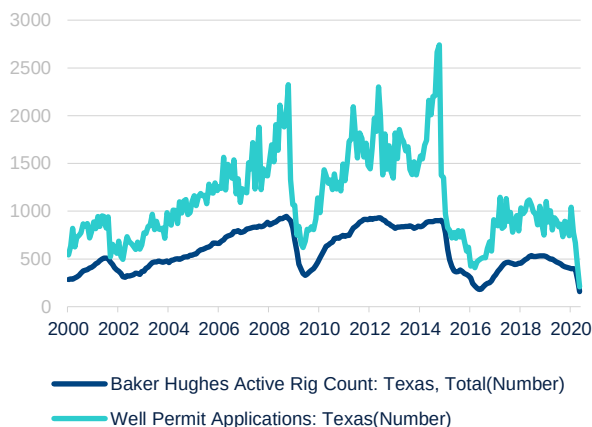
that for each two jobs permanently lost in the energy sector, the state has to create roughly three new jobs in the non-energy sector.¹ This will be less challenging for MSAs with a diversified industrial base. In fact, the benefits of diversification can be illustrated by differences in employment figures at the MSA level. Figure 4 shows that MSAs with the highest concentration of energy jobs like Midland and Odessa were disproportionately hit by the current crisis. By contrast, in the energy dependent but more diversified Houston, the impact was less severe.

Production and Drilling Activity

Figures from the Energy Information Administration's Drilling Productivity Report show that there has been a significant decline in crude oil and natural gas production from February to May. By region, crude oil production decreased 7.7% in the Permian and 10.9% in the Eagle Ford. Meanwhile, natural gas production declined 3.5% in the Permian and 6.5% in the Eagle Ford.² In the same period, estimates of statewide crude oil production showed a decline of 5.9% from February to May, from 5.8 to 5.5 million b/d. Excluding Texas, the rest of the country's crude oil production went down 13%, from 7.1 to 6.2 million b/d.³

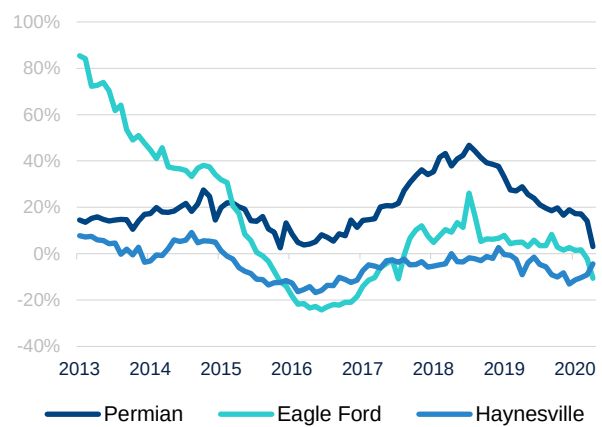
A significant contraction in drilling activity implies further reductions in oil and gas production and investment down the road. Statewide, well permit applications went down to 208 in May from 1,041 in January. In April, the Permian, Eagle Ford and Haynesville regions registered the lowest number of drilling permits issued per month since 2016. Meanwhile, the active rig count for the entire state reached 158 units in May, the second lowest number on record. Although technological advancements have weakened the correlation between the rig count and production, May's readings are bad enough to signal a contraction in drilling activity. Approximately 65% of the decline in the state rig count since January occurred in the Railroad Commission of Texas' District 8, where part of the Permian Basin is located.

Figure 5. **Texas rig count and well permit applications**



Source: BBVA Research and Haver Analytics

Figure 6. **Crude oil production (yoy % change)**



Source: BBVA Research and Haver Analytics

1: Elasticities may be different across MSAs

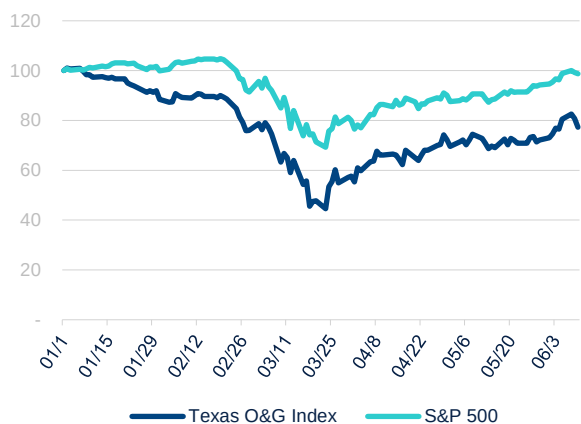
2: Source: Energy Information Administration, Drilling Productivity Report.

3: Source: Haver Analytics with data from Oil and Gas Journal

Would the recent increase in crude oil prices spur activity in the sector? The combination of OPEC+ production cuts and the gradual normalization of economic activity have boosted oil prices from \$12/b in late April to almost \$40/b in mid-June. This is good news, but may not be enough to bring exploration and production back to pre-pandemic levels. According to the Dallas Fed Energy Survey of 1Q20, the average shut-in prices (to cover operating expenses) across different shale plays range between \$23 and \$36/b, but the level of breakeven prices (to profitably drill a new well) ranges between \$46 and \$52/b. This suggests that current prices are, on average, enough for companies to cover their operating expenses, but not sufficient to generate profits. This implies that, at current levels, prices could help avoid another wave of bankruptcies similar to the one observed between 2015 and 2016, but they may not be high enough to revitalize investment and employment. In our baseline scenario, WTI prices will remain below breakeven prices for the remaining of the year.

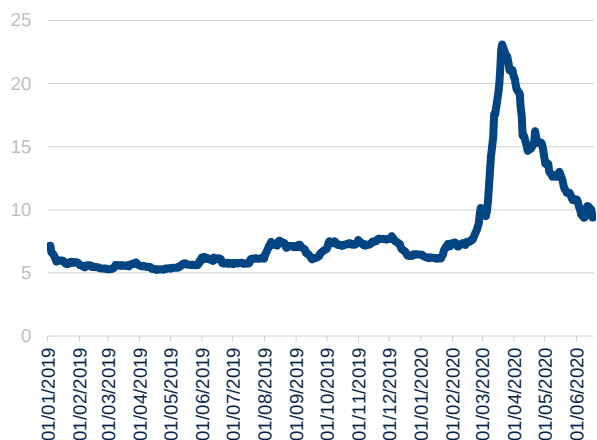
Investors seem to be discounting a challenging environment for O&G profitability. Figure 7 shows the stock market performance of some of the most important O&G companies operating in Texas against the S&P 500. Overall, the Texas O&G index has reached a bottom and is now in recovery mode, like the rest of the economy. However, while the S&P 500 is very close to the levels observed at the beginning of the year, our index of Texas O&G companies still fluctuates between 20% and 30% below what it was in January.

Figure 7. **Stock Market Indices**
(01/01/20 = 100)



Source: BBVA Research and Haver Analytics

Figure 8. **Bloomberg Barclays High Yield Energy Average OAS (USD)**



Source: BBVA Research and Bloomberg

The data described above suggest that despite the rebound in oil prices, massive fiscal and monetary support and the gradual reopening of the economy, it may take some time for the Texas energy sector to return to pre-pandemic levels. As such, the balance of risks is tilted to the downside. In particular, a second wave of Covid-19 in the second half of the year could keep crude oil demand subdued for longer than expected, especially if it results in more hospitalizations and the saturation of ICUs in the U.S. and other countries. This would force authorities to suspend or even revert the reopening process, which could lead to another round of O&G bankruptcies. Moreover, there is a possibility that crude oil demand does not recover entirely under a new normal if there is a permanent change in the demand for transportation, and stimulus packages around the world help speed up electrification. On the upside, if the second wave of Covid-19 is not too strong, the reopening of economies may continue with positive effects for the demand of

transportation fuels and other petroleum products. There is also a possibility, although less likely, that a vaccine becomes available before the end of the year, which would infuse confidence and accelerate the recovery.

Bottom line

The Texas economic recovery is still tied to the future of its O&G sector. Recent figures reveal a significant adjustment in employment, production and drilling activity. However, as lockdowns are lifted around the world and OPEC+ remains committed to restrict supply, crude oil prices have increased, allowing companies to better cope with the crisis. Nevertheless, returning to pre-pandemic levels will be hard since, in the absence of a vaccine, the persistence of the virus will make it difficult for demand to bounce back entirely, a situation that could lead to a long period of low energy prices, and sub-par investment. In this environment, policies that promote industry diversification will continue to play a critical role in the future of the state's economy. The increasing presence of high-value added industries other than O&G will help Texas return to normal in a reasonable period and allow the state to seize the opportunities in a post-pandemic world.

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