COSTS OF AN OIL PRICE BUST: New US evidence of the long-term damage to local labour markets

Ninety US companies in the oil and gas extraction industry have gone bankrupt since January 2015, but the impact of the downturn on producers does not fully capture the consequences of oil booms and busts for local communities. That is the conclusion of research by Gaetano Basso, which analyses the impact of global oil price shocks – both up and down – between 1970 and 2000.

The study, to be presented at the annual congress of the European Economic Association in Geneva in August 2016, finds that the real gains of a boom to local people are much more limited than previously thought, due to an upsurge in prices. The research also finds a disproportionately negative impact of an oil bust on the very low income percentiles (up to a 15% decline), while a boom benefits all income percentiles equally, by about a 6% increase over ten years.

Local employment increases during booms are also smaller than the declines that follow a bust. Annual earnings per worker reveal a premium soon after a positive oil shock, which dissipates over ten years; then they do not fall in the first four to five years after a negative oil shock, but they do decline over a ten-year period.

Although the study does not analyse data from the fracking boom, the author says that the analysis has lessons for the vulnerabilities of communities to recent oil busts: ‘The current bankruptcies and cuts in investments indicate negative growth prospects of oil-rich regions in the years to come.’

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The prospects for the US oil industry have suffered great uncertainty since the oil price plummeted dramatically in the summer of 2014. According to a recent report by Haynes and Boone, ninety US companies in the oil and gas extraction industry have gone bankrupt since January 2015. This is just one indicator of the state of the industry and it does not fully capture the consequences of oil booms and busts on the US economy.

Regions rich in oil reserves, whose economies largely depend on the extraction industry, may suffer disproportionally from ups and downs in the price of oil. Dependence on the natural resource extraction industry and its booms and busts could also affect the long-term growth prospects of these regions.

Research by Gaetano Basso analyses the recent history of US oil-producing local labour markets and studies the incidence of oil booms and busts by combining global oil price shocks between 1970 and 2000 (thus before the fracking revolution) with spatial variation in large oil fields. The interaction of these two measures determine changes in the local value of natural resources, which in turn trigger local labour demand shifts.

The research starts by showing that labour market indicators (namely population, employment and annual earnings per worker) respond differently to oil price booms than to oil price busts, both in terms of timing and size of the response. The net inflows of population (due to oil price increases) occur quickly – over one-two years from the oil price shock, but are small in magnitude.
The results suggest that differently from the most recent experience in North Dakota migration responses were limited during the 1970s boom. During busts there are larger net outflows, but such changes occur throughout a longer period of time (about ten years) indicating substantial migration costs.

Local employment increases during booms are also smaller than the declines that follow a bust, and employment responses are larger in the long run than in the short run. In contrast, annual earnings per worker reveal a premium soon after a positive oil shock, but this premium dissipates over the following ten years. Earnings do not fall in the first four to five years after a negative oil shock, revealing some rigidities, but then decline over a ten-year period.

The increase in average annual earnings is, however, not sufficient to understand the incidence of such macroeconomic shocks on local economies. The upsurge in local prices indicates that real gains are much more limited than previously thought.

The research also finds a disproportionately negative impact of an oil bust on the very low income percentiles (up to a 15% decline), while a boom benefits all income percentiles equally by about a 6% increase over ten years. Limited migration together with substantial changes in local non-employment and an increase in the poverty rate imply that regions rich in oil largely bore the incidence of shocks to the value of their reserves.

Consistent with existing evidence (Allcott and Keniston, 2015) the new study does not find that the manufacturing sector suffers during oil booms. Instead, the 4% increase in the share of 16 to 22 year olds who did not attend any school during the 1970s oil boom contributed to the observed adverse long-run effects of the 1980’s decline in oil prices.

While previous convincing studies have documented similar contemporaneous phenomena (Black et al, 2005), the research also shows the increase in the fraction of the population with low skill levels spills over onto the local economy in subsequent decades.

The share of people with at most high school education increased by two percentage points in oil-rich areas with respect to non-oil-rich areas between 1970 and 2000. As a consequence, oil-rich regions have suffered from a lack of skilled labour that would have been complementary to productivity-enhancing technologies that were adopted during the 1980s and 1990s.

Such comprehensive analysis is necessary to understand the incidence of macroeconomic shocks on local economies. While the analysis uses historical data and its results cannot be directly applicable to today’s fracking boom and the recent uncertainty period, the results suggest some interesting regularities in the oil-rich local labour markets dynamics.

After a negative price shock, employment does not substantially drop in the first two years, but the current bankruptcies and cuts in investments indicate negative growth prospects of oil-rich regions in the years to come. But the disinvestments in human capital observed during the fracking boom (Morissette et al, 2015; Cascio and Narayan,
2015; Marchand and Weber, 2015) are an even more worrisome signal for the prospects of growth of US oil-rich regions.

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References


Figures

Figure 5: Cumulated Responses of main local labor markets outcomes to positive and negative shocks

Panel B. Total employment (log)

Note: The figure plots separately for each outcome the Cumulated Response functions (CRFs) over a 10 years horizon estimated by local projections (see equation (2)). The dark line plots the CR to a positive oil price shock, $\gamma$, while they grey line plots the CR to a negative price shock, $-(\gamma + \tilde{\gamma})$. The shaded areas represent 95 percent pointwise confidence intervals robust to state clustering.

Figure 8: Percent of population with at most 12 years of schooling (price of oil at age 16)

Note: The figure plots the percentage of population with at most 12 years of schooling living in oil-rich CZs (dark) and other CZs with no oil (grey) as measured in the 2000 Census, by cohort when each cohort was 16 years old. The graph indicates that, by year 2000, cohorts living in oil-rich CZs and exposed to a higher price of oil around age 16 have a larger share of people without college education than the same cohorts living in non-oil-rich CZs. Oil rich CZs have at least one large oil field (EUR 100M bbl) as of 1999. The oil price is the log annual average (real 1999 $ per bbl, WTI 1969-1999). Source: Census, 2000, and FRED, 2014.