

The US Fracking Boom, Oil Prices and Policy Options for Arab Oil Producers

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About the author

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In a nutshell

- In the absence of the US fracking boom, the global price of crude oil since 2011 would have been as much as \$10 per barrel higher.
- This effect pales in comparison with the decline in the oil price that took place after June 2014, to which shale oil contributed little.
- Given the likelihood of persistent low oil prices, fiscal retrenchment looks essential for Arab oil-exporting countries. A natural starting point would be phasing out domestic subsidies on energy consumption.

What are the implications of a period of low oil prices for the economic and political stability of Arab oil-exporting countries such as Saudi Arabia – and how should policy-makers in these countries respond? In analysing the policy trade-offs, one key question is the extent to which increased US production of shale oil – as a result of the so-called ‘fracking boom’ – has lowered the global price of crude oil and thereby reduced Arab oil revenues.

The impact of the US fracking boom on the global oil price

It is common to attribute most of the decline in the oil price since June 2014 to the US fracking boom. But analysis by Christiane Baumeister and Lutz Kilian shows that higher oil production elsewhere in the world, a global economic slowdown, and shifts in oil price expectations and storage demand have all contributed to the decline (Baumeister and Kilian, 2016).

There is no historical precedent for the fracking boom. In a related study, Professor Kilian compares it to the outbreak of the Iran-Iraq War in 1980, which was followed by an oil supply reduction of roughly the same magnitude as the supply increase associated with US shale oil (Kilian, 2016a). This supply shock was followed by an increase in the US price of import-

ed crude oil of about 10%. After reversing the sign, that would correspond to a decrease in the oil price of about \$10 in today's market.

In his latest research, Professor Kilian measures how much global oil production would have been lower if the fracking boom had never taken place (Kilian, 2016b). Figure 1 shows both the observed path of global oil production and where oil production would have been without US shale oil. The analysis determines what sequence of oil supply shocks would have been required to force global oil production to follow this counterfactual trajectory.

The model implies that under this counterfactual, the Brent price of crude oil since 2011 would have been higher by as much as \$10 per barrel (see Figure 2). As large as this effect is, it pales in comparison with the decline in the oil price that took place after June 2014. Moreover, shale oil actually contributed little to the decline in the oil price after June 2014.

Figure 1: Actual (blue) and Counterfactual (red) Paths of Global Oil Production

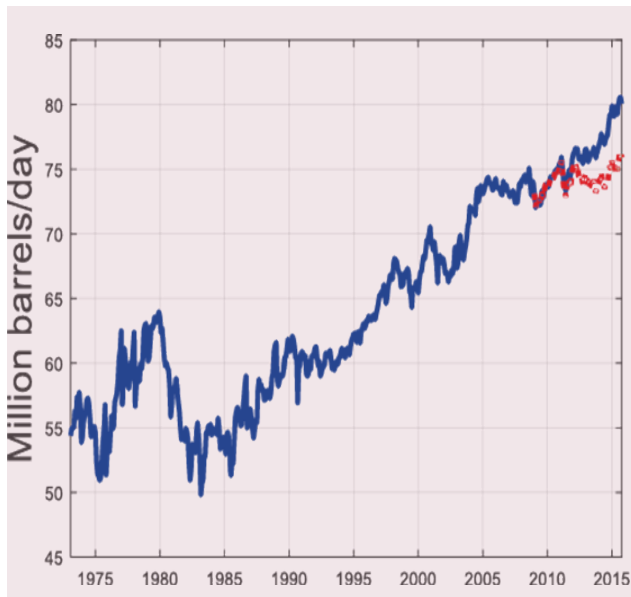
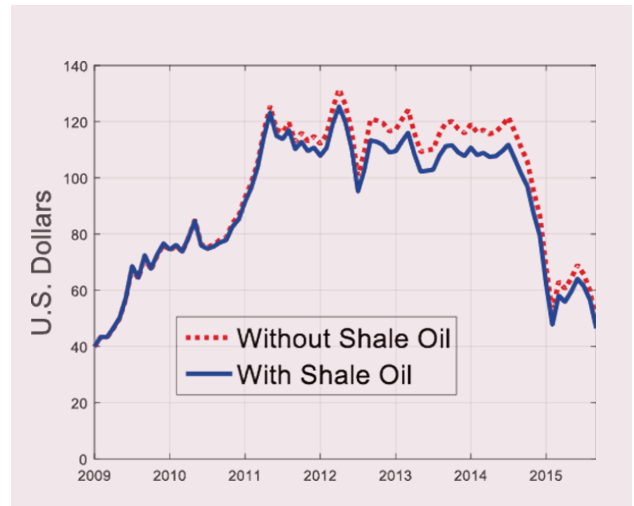


Figure 2: Shale Oil Helped Prevent Higher Brent Oil Prices



Saudi responses to declining oil revenues

To date, Saudi Arabia's strategy for dealing with the US fracking boom has been to preserve its market share and to avoid idle capacity. There is no sign of the country curtailing its oil production nor is it likely that such a strategy would help preserve Saudi oil revenue. Instead, the Saudi government has dealt with the decline in oil revenues mainly by tapping its financial reserves, as predicted by standard models of precautionary savings.

Data from the International Monetary Fund show a reduction in Saudi net foreign asset holdings of nearly \$90 billion between mid-2014 and August 2015. This estimate is considerably larger than the loss in oil revenue attributable to the fracking boom over that period, which Professor Kilian's analysis puts at about \$24 billion. In other words, in the absence of the shale oil boom, the reduction in Saudi foreign exchange reserves since mid-2014 would have been about two thirds of the actual decline.

How long can Saudi Arabia sustain such large losses?

If the decline in Saudi foreign exchange reserves continues at the rate experienced between January 2015 and January 2016, it is likely that net foreign assets will be exhausted by early 2020. This process would accelerate if the oil price were to fall further; it would slow if the price were to recover somewhat.

But there are two potential mitigating factors. First, unlike some of its neighbors, Saudi Arabia has very little external debt. The country resisted the temptation to leverage its increased oil revenues during the 2003-2008 oil price boom by running up external debt. As a result, for now, the Saudi government has been able to borrow in global financial markets, given the expectation that the oil price will ultimately recover.

Second, to date, the Saudi government has been reluctant to impose fiscal retrenchment because of the political costs of such measures. But in December 2015, it announced a budget plan that envisions cuts in spending from \$975 billion in 2015 to \$840 billion in 2016. This represents a 14% drop in government spending. The finance ministry also announced that it would raise taxes and adjust subsidies for water, electricity and petroleum products over the next five years.

How long will low oil prices persist?

The central question for Saudi Arabian policy-makers is to what extent the country should rely on external borrowing and to what extent it should cut public spending. Economic theory indicates that it makes sense for Saudi Arabia to borrow in response to a temporary fall in oil prices. But if the decline in the oil price were expected to be permanent, external borrowing would not be the appropriate response and the adjustment instead would have to come from fiscal retrenchment.

Thus, the answer to the question of how much fiscal adjustment Saudi Arabia requires is ultimately determined by how long low oil prices are likely to persist.

How soon the oil price is expected to recover depends on why it declined and how important those determinants will remain in the future.

For example, to the extent that the fracking boom influenced the price decline, the question is how long the boom can persist at current prices with many commercial tight oil producers experiencing heavy operating losses. It also depends on how quickly these firms could resume tight oil production at higher oil prices, if they were forced to close down. The same concern applies to unconventional oil production in Canada.

But even if the current low oil price were to put shale oil producers out of business, such an outcome might be short-lived. An obvious concern is that shale oil production is likely to resume as soon as world oil prices recover sufficiently, making it impossible to remove permanently the shale oil competition for as long as there remains easily accessible shale oil in the ground.

At \$60 per barrel, for example, many US shale oil producers are likely to generate profits, even if they do not at \$40 per barrel. Given this reasoning, much of the shale oil component of the Saudi foreign exchange losses should be treated as persistent, in which case the response should be to cut public spending rather than borrowing.

The influence of factors other than shale oil

As Professor Kilian's research shows, shale oil is only one reason for the ample supply of crude oil in world markets. To the extent that other oil producers including Iran, Iraq and Russia are expanding production, the question becomes one of how long state-controlled oil producers with few other options to generate foreign exchange and no accountability to shareholders or financial markets will put pressure on the oil price.

Countries such as Russia, for example, rely on oil revenues both to finance their military ambitions and to

sustain the domestic economy. There is no reason to expect these countries to reduce their exports, except to the extent that inadequate investment limits their ability to sustain high levels of production in the long run.

At present, the only countervailing force on the supply side is that production in many other oil-producing countries will continue to fall over time, as conventional fields are depleted. Norway and the UK are good examples. Indeed, world oil production has not grown nearly as fast as might have been suggested by news reports about rising oil production in some countries. The simultaneous gradual decline in oil production elsewhere in the world has largely gone unreported.

Over time, however, it seems likely that these continued production declines will make room for higher oil production in countries such as Iran, Iraq, Saudi Arabia, Russia or the United States. This adjustment will be accelerated by worldwide cutbacks in investment in the oil industry. The problem for Saudi Arabia is that there is a good chance that the process may take longer than its foreign exchange reserves will last.

Global economic prospects

To the extent that low oil prices reflect a sluggish global economy, the question becomes at what point Europe, Japan and emerging Asia will recover. A swift and sustained global economic recovery, unlikely as it may seem at this point, would quickly eliminate the current glut of crude oil. All indications are, however, that there remain considerable downside risks in the global economy and that the recovery is likely to be slow and gradual. This suggests that the demand for oil will not surge in the foreseeable future.

A final remedy would be coordinated oil supply cuts, similar to those that helped to alleviate the glut of crude oil when the oil price dropped to \$11 in 1998 (Kilian and Murphy, 2014). But taking the theory of cartels as a guide, that solution seems unlikely in the

current environment of low demand for oil. Oil cartels are inherently pro-cyclical and tend to fall apart during economic slumps (Barsky and Kilian, 2002).

Although there have been talks between Russia, Saudi Arabia, Venezuela and other oil producers about coordinated supply restrictions, all indications are that these producers are more likely to freeze recent high production levels than to agree on actual production cuts. Moreover, Iran, Iraq and the United States are unlikely to feel bound by any such agreements.

There is little doubt that the oil price will recover in the longer run, but the question is whether Saudi net foreign assets can sustain the economy until then. It is more than likely that the Saudi economy could face another three or four lean years. At that point, the precautionary savings in the Saudi sovereign wealth fund would probably be exhausted, while the prospects of new external borrowing would diminish. Already, the Saudi credit rating has been lowered.

The likely need for fiscal retrenchment

For Saudi Arabia, there seems to be no alternative to some considerable measure of fiscal retrenchment in the foreseeable future. The same argument applies even more forcefully to other Arab oil producers faced with more foreign debt and lower foreign exchange reserves.

A natural starting point for such reforms would be for policy-makers to reduce or even phase out domestic subsidies on energy consumption. In fact, implementing such reforms is likely to be politically easier in an environment of falling oil prices. The United Arab Emirates, for example, have already successfully aligned their domestic fuel prices with prices in global markets. Many other Arab oil-producing countries have yet to implement similar reforms.

Clearly, however, such reforms will not be enough, given the magnitude of the oil revenue shortfall that has accumulated in recent years. There will have to

be more fundamental changes to the welfare state in countries such as Saudi Arabia and implementing these changes will be politically challenging.

One problem is that many Arab oil-producing countries lack an income tax base. Taxing incomes of domestic citizens working in the public sector would be the same effectively as lowering public wages and hence public spending, leaving taxes on foreign workers' income as the only policy option for raising tax revenue. Thus, much of the fiscal adjustment will have to occur on the expenditure side.

Conclusion

It seems safe to conclude that an extended period of low oil prices is likely to cause far-reaching economic changes in Arab oil-producing countries as well as changes in the social fabric, whether these changes are implemented gradually in anticipation of growing financial constraints or are eventually forced by external events.

The obvious concern is that if this transition is not managed well, geopolitical risks in the Middle East, which have not played a large role since 1990, may become much more important again. This would contribute to higher oil prices in the long run.

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