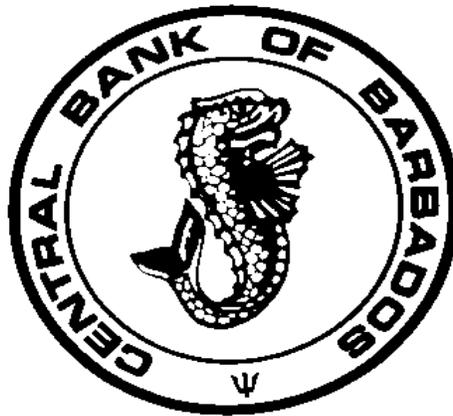


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**BOOK REVIEW: FUELING UP: THE ECONOMIC IMPLICATIONS  
OF AMERICA'S OIL AND GAS BOOM, BY TREVOR HOUSER  
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**LARON ALLEYNE**



**CENTRAL BANK OF BARBADOS**

## **BOOK REVIEW**

### **FUELING UP: THE ECONOMIC IMPLICATIONS OF AMERICA'S OIL AND GAS BOOM, BY TREVOR HOUSER AND SHASHANK MOHAN, PETERSON INSTITUTE FOR INTERNATIONAL ECONOMICS, 2014.**

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**LARON ALLEYNE<sup>1</sup>**

The recent decline in international oil prices is one of the largest in over 30 years (World Bank, 2015), with global oil prices falling by 40 percent between July and December in 2014. In early 2015, oil prices continued to fall reaching just below US \$50 per barrel, approximately 50 percent below an average price of US \$105 per barrel between 2011 and 2013. The sharp decline in oil prices is said to be linked to constrained global demand caused by lackluster growth and the increasing significance of renewable energy sources resulting in a decline in the importance of oil in GDP. These explanations seek to place the recent dip in prices in the context of a demand shock; however, there is a stronger case that can be made when viewed from a supply-side perspective. Perhaps, the strongest driver of the current fall in oil prices is the rapid expansion of unconventional oil production in North America.

There has been extensive debate about the economic consequences of the US energy boom, particularly as it relates to a possible “manufacturing renaissance” and broader U.S economic revival (CBO 2014), (Lawrence 2014) and (Sparshott 2015). This issue is the central focus of the book entitled: “Fueling Up: The Economic Implications of America’s Oil and Gas Boom” by Trevor Houser and Shashank Mohan. The authors assess the impact of the recent and projected increase in U.S. energy production on the country’s GDP, employment growth, manufacturing competitiveness, household expenditures and the trade balance. The potential environmental costs and benefits are also discussed along with possible implications for trade policy.

The discussion is structured into three main parts. Chapters one to three, contextualize the evolution of America’s energy sector. Chapters four to six discuss the limitations of previous private and public sector outlooks and present the authors’ alternative pre-shale, optimistic and conservative forecasts scenarios based on an Econometric Dynamic Equilibrium Growth Model (DEGM). The macroeconomic results are discussed in the context of equilibrium effects. The environmental costs and benefits of the oil and gas boom are also discussed along with trade policy implications, in chapters seven and eight.

In framing the significance of the oil and natural gas boom, Houser and Mohan open the discussion by highlighting that in 2006, the U.S was experiencing a surge in petroleum prices not seen since the 1970’s. The cost of crude oil had doubled since the beginning of the Bush administration and gasoline prices had increased by 40 percent. This occurred at a time when the outlook for global supply was dismal, as a result of political instability in the Middle East and higher exploration and development costs. Furthermore, U.S. demand for crude oil was expected to increase by 40 percent between 2000 and 2030. Ironically, the economics of these high fuel prices provided the impetus for increased investment in

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shale production, due to higher returns on capital. Shale production was made commercially viable through the combination of hydraulic fracturing and horizontally drilling, which allows for the extraction of oil and natural gas reservoirs surrounding and directly from low-permeability shale rock. The resulting technological advances made it possible to tap previously inaccessible reservoirs of natural gas and oil. As a result, there has been a significant expansion in U.S. natural gas and crude oil production and an improvement in the energy sector's outlook. For instance, in 2014 the U.S. produced 86 percent of its total fossil fuel consumption, relative to just 66 percent in 2006, (U.S. Energy Information Administration, 2015).

Given the recent rate of growth and the expectation for continued expansion, many public and private sector analyst project a significant expansion of the manufacturing sector and broader economic activity. However, Houser and Mohan argue that the projected economic impact of a further expansion of shale production is overstated since most forecasts utilize input-output (I-O) models and do not account for equilibrium effects. They contend that the expected economic gains will either be “zero or considerably lower than gross estimates I-O models provide” if an economy is at full employment (p. 41). In other words, they are advocating that forecasts should be based on the net rather than gross effects of the boom. Indeed, both labor and investment constraints mean that these factors of production would be redirected from other sectors tempering overall economic growth.

To address this issue, Mohan and Houser construct a general equilibrium model to assess the overall macroeconomic effects of a boom in shale production and account for feedback loops within the energy sector. They report that the shale gas and tight oil revolution could result in U.S. GDP being higher between 2013 and 2020 by as much as 2.1 percent. They also report substantial improvements with respect to employment levels, due to an overall shift towards more labor-intensive industries, particularly the mining, oil, gas and related industries.

Over the long run, however, economic benefits are expected to be subdued as general equilibrium effects take hold, despite a one-time outward shift of the production frontier. These findings are consistent with economic theory where high demand for investment and labor resources reduces investment and employment in the long-run by putting upward pressure on interest and wage rates. The contractionary effects of raising interest rate are documented by Feldmann (2013), who found evidence suggesting that a rise in the real interest rate increases the unemployment rate in countries around the world.

While increased domestic production could result in an improvement in the United States energy trade balance, this may not translate into a lower trade deficit. In the long-run increased exports and capital inflows result in a real dollar appreciation within the authors' models, making exports less competitive. This dynamic is currently occurring in the exchange rate market; in the second half of 2014, the U.S. dollar appreciated by more than 10 percent against other major currencies (World Bank, 2015, p. 6). U.S. interest rates are noted not to have risen in 2014 but investor expectations for higher rates in the future are driving the current appreciation of the U.S dollar (Frankel, 2014).

The loss in export competitiveness, via the dollar appreciation, can lead to economic losses and current account depreciation - a phenomenon known as the Dutch disease (Magud and Sosa, 2010). Additionally, expected trade balance improvements, by way of the decline in net oil and energy related imports, are likely to be off-set by greater net imports in other goods and services (Lawrence, 2014). This is supported by Sparshott (2015), who reports that rising oil production helped pushed petroleum imports down in

2014 by more than 40 percent, relative to five years earlier, although this was negated by increased demand for foreign goods due to an appreciation of the dollar. In contrast to their passive outlook for long term national economic growth, the authors report that the prospects for some states and industries were significantly more positive but with winners and losers due to rising production factor cost. These gains are expected to come at the expense of other industries due to declining competitiveness.

While there is some analysis of the influence of improved efficiency and fuel switching on forecast scenarios, the macroeconomic analysis is devoid of any deliberations regarding the impact of oil demand. Houser and Mohan indicate that expectations for producer's oil revenue are subdued due to the downward pressure excess supply exerts on prices. Mohan and Houser assume that demand for crude oil and natural gas will increase in the face of lower international prices, notwithstanding efficiency gains and fuel switching; however, current experience suggests otherwise. In 2014, demand from Organization of Economic Cooperation and Development (OECD) contracted and surging supplies coupled with weak demand resulted in growing oil inventories (World Bank, 2015). The glut was further exacerbated by the Organization of Petroleum Exporting Countries' (OPEC) decision to maintain production levels, despite historically low prices. The impact is already evident in the form of curtailed investment, as America's oil industry has begun to be strained. More than half of the country's oil and gas rigs have been shut down and more than 44,000 jobs in oil and gas drilling or supporting industries, have vanished since November 2014 (Jim Tankersley, 2015). Geopolitical pressures and demand side considerations are therefore important elements that could potentially stifle the expected gains from America's oil and gas renaissance. With demand expected to increase in 2016, it would be useful to have a clear understanding of the demand and supply interactions, although this could prove to be difficult to model.

Unconventional oil production, if well regulated, can reduce air and even water pollution when compared to other fossil fuels (Jackson et al., 2014). This view is supported by Houser and Mohan who argue that environmental costs are not as dire as critics warn, since much of the environmental concerns can be addressed through effective policy planning. Jackson et al. (2014) also caution that the current energy boom can slow down the adoption of renewables. Houser and Mohan acknowledge that it is unclear whether the recent surge in U.S. oil and gas production is representative of a structural expansion. Given the associated opportunity costs, however, the slowdown of investment in renewables could be extremely costly. Renewables offer the chance to address issues of finite supply and achieve improvements in the transformative process. They contend that revenue generated through the taxation of fossil fuels and their emissions could be used to fund nuclear and renewable energy development. The question still remains: can resources be efficiently allocated in an environment where competing interests are no longer incentivized to pursue sustainable energy alternatives?

Unsurprisingly, the turnaround in US oil and gas production has given rise to new trade policy questions. Houser and Mohan suggest that there is no evidence to substantiate that allowing open trade in U.S. energy resources would undermine the underlying benefits of the boom. Clayton (2013) provides an even more optimistic perspective, by suggesting that energy trade liberalization would provide greater stimulus for investment, thereby decreasing the country's reliance on imported energy. Of course, if one follows the suggested natural progression of events, it can be argued that the increased investment inflows will intensify the problems of the ballooning trade deficit, due to the appreciation of the U.S. dollar.

Mohan and Houser's discussion of the economic implications of the recent oil and gas boom is based on their use of a DEGM which incorporates many theoretical approaches to the business cycle. The meld of various theoretical schools lends itself to the construction of a comprehensive model, where both monetary and fiscal policies influence the short-run and long-term dynamics of an economy but in concert with neoclassical influences. There are, on the other hand, some caveats to the approach. Proponents of the Sonnenschein-Mantel-Debreu theorem, such as Rizvi (2006), state that rationality does not have macroeconomic implications. The presence of many unique individuals suggests that an equilibrium point might not exist. A countervailing argument to this is that the existence of unique behaviors do not preclude the existence of a general equilibrium, rather it speaks to tendencies of the system.

The book "Fueling Up: The Economic Implications of America's Oil and Gas Boom", provides fresh insight into America's most recent energy boom. For curious readers, academics and practitioners alike, the consideration of general equilibrium effects provides enlightenment into why recent predictions about the economic gains from the boom, might be overstated and why there will be winners and losers. Overall, the book is a useful contribution to the field of energy economics and could "fuel" the thinking of future research and scenario building.

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