

The Coupled Cycles of Geopolitics and Oil Prices

*Mahmoud A. El-Gamal**, *Amy Myers Jaffe*†

Executive summary

1. Motivations underlying the research

The last few decades have been characterized by repeating patterns of global oil-price boom and bust cycles that have wrought negative social, geopolitical and economic consequences on a variety of nations, especially in the Middle East. Energy economics literature has linked this oil boom and bust cycle to the global secular business cycle. The literature has identified links between economic growth and oil demand and, thus, trends in gross domestic product (GDP) are utilized in efforts to model oil prices. Periods of strong global economic growth lead naturally to increased demand for oil that cannot be immediately met from existing above-ground inventories and under-ground recoverable reserves that cannot translate quickly into oil production.

To address the potential of oil reserves to meet future oil demand growth as population and global GDP expands, the literature adapts the so-called Hubbert curve, which is a geologically driven curve fitting technique developed in 1956 by geologist Marion King Hubbert. The technique postulated that production of a finite resource, when viewed over time, will resemble a bell-curve. The theoretical basis of the bell curve follows from the technical limits of resource exploitation, where the estimated parameters of the curve determine the rate of ascent and descent before and after the peak.

These modeling approaches can only treat geopolitical variables exogenously. We extend this literature to demonstrate that oil price movements are not only connected to the rise and fall of demand related secular business cycle but also to a more pernicious channel that posits the accumulation of armaments during expansionary economic and oil price periods that then increase the chances of military conflict during economic contractionary, low oil price environments, perpetuating a pattern of repeating crises.

2. A short account of the research performed

Using wavelet analysis methods, we offer a framework for considering how geopolitical risk is endogenous to the oil price cycle. To do so, we extrapolate from the Hubbert curve technique to show that geopolitical events and technology disruptions can and have altered the production curve for resources over time. We also outline a separate model for how to link passive and active military spending to fluctuating oil revenue cycles.

3. Main conclusions and policy implications of the work

* Professor of Economics and Statistics, Rice University, elgamal@rice.edu

† Corresponding author. David M. Rubenstein Senior Fellow for Energy and the Environment, Council On Foreign Relations, ajaffe@cfr.org

High oil prices from 2011 to 2014 were accompanied by sharp increases in military expenditure in oil producing countries across the Middle East, which eventually has contributed to escalating conflicts once oil prices receded (2014-2016). At the end of 2017, markets were caught between upward oil price momentum, driven by risk premiums related to these escalating conflicts, and the potential for higher competition among oil producers as technology advances have driven new oil supplies. The perpetuation of the geopolitical and oil price cycle means that Western governments need to stay the course on efficiency and energy substitution programs that can ease the negative impacts of the oil-price cycle on the global economy and on international security. Governments should also consider creating expedited leasing and permitting procedures for new domestic oil production to shorten the time lag from investment response to first production in the aftermath of major international supply outages.