OPEC's kinked demand curve

Marc H. Vatter *

Brown University, Department of Economics, Box B, Robinson Hall, 64 Waterman St, Providence, RI 02912, USA
Economic Insight, Inc, PO Box 2295, Sisters, OR 97759, USA
Birch Energy Economics, LLC, 13670 W Prairie Ave, Post Falls, ID 83854, USA

Article history:
Received 4 February 2015
Received in revised form 15 February 2017
Accepted 27 February 2017
Available online 8 March 2017

JEL classification:
Q41
Q43

Keywords:
OPEC
Asymmetric
Multiple equilibria
Unstable

1. Introduction

The price of crude oil has been less stable, and marked by upward shocks, and world economic growth has been slower, since the Organization of Petroleum Exporting Countries first wielded its market power assertively in 1973.1 Before then, major oil companies known as the “Seven Sisters”, in conjunction with the Texas Railroad Commission, stabilized price above marginal cost, using tacit collusion and secret agreements to elude the Antitrust Division of the U.S. Department of Justice.2 Fig. 1 shows the log real price of West Texas Intermediate (WTI) crude oil and the real rate of growth of the world economy from 1951 to 2010.

Why have prices been unstable during the “OPEC era”? What is the effect on the macroeconomy, and what types of policy responses would stabilize and increase macroeconomic growth and employment? The main contribution of this paper is to help answer the former question. It contains estimated net demand to OPEC, including effects of oil prices on world GDP that allow for differences in responses to increases and decreases in price. Estimated asymmetric effects imply multiple equilibrium prices in the cartelized market, and the range of equilibria represents a measure of potential instability in price. Due to the asymmetry, the greater the instability in the price of crude oil, the lower are macroeconomic growth and employment. Poor national economies are more oil-intensive than rich economies, so the effects of the asymmetry are experienced disproportionately in poor countries. (Using IEA and IMF3 data, I regressed log petroleum consumption by country in 2013 on log GDP and derived a coefficient of 0.95, with a standard error of 0.02.) Policies that narrow and lower the range of equilibrium oil prices, then, raise GDP and employment, especially in poor countries. These include policies that make net demand to OPEC more price-elastic, policies that reduce net demand to OPEC, and policies that lower OPEC’s rate of time preference. A corollary to the latter is that monetary policy is more effective at accelerating or retarding economic activity when OPEC has a larger market share.

The main welfare criterion used in this article is world GDP. Bloom and Canning (2007) confirm that the positive relationship between national income and life expectancy identified by Preston (1975) continues to hold. Ensor et al. (2010) find that recessions increase maternal and infant mortality in the earlier stages of a country’s economic development. Pugh Yi (2011) summarizes literature and U.S. data, argues that poverty, both cyclical and structural, causes abortion, and concludes that raising employment and stabilizing the macroeconomy would reduce abortion.

1 See Greenhouse (1987) for journalistic observations.
2 See Moran (1993, pp. 159–178) for a comparison of the two cartels.
fluctuations in consumption associated with the macroeconomic instability caused by the changes in price. Teitenberg (2007, p. 202) explains that periods of high oil prices may leave developing nations short of foreign exchange. There is no economic risk more systematic than that to the world economy, and OPEC can sell insurance against that risk inasmuch as it results from changes in production. As noted, variation in price overall is consumption-smoothing, and causes procyclical variation in the incomes of producers of oil, including OPEC, but policies, such as trading strategic stocks of crude oil, capable of mitigating variation in price originating in changes in production will not only raise GDP over time, but also smooth the consumption of consumers, and make the incomes of producers of oil more procyclical.

Because of multiple equilibria leading OPEC to accept shocks to price originating both beyond and within the cartel, and because of countercyclical profits associated with shocks to production of oil, OPEC may find variation in price more profitable than stable prices. The multiple equilibria result from asymmetry in the effects of changes in oil prices on the macroeconomy. The asymmetry also implies that instability in the price of oil lowers economic growth and employment over time, and I proceed here on the assumption that this loss in GDP is greater than any net benefits of consumption-smoothing, though preference may be given to policies that mitigate volatility in price originating in shocks to production, rather than in shocks to GDP.

I review literature in Section 2. I describe method, model, and data in Section 3. I present and discuss estimates of world demand for and non-OPEC supply of crude oil, and the effects of crude oil prices on world GDP, in Section 4. The discussion includes estimated ranges of equilibrium prices and elasticities. I conclude, discuss policy implications, and mention further research in Section 5, and I cover more detailed aspects of the econometrics in the appendix.

دریافت فوری متن کامل مقاله

امکان دانلود نسخه تمام متن مقالات انگلیسی
امکان دانلود نسخه ترجمه شده مقالات
پذیرش سفارش ترجمه تخصصی
امکان جستجو در آرشیو جامعی از صدها موضوع و هزاران مقاله
امکان دانلود رایگان ۲ صفحه اول هر مقاله
امکان پرداخت اینترنتی با کلیه کارت های عضو شتاب
دانلود فوری مقاله پس از پرداخت آنلاین
پشتیبانی کامل خرید با بهره مندی از سیستم هوشمند رهگیری سفارشات