



Not Your Father's Oil Shock

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A widely popular notion is that oil price fluctuations are primarily driven by changes in oil supply. This belief may have formed because much of the production of oil is determined by a cartel (the Organization of the Petroleum Exporting Countries). During the 1970s and early 1980s, several oil supply disruptions were associated with large increases in the real price of oil. In particular, the oil embargo of 1973 and the Iranian Revolution of 1979 appeared to cause large increases in oil prices.

The chart tracks the West Texas Intermediate crude oil spot price (deflated by the headline consumer price index) and world crude oil production. For both series, the rate of change in the two-quarter moving average is shown. The vertical bars represent the noted historical periods and a few others that seemingly affected oil prices—the start of the Iran-Iraq War in 1980, the start of the Persian Gulf War in 1990, civil unrest in Venezuela in 2002, and the invasion of Iraq in 2003.

As the chart shows, oil price changes do not always react in the opposite direction of supply changes, implying that additional factors may be at work.

Economist Lutz Kilian (2009) recently studied three different types of oil price shocks: changes in (i) production (i.e., supply shocks), (ii) global demand driven by economic activity, and (iii) precautionary demand, which is the demand for assets (in this case, oil) to guard against future emergencies (e.g., unanticipated shortages).¹ Similar to conventional increases in demand (say, for production or transportation), increases in precautionary demand raise the price of oil.

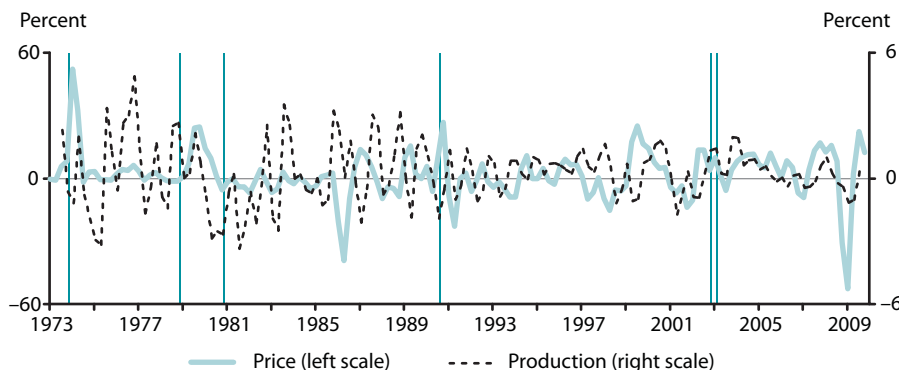
If different oil price shocks occur around the same time, can we differentiate their effects on oil prices? Kilian addresses this question in the context of some notable oil price spikes. For

instance, he finds that the price increases in 1979-80 were primarily caused by increases in precautionary demand, while oil production declines had a relatively small impact. The same can be said for the Persian Gulf War period. Since 2002, however, most of the price increases can be attributed to increased global demand from countries such as China and India. Overall, Kilian's results provide evidence that increases in the demand for oil are the main contributors to fluctuations in the real price of oil.

Factors other than changes in oil supply may cause changes in oil prices.

This does not imply that disruptions in oil supply have no effect. Changes in supply now can indirectly affect prices by raising precautionary demand if agents believe that

Changes in Moving Average of Oil Price and World Oil Production (Quarterly)



SOURCE: Wall Street Journal and Bureau of Labor Statistics (West Texas Intermediate crude oil spot price deflated by consumer price index); U.S. Energy Information Administration (the monthly average of world crude production in thousands of barrels per day). The log rates of change for the two-quarter moving averages are shown. The text lists the events indicated by vertical bars.

future disruptions will escalate. If, say, political unrest in oil-producing regions leads to uncertainty about future oil supplies, precautionary demand will increase, as will oil prices. ■

¹ Kilian, Lutz. "Not All Oil Price Shocks Are Alike: Disentangling Demand and Supply Shocks in the Crude Oil Market." *American Economic Review*, June 2009, 99(3), pp. 1053-69.