

The key features of any account, he writes, are the low price elasticity of demand for oil; the strong growth in demand from China, other newly industrialized economies, and the developing Middle East itself; and the failure of global production to increase. These factors explain the initial strong pressure on prices that may have triggered commodity speculation. Speculation could have edged producers like Saudi Arabia into the discovery that small production declines could increase current revenues and might be in their long-run interest as well. The strong demand may also have moved us into a regime in which scarcity rents, which were negligible in 1997, were perceived to be an important permanent factor in the price of oil.

Hamilton explores three broad ways to explain changes in oil prices: a statistical investigation of the basic correlations in the historical data; a look at the predictions of economic theory as to how oil prices should behave over time; and a detailed examination of the fundamental determinants and prospects for supply and demand. In terms of the statistics, he notes that changes in the real price of oil historically have tended to be permanent, difficult to predict, and governed by very different regimes at different points in time.

According to economic theory, three restrictions of the time path of crude oil prices should hold in equilibrium, arising from storage arbitrage, financial futures contracts, and the fact that oil is a resource than can be depleted. These connect the spot price of oil today to the value that market participants expect the price to be in the future. Just as the current price of

a stock reflects what people expect about future earnings, making the actual change in stock prices very difficult to predict, the current price of oil should reflect expect-

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tations of future fundamentals, making changes in the price of oil hard to predict. The broad movements of the price of oil and oil futures contracts are consistent with these theoretical restrictions.

The price elasticity of demand for oil (that is, the response of the demand for oil to changes in its price) is challenging to measure but appears to be quite low, Hamilton writes, and it seems to have declined over time. Income elasticity (that is, the response of the demand for oil to changes in income) is easier to estimate: for countries in an early stage of development it is close to unity, but it is substantially less than one in recent U.S. data.

On the supply side, Hamilton notes that there are problems with interpreting OPEC as a traditional cartel and with cataloging intermediate-term supply prospects, despite the very long development lead times in the oil industry. The path of depletion for existing oil reserves is related to the past and possible future geographic distribution of production. Although the standard theory of exhaustible resources suggests that the difference between the price and marginal extraction cost of oil should rise at the interest rate, in fact, the real price of oil declined steadily between 1957 and 1967, and fell sharply between 1982 and 1986. This record led many economists to conclude that, at least his-

torically, oil prices had not been significantly influenced by the possibility of exhaustion. However, nothing in the theory says that just because the scarcity rent

has been negligible historically, it's going to continue to be negligible in the future.

Overall, Hamilton concludes, the low price-elasticity of short-run demand and supply, the vulnerability of supplies to disruptions, and the occurrence of a peak in U.S. oil production explain the general behavior of oil prices over the period of 1970–97. Although the traditional economic theory of exhaustible resources does not fit in an obvious way into this historical view, the profound change in demand coming from the newly industrialized countries and recognition of the finiteness of oil offer a plausible explanation for more recent developments in oil prices.

Still, Hamilton writes, “the \$140/barrel price in the summer of 2008 and the \$60/barrel in November of 2008 could not both be consistent with the same calculation of a scarcity rent warranted by long-term fundamentals.” He nevertheless concludes that “if demand growth resumes in China and other countries at its previous rate, the date at which the scarcity rent will start to make an important contribution to the price, if not here already, cannot be far away.”

— Matt Nesvisky

Exchange Rates and Prices

Since the 1990s, a debate has raged over the relationship between currency depreciations and the prices of domestic goods. Traditionalists argue that when a nation's nominal exchange rate rises, the prices of its traded goods rise, so that the real exchange rate of traded goods between

two countries remains roughly the same. Contemporary U.S. exchange rate and price behavior, however, casts doubt on this view, and an alternative has emerged which suggests that currency depreciations have little or no effect on domestic prices. This alternative view, known as the

New Open Economy Macroeconomics (NOEM), implies that when a country's currency depreciates its goods simply become less expensive compared with those of other countries.

In Real Exchange Rate Movements and the Relative Price of Non-Traded

Goods (NBER Working Paper No. 14437), **Caroline Betts** and **Timothy Kehoe** examine recent price and exchange rate movements to help distinguish between these two views. They study the quarterly bilateral real exchange rate and the relative price of non-traded to traded goods for 1225 country pairs over 1980–2005. They show that there is a strong relation, on average, between depreciations and domestic prices, especially between two countries that trade intensively with each other. The exception, which conforms more closely to the emerging “alternative” view, is trade between North America and the European Union.

Their findings suggest that “neither the extreme approach to bilateral real exchange rate determination of the traditional theory nor that of the NOEM literature is appropriate... The traditional theory works best for pairs of countries that trade a lot with each other, and who share a relatively stable real exchange rate. The NOEM approach applies best to pairs of countries that trade little and share a relatively volatile real exchange rate.”

This debate is important because of what it says about the so-called “law of one price,” which holds that traded goods have one price no matter where they are sold. So an exportable good — a Japanese tire or an American car — would cost the same whether it was sold domestically or abroad, after transportation and other costs are factored in. If one nation’s currency depreciates, then its traded goods would become cheaper for foreign consumers, who would

begin to snap them up until the prices of those goods began to rise. Eventually, prices will return to the point where the real price of that nation’s goods, measured in either the home country’s prices or those

currency movements affect the ratio of the prices of a nation’s traded and non-traded goods. The effect is especially strong if two countries trade intensively. This relationship holds even when there are wide dis-

“The traditional theory — [the law of one price for traded goods] — works best for pairs of countries that trade a lot with each other, and who share a relatively stable real exchange rate.”

of its trading partner, would again equal the prices of goods produced by its trading partner in either market.

The law of one price doesn’t hold for non-traded goods, like a haircut, because such goods cannot be moved across markets. Thus, currency depreciation could cause the ratio of the price of a nation’s non-traded goods to that of its traded goods to rise. For example, it would take more haircuts to equal the market price of a car.

Historically, economists have noticed that the law of one price doesn’t always hold for traded goods. In many cases, especially in trade between the United States and the European Union, depreciations seem to have no price impact at all. Such findings led to the NOEM school of thought, which suggests that monetary policy could explain most or all of the fluctuations in nations’ real exchange rates of traded goods.

In the Betts and Kehoe study, which examines bilateral trade among 50 countries, the law of one price does not hold for traded goods, but it comes closer than for non-traded goods. Put another way,

parities in wealth or inflation between the two nations.

When the authors include China, for which the data is annual rather than quarterly and only dates back to 1985, the results change very little. But for the United States and its European trading partners, the relationship is dramatically weaker. Fluctuations in the relative price of non-traded-to-traded-goods account for only 7 percent of the fluctuations in the bilateral U.S./EU real exchange rates when measured in four-year differences using a variance decomposition. By contrast, these relative price fluctuations account for 29 percent of the fluctuations in U.S./non-EU real exchange rates and 39 percent of the fluctuations in U.S./Canada and U.S./Mexico real exchange rates. The authors suggest that the lower ratio for the United States and the EU nations may be attributable to the relatively low importance of trade, compared to the size of these economies. They note that just because there’s a relationship between exchange rates and domestic prices, it does not follow that one drives the other.

— Laurent Belsie

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