



The Economics of Volatile Oil Prices

Posted by [Phil Hart](#) on February 18, 2009 - 10:12am in [The Oil Drum: Australia/New Zealand](#)

Topic: [Economics/Finance](#)

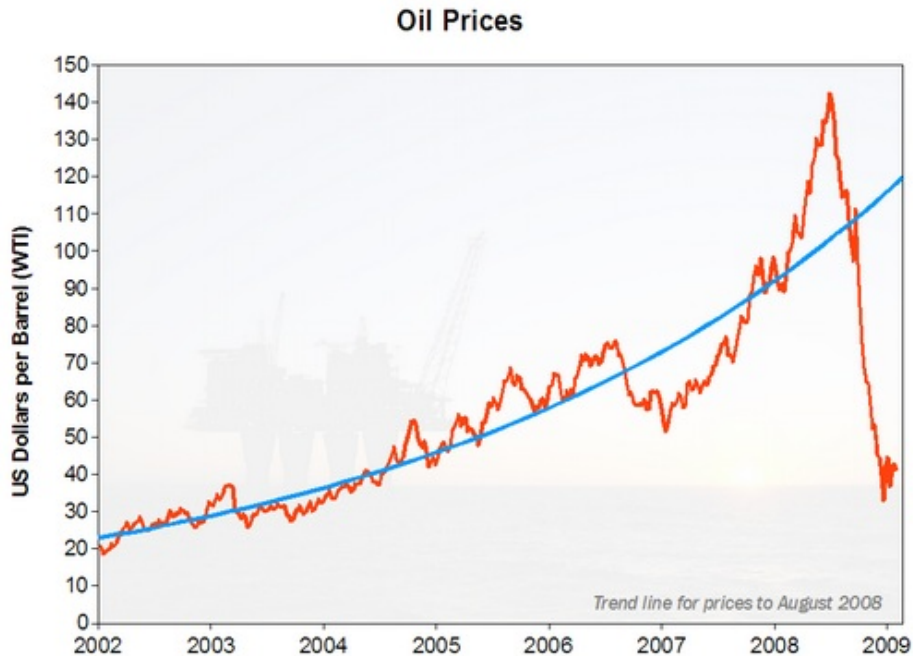
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Considering the fundamental nature of oil supply and demand provides a coherent explanation not just for the rapid rise in oil prices, but also the dramatic fall.



In recent years, I despaired when I heard economists on TV explain oil's spectacular run up in prices by saying that 'demand was exceeding supply'. How could trained economists, in just a few short words, contradict the basic grounding in economics that I was taught early in my engineering degree?

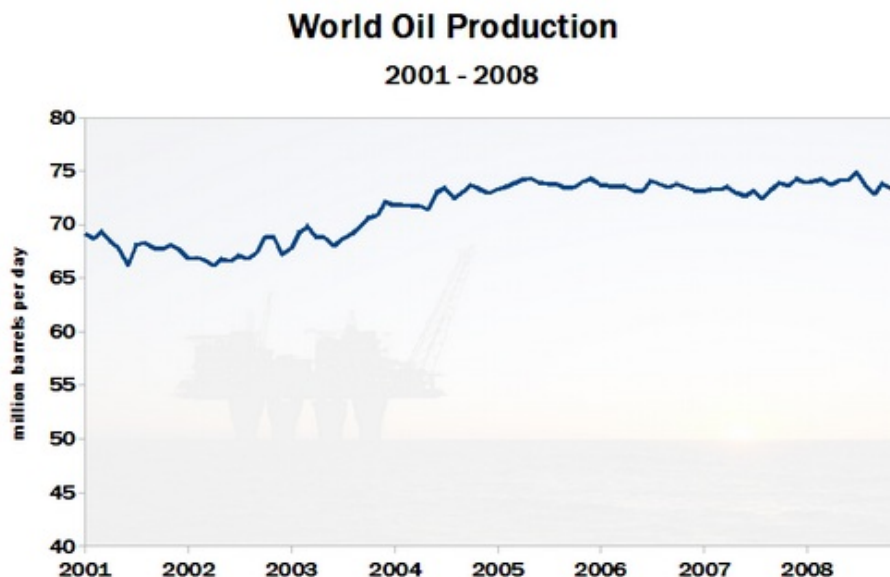
Another popular explanation was 'market speculators' who were apparently exploiting us and walking away with squillions of dollars for a few easy hours work. Blaming the speculators seems to make even more sense now that we have watched the price of oil evaporate from \$140 to \$40 a barrel overnight. How can \$140 have been anything other than speculation?



Speculation increases volatility in oil prices, but it cannot lead to a long-term bias in the price. Oil traders make money just as easily being 'short' oil as they do buying or going 'long'. If some traders have pushed a price irrationally high, others will go 'short' making their profits when the price readjusts. That is the ruthless 'price finding' of the market at work (just as the markets have ruthlessly found the value of Wall St stocks).

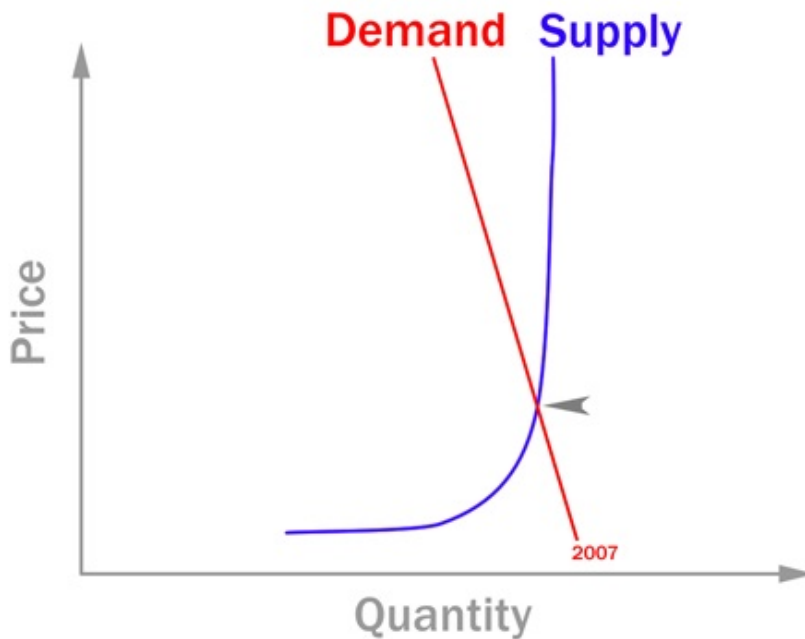
Disruptions to oil supply caused price spikes as buyers bid against each other to ensure their supplies for the following month are secure. When the crisis died down, prices fell steeply as buyers found themselves with oil that nobody was particularly desperate for anymore.

In the chart above, the trend line shows the increasing oil price necessary to balance the market. The market could be above the trend line at times of disruptions to supply, or just as easily below the trend when it underestimated how much production would be available in coming months. Only with hindsight can we see when the market was over or under-priced. Since August 2008, we have clearly broken from the previous trend.

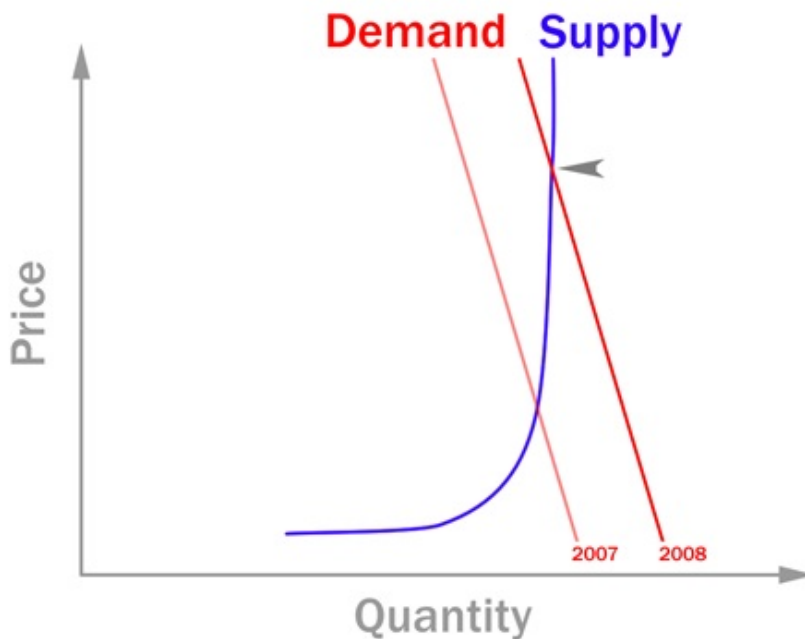


Oil production was relatively flat from 2004 to 2008, despite the rapid rise in prices. Once the

world's maximum production capacity was reached, the supply curve for oil became vertical. It didn't matter how high the price went, oil producers could not bring any more oil onto the market.



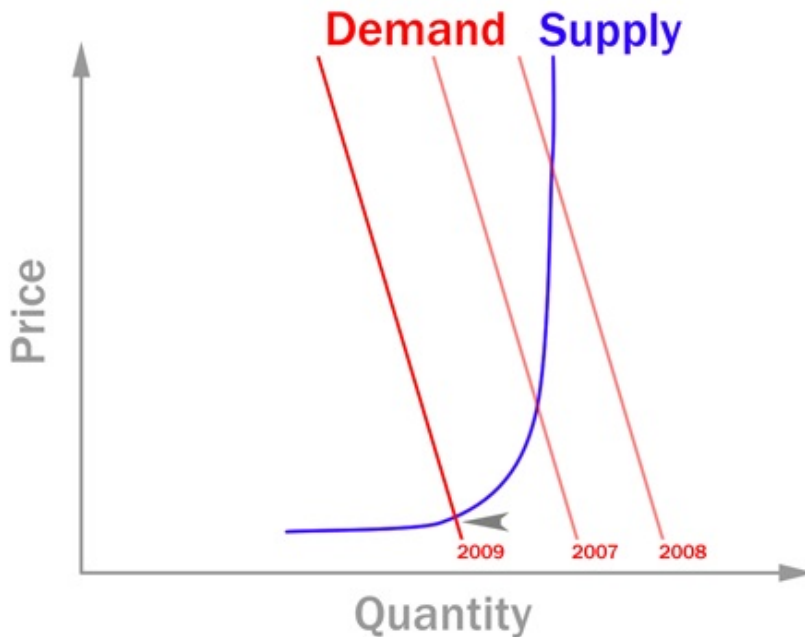
But over the same period, the world's economies were still growing. The desire and thirst for oil was greater. The effect of this was to move the demand curve further to the right each year. But the demand curve is also steep - each individual user of oil, while bemoaning the high price, made little change to their own consumption. To force enough users to reduce their consumption and find a new equilibrium, the price had to rise quite significantly.



Demand curve moves right as the world economy grows from 2007 to 2008, requiring a much higher price to balance the market.

Demand was not 'exceeding' supply. But because both functions are 'steep' or 'inelastic' (not responsive to price), it required dramatic increases in price to find a new equilibrium between the

two. This is the fundamental nature of constrained supply and robust demand that drove the oil price boom. It's not hard to see why there were predictions of \$200 a barrel, on the assumption that the global economy could keep growing at its breakneck pace.



Demand curve for 2009 moves sharply left as the global economy contracts. It takes a steep drop in price to force enough producers to cut supply to balance the market.

On the way down, the oil companies are their own worst enemies, doomed to repeat the boom-bust cycle that has plagued the industry for decades.

The industry is capital intensive, hugely so, which is why it is dominated by big players. But once an oil field has been developed, the marginal cost of operating that field is relatively low. For most fields, the operating cost is still less than \$40 per barrel. This means that most oil companies, despite the oil price collapse, are still producing today almost the same as they were twelve months ago at the top of the price cycle.

But demand has collapsed - the demand curve for 2009 has moved sharply left as economies unravel. So the oil price has to fall far enough to force some companies to cut production. If it weren't for OPEC cutting a few million barrels per day from their production, the price would fall even further until the market actually cut below the operating costs for a large enough fraction of the world's oil fields. Tar sands are feeling that impact already.

This price bust must eventually be followed by another boom. The impact of low oil prices is for oil companies to cancel their capital expenditure on new developments. The future supply curve is already being shifted to the left - the vertical asymptote on the supply curve will be at a lower production level in 2010 and following years than last year. Once demand recovers (shifts right), or just because supply begins to fall faster than demand, we will see prices rise again.

For more on the economics of supply and demand, see [How to Address Contrarian Arguments - part III](#) by Luis.



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