Oil Market Dynamics and the Fear Factor

Crude oil prices surged in February 2012 mostly due to fears of potential supply disruptions related to the rising global tensions surrounding Iran’s nuclear ambitions. This rise in crude oil prices occurred despite increased supply from Saudi Arabia, more production in the US and Canada, less US imports, slower oil demand growth due to stagnation in Europe and decelerating growth in China, and competition from cheaper alternative sources of energy such as natural gas. That is, the purely economic supply/demand fundamentals of the oil market might suggest lower oil prices. The addition to the oil price equation of the geo-political dimension of fear trumps the economic fundamentals.

Markets tend to be especially fearful of potential events that can have large negative impacts. The probabilities may be low for a conflict over the Strait of Hormuz or the possibility of additional military action in the Mid-East, yet the direct and indirect implications for all the nearby oil-producing countries are extremely severe and the potential negative spillover into the world’s oil supply is huge.

This is a current example of the challenges markets face in combining two distinctly different scenarios. One scenario has a very low, but all too real, probability of an outcome with dire consequences, while the other has a high probability, but by no means certain outcome of market stability and economic optimism. As we highlighted in our in-depth and long-term research report, “Era of Dissonance” in the fall of 2011, when market fears become driving forces, it is not unusual to get a bi-modal probability distribution reflecting the “fear” versus the “relatively normal” possible future outcomes. And, bi-modal probability distributions are especially hard to analyze, since what matters to markets is how the relative probabilities of one scenario to the other shift over time with new information.1

In this case, the fears of disruptions either of sources of crude oil or crucial supply lines are all too real. Moreover, the geo-political issues surrounding the tensions related to Iran’s potential nuclear ambitions are exceedingly complex and have a history extending over many centuries.

Put yourself in Iran’s shoes. Look east. Pakistan has nuclear capabilities. India has nuclear capabilities. China has nuclear capabilities. Now look north. Russia has nuclear capabilities. It is like a housing subdivision, and Iran is the only home on the block without nuclear capabilities.

Now look west from Iran. Iran has simultaneously been a disruptive force for both Israel and Saudi Arabia. Israel would like to see Iran’s nuclear ambitions derailed. Saudi Arabia will surely want to obtain nuclear capabilities if Iran achieves this status.

The potential military battle ground is the Strait of Hormuz, a crucial conduit of Mideast oil. Iran has threatened to close it. The US Navy is there to defend it.

Moreover, as everyone is aware, tensions run deep in the Middle East and military action has been all too common. The potential for an eruption in one place to become contagious and spawn unintended consequences is very real. Iran has been at the center of many disputes old and new; the Turkish Ottoman empire fought the Persian Safavid dynasty for centuries over all the territory currently involved in today’s tensions. And, there are many latent and not so latent disputes which can be put into play in one country or area and easily spread to others, as was observed in the uprising known as the “Arab Spring”. The current civil unrest in Syria, or desires by the Kurds for a state of their own, for example, should not be viewed in isolation but as part of package that could be impacted if the tensions with Iran escalate into military action.

While heightened fears of Iran-related oil supply disruptions have sent crude oil prices surging, other asset classes were relatively calm in February 2012. Fueled by better US economic data and diminished fears of a collapse of the European banking system due to sovereign debt exposures, optimism in equity markets hardly skipped a beat in the month as crude oil prices raced higher and higher. Treasury bonds, which often reflect “flight-to-quality” impulses were relatively unperturbed in February, and responded in March to better news from the US economy more than anything else. Nevertheless, the volatility potential from the Middle East is very large should diplomacy fail to calm the tensions. Crude oil prices would be at the epicenter of market participant concerns over the potential impact of highly disruptive, yet low probability events.

Moreover, the knock-on effects from the higher crude oil prices that reflect the geo-political tensions instead of supply/demand fundamentals are quite complex to analyze. Crude oil comes in several varieties (e.g., sweet to sour). While supplies from one region of the world can be diverted to other regions there are non-trivial economic costs involved, as well as political ramifications. Crude oil has substitutes, such as natural gas, for some uses, but the substitution process involves considerable time, measured in years in some cases, as well as costs. The time and cost dimensions of the complexity of effectively utilizing energy substitutes in the near-term simply makes the price impact in the crude oil market that much more severe in reaction to geo-political fears.

Of note, there have been markedly different price patterns in recent years for US natural gas and crude oil. This reflects the expanded supply of natural gas in the US on the one hand, and the very slow process of substituting natural gas for other energy sources on the other hand. To the extent, over the long run that alternative energy sources become more easily and quickly (time is money) substitutable for each other, then geo-political tensions may be modestly less disruptive to oil markets.
In addition, there are economic effects from elevated crude oil prices that reverberate through economies around the world. Attention in the US, for example, often focuses on the price of gasoline at the pump for an auto-centric society. US gasoline prices at the pump follow crude oil prices more (2009-2012) or less (2003-2006), but if crude oil prices soar, then gasoline prices will follow.

The possibility of $5/gallon gasoline at the pump would divert consumption from other goods and services and knock a few tenths of a percent off the annual real GDP growth of the economy in 2012. It would by no means stop the accelerating recovery, but the economy would certainly do better if it did not happen. The February 2012 move in crude oil prices, however, is well short of what it would take to move gasoline prices at the pump high enough to impact economic growth in a meaningful manner. Crude oil prices would need to surge much higher to bring $5/gallon gasoline or higher. That is, $5/gallon gasoline is unlikely unless the worst fears (very low probability) of the military action and supply disruptions in the Middle East actually come to pass.

As we all intensely watch the ebb and flow of the war of words and economic sanctions, market participants of all stripes and kinds are also likely to explore how to hedge their risks. There has already been increased interest in the Oman crude oil futures contract traded on the Dubai Mercantile Exchange, since the delivery point for Oman oil is on the Indian Ocean side of the Strait of Hormuz.

For many market participants, however, the risk mitigation challenge is extremely complex. The existence of market expectations reflecting the complications of a two scenario, bi-modal distribution points in the direction of an “insurance” solution as part of the risk management process.

There are a few critical points to appreciate. The status quo in these cases is not stable. One or the other scenario eventually takes control of the market consensus. In the period of instability in which we currently find ourselves, market volatility will shift dynamically as the odds move to favor one or the other outcomes. Shifting volatility, known technically as heteroscedasticity, is an enormous problem for many risk systems and options pricing methodologies, as they often embed assumptions that volatility is both predictable and stable. As a result, shifting volatility makes these risk and options pricing systems less robust and the user should have less confidence in model results.
One solution is to approach the problem through the lens of the insurance industry. Take the example of fire insurance on one’s home. The probability of a fire is exceedingly low, but the consequences are quite dire. One does not typically sell one’s house because of the unlikely possibility of a fire. One buys insurance. The financial market equivalent is deep out-of-the-money options. How deep out-of-the-money determines the “deductible”. Like fire insurance, one hopes never to need the insurance, but having it allows one to focus on the upside potential of the much more likely, but definitely not certain, more optimistic outcome.

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