

Taking a Chance on Oil
by Georges Chehade and Eduard Gracia

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Geopolitical and financial uncertainty contribute more than an imbalance between supply and demand to sky-high oil prices.

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We live in uncertain times. The war in Iraq and on terrorism, diplomatic struggles with nascent nuclear powers, and a crisis in global finance have combined to make the world a very unsettled place to do business. Consider the plight of an executive in charge of strategic planning at a major international oil company. Faced with the decision of whether to make significant investments in exploration and production, he or she needs to take into account expectations about the future price of oil. It is, of course, nearly impossible to predict that price. But insight into the elements that contribute to price fluctuations may help companies improve their planning and better manage their risk.

On the surface, the price of oil appears to be subject to the laws of supply and demand. Oil is not reusable, and supplies are tied to a variety of factors, including exploration, geopolitical issues, and, ultimately, just how much oil the world has left. Meanwhile, global demand is on the rise as the developed world maintains its seemingly insatiable appetite for hydrocarbons and countries such as China and India look to fuel their fast-growing economies.

Like any market, however, something less cut and dried is also influencing the cost of oil: the changing expectations of participating buyers and sellers. In the

past, every time the price of oil has gone up, naysayers around the world have claimed that reserves are running dry — and have yet to be proven correct. Given this long history of mistaken predictions, it is clear that most people have had little idea whether supply and demand or market expectations is the predominant influence on price.

But if it were possible to calculate just how much of the price of oil at any given time is due to fundamentals and how much is the result of uncertainty, companies could make better decisions about investments whose performance depends on what oil will cost in the future. That calculation requires a third factor, what economists call an “instrumental variable,” closely correlated to one of the primary factors — in this instance, the degree of uncertainty — that can help produce a consistent estimate. In the case of crude oil, an excellent variable is readily at hand: the price of gold.

Gold is currently selling at nearly US\$1,000 an ounce, up from about \$350 just three years ago. The price has jumped not because the world’s gold supplies are fast being depleted or because demand for gold from jewelry makers and high-end audio cable manufacturers has suddenly increased. Although the amount of gold in the world is essentially finite, all of it is reusable, and industrial demand for the precious ele-

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ment has remained relatively constant for years. Rather, the price of gold has long been a function, and a leading indicator, of global uncertainty. Stock markets may plummet, entire empires may crumble, but gold will always retain some value as a medium of exchange. Thus, when uncertainty is high, the price of gold rises. When the situation calms down, the price declines.

Therefore, we can use the correlation between oil and gold prices to understand how geopolitical uncertainty affects the former, and to distinguish uncertainty's influence from that of underlying supply and demand. It turns out that the price of gold has tracked the price of oil very closely over the past decade or so. And because the amount people are willing to spend on gold is an excellent indicator of uncertainty, gold provides a near-perfect variable for determining the degree to which perceived instability is influencing the price of oil. Our analysis shows that there was a 90 percent correlation between gold and oil prices between 1999 and 2007; however, the correlation dropped below 10 percent during the relatively stable period from 1992 to 1999, after the Gulf War. This suggests that a large proportion of price changes in the past several years could be attributed to the impact of uncertainty, and only a small proportion to changes in the supply-demand balance. (Inflation induced by oil prices might also explain the correlation between oil and gold, because gold itself is a common hedge against inflation. However, that link explains only a small portion of the correlation between the two commodities' prices.)

Currently, unrest in the Middle East, the diplomatic standoff between the U.S. and Iran, doubts about the intentions of President Hugo Chavez in

Venezuela, and Russian supply disruptions lead traders to try to protect themselves by locking in oil prices, an activity that inevitably increases the price of oil. The high degree of uncertainty also has an economic component, as local and regional inflation, fluctuating currency exchange rates (not least, the declining value of the U.S. dollar), and the potential for rapid increases and declines in national economic growth rates influence the behavior of market players.

Using the Gold Standard

The conclusion, then, is that greater geopolitical and financial uncertainty translates into wilder fluctuations in oil prices. Armed with this information, companies can make better assumptions about the future price of oil when their planning initiatives call for them to do so. Although the uncertainty buffeting the price of oil is unavoidable, executives can recognize the *risk* involving the market trajectory of oil and determine their companies' appetite for it by taking into account the uncertainty factor in the circumstances affecting investment decisions. For example, when an oil company decides how much to invest in upstream efforts such as exploration, it typically sets a future price for oil, the "hurdle" price, above which its investment will produce positive returns. The risk in such a decision rests in the probability that the price of oil will dip below the hurdle price, thus destroying the profitability of the investment. As the uncertainty of oil prices increases, planners must recognize that this uncertainty forces them into the position of taking on greater risk.

Taking uncertainty into account in decision making applies not only to oil exploration; the decision to build a new nuclear plant or a wind farm, for instance,

should be driven by the same considerations — how likely is it that the price of oil will drop to the point where alternative energy sources are less competitive? Alternative energy players may well be willing to make investments in new technologies, betting that oil prices will go up and they will reap the rewards. At the same time, however, they are braving the possibility that prices may go down. The key is that they must be well aware of the dangers and plan their contingency scenarios accordingly.

The relative level of uncertainty in the price of oil also has consequences for downstream companies: The greater the uncertainty, the more important it is for these companies to optimize the supply chain in order to have product available when the price is high.

Similar considerations hold true for every company whose future profitability depends to some degree on the price of oil, from airlines to plastics. An auto company contemplating major investments in alternative technologies should tread carefully when the oil market is uncertain, because the risk is much greater that the price at the pump may drop to the point where the auto-buying public will decide that those new technologies aren't worth the extra cost. When the price of oil is uncertain, any investment in fixed assets designed to reduce variable costs will have a bigger risk.

Making long-term investments based on the price of oil is, right now, very risky. Yet all companies must make such bets — and a better understanding of the role of uncertainty in determining oil prices, aided by an understanding of the correlation between oil and gold prices, can help them to do so. What's critical, therefore, is to make sure that risks are calculated as carefully as possible given that such investments are

probably more chancy than they have been in the past. In light of the ever-shifting circumstances in the world's political and financial environments, every company needs to determine how much risk it is willing to take on. +

Resources

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