



Calhoun: The NPS Institutional Archive
DSpace Repository

Faculty and Researchers

Faculty and Researchers' Publications

2003-04

**Oil Prices and the Iraq War: Market
Interpretations of Military Developments;
Strategic Insights: v.2, issue 4 (April 2003)**

Looney, Robert

Monterey, California. Naval Postgraduate School

Strategic Insights, v.2, issue 4 (April 2003)

<https://hdl.handle.net/10945/25431>

This publication is a work of the U.S. Government as defined in Title 17, United States Code, Section 101. Copyright protection is not available for this work in the United States.

Downloaded from NPS Archive: Calhoun



Calhoun is the Naval Postgraduate School's public access digital repository for research materials and institutional publications created by the NPS community. Calhoun is named for Professor of Mathematics Guy K. Calhoun, NPS's first appointed -- and published -- scholarly author.

Dudley Knox Library / Naval Postgraduate School
411 Dyer Road / 1 University Circle
Monterey, California USA 93943

<http://www.nps.edu/library>

Oil Prices and the Iraq War: Market Interpretations of Military Developments

Strategic Insights, Volume II, Issue 4 (April 2003)

by [Robert Looney](#)

[Strategic Insights](#) is a monthly electronic journal produced by the [Center for Contemporary Conflict](#) at the [Naval Postgraduate School](#) in Monterey, California. The views expressed here are those of the author(s) and do not necessarily represent the views of NPS, the Department of Defense, or the U.S. Government.

Click [here](#) for a PDF version of this article.

Introduction

By their nature, crises tend to have a negative impact on markets and economic activity. In a play on the old market adage, "Buy on the rumor, sell on the fact," market wags now advise one to "Sell on the saber-rattling, buy on the bullets." Another variant suggests a wise move is to "Buy when you hear the sound of the cannon; sell when you hear the sound of the church bells" (quoted in Walsh, 2002). While no doubt good advice in many cases, are these words of wisdom good guidance when it comes to oil markets during periods of war and conflict?

Drawing on a framework developed at the Naval Postgraduate School for the Chief of Naval Operations (Looney and Schrady, 2000; Looney, Schrady, and Brown, 2001, and Looney, 2003), and applied to several recent conflict situations, this *Strategic Insight* examines oil price movements prior to and immediately following the initiation of the current conflict in Iraq. Are the oil price movements seen to date similar in nature to those previously observed in wartime situations? Are the markets reacting in a rational, predictable way to readily available information on military developments? The next section summarizes the light shed on these issues by prior research and outlines a model for assessing the current conflict.

Oil Markets During Crisis Periods: Conceptual Issues

Identifying links between international conflicts and oil markets entails several steps. The first is the monitoring of factors that are generally viewed by markets as affecting the outcome of the conflict. In this regard, the research noted above focused on the deployment of forward-engaged naval forces. These are often the first to respond to a crisis and their arrival on scene can often have a stabilizing political influence. The comings and goings of naval forces are widely reported so that market traders can consider this information in planning their buy/sell strategies.

Second, it is essential to select an index capable of reflecting the market's interpretation of the severity of a crisis as well as the degree to which market confidence is restored following a military action. Because oil futures prices provide more information than spot prices, movements in these markets were used to explore the effect of naval forward engagement and crisis response. Oil futures markets serve as an efficient substitute for the bulk storage of oil. Instead of stockpiling oil reserves, futures markets such as the New York Mercantile Exchange (NYMEX), and the London (Brent) allow companies to purchase contracts to buy or sell oil at some future time. These contracts are transacted for individual months in the future. Traders base their offers on the best economic, political, and military information available to them at the time the contract is traded. As a result, futures prices are considered to be the best unbiased

estimate of the likely spot or daily price of oil when the contracted delivery date actually arrives.

In sum, futures markets transactions generate oil price forecasts that reflect traders' confidence as to the future state of oil markets. Futures prices can thus be used to assess the effects of military actions such as naval forward engagement and crisis response on market confidence in oil availability.

Oil Price Movements During a Crisis

With these considerations in mind, the actual oil price patterns observed in the cases previously examined (the First Gulf War, 1990-91; the Taiwan Strait Crisis, 1996; Operation Desert Strike, 1996; Operation Desert Fox, 1998; the Libyan Operations, of 1986; the Gulf Shipping Crisis, 1987; and the Iraq-Kuwait border confrontation of October 1994) followed a fairly similar pattern. Prior to a crisis, oil futures market curves generally slope upward as shown in [Figure 1](#), Curve 1. Curve 1 reflects both the cost of storage and the general expectation among traders that oil prices will increase over time. With the advent of a crisis, however, future availability of oil is in doubt and traders attach an uncertainty or "war premium" to their ask price (Gabilon, 1995). The effect on futures prices is twofold. First, such a development increases futures prices for all months (indicated by an upward shift in the futures price schedule). Second, the slope of the futures market curve becomes negative ([Figure 1](#), Curve 2), reflecting traders' willingness to pay a premium for immediate possession of oil. It was found that when naval forces respond to the crisis, some of the uncertainty concerning oil supplies is alleviated. The impact of this information on trades shifts the futures price curve downward and decreases the short run premium paid for immediate possession of oil. These effects are evidenced by a downward shift and flattening of the futures price schedule ([Figure 1](#), Curve 3).

Over time, naval forward presence reduces risk to oil supplies and alleviates traders' concerns over oil availability. Increasing confidence in oil supplies can be seen graphically by a further flattening of the futures price curve ([Figure 1](#), Curve 4).

The 1990 Iraqi Invasion of Kuwait

As noted, we found this model (with some case by case variation in detail) to depict oil price movements during a number of recent conflicts. In the case of Kuwait (Looney, Schrady, Brown, 2001), following the August Iraqi invasion (a Thursday), oil spot prices increased to \$28.30 by 6 August (the following Monday). Traders at first didn't know what to make of the invasion. But, as events unfolded over the weekend, uncertainty heightened and futures markets shifted from upward sloping ([Figure 2](#), Curve 1) to downward sloping ([Figure 2](#), Curves 2, 3, 4). As evidenced by the steep slope of the 6 August futures price profile ([Figure 2](#), Curve 2), a high premium was placed on immediate possession of oil. Futures prices increased again on 7 August before beginning to stabilize on 8 August as U.S. intentions became clear. Spot prices declined to \$25.65 by 8 August as well.

A close examination of movements in the sensitive NYMEX futures market shows that futures prices had in fact stabilized by around 9 August. In general, as markets stabilize, the differential between the price a trader offers for delivery of oil next month and the price offered for delivery of oil in two months decreases. The differential between these two futures contracts is a very sensitive indicator of oil traders' uncertainty over oil availability. In this case, stabilization of the price differential (i.e., the first futures contract minus the second futures contract) indicates that the full effects of naval crisis response had taken place, and a new equilibrium in oil markets had been established by 9 August ([Figure 3](#)). (In [Figure 4](#), a positive differential in the futures market reflects greater risk; i.e., steeper downward slope in the futures price curve. Conversely, a negative differential reflects the elimination of a risk premium.) Specifically, the narrowing differential observed in this case reflects the reduced risk premium that sellers were able to charge for oil as concern over destruction of Saudi oil fields decreased. Put differently, because of the greater likelihood of continued Saudi oil availability, buyers were no longer willing to pay a

high premium for delivery in the immediate future.

Given the high oil inventories at the time, the fall in futures prices can only be attributed to the markets' confidence that U.S. naval crisis response in the region would prevent any further encroachment by Iraq. While prices later began to drift up from this initial equilibrium, a close reading of the events of August 1990 suggests that this subsequent increase was due mainly to factors other than U.S. forward engagement in the region. General market uncertainty over U.S. intentions regarding Kuwait was heightened by Iraq's threat to attack Middle Eastern oil fields and the deliberate inaction of other OPEC producers to increase output.

Although subsequent movements in spot and futures prices occurred throughout the fall of 1990 ([Figure 4](#)), there are other explanations for these fluctuations—in essence they were a war premium as markets assessed the risk to future supplies involved in removing Iraq from Kuwait. As [Figure 4](#) clearly shows the war premium collapsed almost immediately once hostilities broke out on January 17, 1991. At that point the markets appeared to be confident of the eventual outcome.

In sum, oil prices were steadily declining throughout 1990 up to about a month before the invasion of Kuwait ([Figure 5](#)). This was a period of excess stocks, rather slack demand, and over-capacity among the major producers. There was little upward pressure on prices until signs of Iraq's belligerence became more and more apparent in July. As noted above, this was also a period of upward sloping futures curves, indicating no risk premium was associated with concerns over future availabilities of oil. In other words, we can safely attribute most of the price increases from mid-July 1990 up to January 17 of 1991 as strictly associated with military-related events in Kuwait. In retrospect, it is also safe to say that the oil markets were good interpreters of military events as they pertained to future availabilities of oil.

Pre-Iraq War Oil Scenarios

As the 2003 Iraq War became more and more likely, there was increased speculation as to possible oil price outcomes. Clearly, predicting what would happen to oil prices should the United States and its allies attack Iraq is not an exact science. As a result a wide range of outcomes have been suggested (Hebert, 2003), depending on the length of the war, state of oil markets (supply/demand balance) at the time of the war, and the amount of damage to Gulf oil fields stemming from the war. While there are too many of these scenarios to summarize here, they generally fall into one of three broad categories.

Optimistic. A U.S.-led military campaign against Iraq is concluded successfully within two months of its onset, with fewer than 1000 casualties on the coalition side and without any heavy damage to Iraq's non-military facilities (Behravesh, 2003). Variants of this scenario usually assume President Saddam Hussain's government falls quickly; the Iraqi oil fields remain intact and the country's already dwindling oil exports—about two million barrels a day—disappear for a few months; Venezuela's exports resume; and other countries, led by Saudi Arabia, boost production to make up any losses. Prices briefly spike to over \$40 but within three months recede to normal levels or even lower with supplies plentiful. This scenario appeared to coincide with the Bush Administration's position in the months leading up to the launching of the war (although when Presidential adviser Larry Lindsey noted that with Saddam gone, 3 to 5 million barrels per day could be added to world supplies—suggesting that war would be good for the economy—the White House retreated from the comment, and Lindsey was later replaced).

Highly Optimistic. Because he is a Nobel Prize winner writing in a respected and widely circulated magazine (*Business Week*), Gerry Becker's oil scenarios have received considerable attention (2002). Becker felt that an oil scenario would unfold that is similar to the one at the time of the first Gulf War, with prices rising as war became more certain. However, Becker projected that if the war's first few days indicated that Saddam would be decisively and quickly defeated, as he felt was highly probable, then oil prices should fall sharply as the "war premium" disappeared and uncertainty about world oil production

diminished. "Cutbacks in Middle East output would be much smaller than during the Persian Gulf war since Kuwait's facilities would not be destroyed, and Saddam has much less power to damage other facilities than a decade ago".

Worst Case. The basic version of this scenario assumes that the invasion meets stiff resistance, Iraqi oil fields are set aflame, production is disrupted elsewhere in the Persian Gulf, and global supplies fall by 6 million barrels a day. Emergency stocks cannot close the gap. In such a case, oil prices could climb to \$80 a barrel and stay above \$40 well into 2004, halting the U.S. economic recovery and triggering a global recession. Perry (2001) analyzed a similar "worst case" possibility and forecast and a potential loss of 7 million barrels a day, a tripling of crude prices and \$3 per gallon gasoline.

No doubt, these alternative scenarios were in the back of the minds of many oil traders as they watched events unfold in the days up to the conflict and the period immediately afterward.

Oil Markets Leading up to the War With Iraq

In marked contrast to the weak oil markets leading up to the August 1990 invasion of Kuwait and the subsequent January 1991 Gulf War, oil markets in the months prior to the 2003 Iraq War were generally strong. Prices in the six months prior to the March 19 start of the war went through three main phases ([Figure 6](#)):

Falling Prices—Price/Inventory Paradox. The period from October 1 through mid-November was one of generally falling prices, with the spot NYMEX price at its lowest (\$25.36) on November 7. This particular price movement is a bit puzzling given that inventories were quite low. In part, the fall in price reflects the fact that OPEC production in both September and October climbed to its highest levels of the year. Many traders took this information to anticipate increased supplies of crude oil entering the U.S. market in late November and December, and consequently bet that oil prices would fall in the future. As a result they sharply increased their net short positions by selling contracts then with the intention of balancing out their position later by buying contracts at a lower price in the future. This pattern is consistent with a falling NYMEX price during the period even though U.S. crude inventories were near the lowest level in years (EIA, November 20, 2002). In other words, looking at spot prices one might assume that inventories were adequate or on the high side when in fact the reverse was the case.

Rising Prices—The War Premium. The second period was one of rising prices starting November 11 and peaking at \$36.96 on February 27, and at \$37.87 on March 12. This period is reflective of the so called "war premium" that assumes that an increasingly likely military conflict between the United States and Iraq could damage oilfields, pipelines and export terminals in some Arabian Gulf states (Siddiqi, 2002).

Falling Prices—The Gulf War Syndrome. The final period up to the beginning of hostilities has been one of generally falling prices. Beginning around March 13, 2003 with the possibility of war with Iraq just days or even hours away, oil markets rode a wave of optimism as the anticipation of a quick war led many traders to go "short", expecting prices to fall following the onset of war. Apparently they felt that that uncertainty over the war with Iraq, the war premium, and the decrease in Venezuelan exports were the main reasons prices had risen to nearly \$40 per barrel on March 12. At that time, many traders, and some analysts, expected that prices would fall well below \$30 per barrel. Traders came to this conclusion mainly on the news that Venezuelan oil exports were increasing. In addition, it reflected the growing feeling that the upcoming war with Iraq would play out along the lines of the highly optimistic scenario noted above—the war would likely be short with little damage to the oilfields or terminals in the Gulf region. Combining these facts, traders assumed that the start of the conflict would set off a price drop of the magnitude experienced on January 17, 1991, the start of the Gulf War. At that time (1991), the NYMEX crude futures plunged by one third, or \$10.56 a barrel, in the biggest single-day price drop ever.

The *Financial Times* (March 21, 2003) had a less charitable view of these trading patterns as they extended into the first days of the conflict:

Pollyanna would be proud of these hard-nosed speculators driving oil prices down as Iraqi oil wells burn. With spot prices down 25 percent in a week, they appear to believe that war in Iraq will be a swift affair. Futures prices suggest that when it is over the Organization of Petroleum Exporting Countries will shower the world with crude and the price will fall out of its \$22-\$28 a barrel band late next year.

Oil Markets Since March 19, 2003

With the beginning of hostilities, prices began falling, although nowhere on the scale of January 17, 1991. As news of the war was not as encouraging as many had anticipated, prices began fluctuating, and by Friday March 28 they were more or less back to where they had started March 19. On March 28 the NYMEX May contract ([Figure 7](#)) closed at \$30.16 (vs \$29.88 on March 19), while the Brent May contract ([Figure 8](#)) closed at \$26.35 (vs. \$26.75 on March 19). The difference in NYMEX and Brent prices largely reflect the very low stocks in the United States due to the Venezuelan strike—most Venezuelan oil is exported to the United States.

Of particular interest is the manner in which each market assessed changing risk to future positions. As noted earlier, a good proxy of the market's uncertainty over short term future prices is given by the spread between the first and second forward contracts. This declined rapidly up to March 20, but has been gradually increasing since, especially in the NYMEX market ([Figure 9](#)). While it is too early to say if the slight decline in spreads on March 28 is indicative of a reduced perception of risk, it is clear that the markets were increasingly uncomfortable with many of the assumptions that had entered into their immediate post-war-inception assessments of likely future prices. Martin Wolf (2003) provides a more critical interpretation: "Markets are cold-hearted beasts. As the bombs and missiles rained down, equity prices jumped and oil prices tumbled. But markets can also be stupid."

Clearly there was wide-spread disappointment that the highly optimistic oil scenario noted above was not likely to play out in the strict sense. But still even the relatively optimistic scenarios had predicted a oil spike to around \$40 and this did not occur. On the other hand, those who had stressed the market similarities with the first Gulf War were proven wrong. In this regard, there are a number of significant differences between the two periods and some new factors currently at play.

Strategic Petroleum Reserve. First, in direct contrast to the decision on Jan. 16, 1991 at the start of the Gulf War, the President decided not to release oil from the strategic petroleum reserve (Hoyos, 2003). This action implicitly trusts OPEC to cover the supply gap caused by the loss of around 2 million barrels a day of Iraqi output. In the first Gulf War, the United States and its International Energy Agency partners opted for a 2.5 million b/d release from emergency stocks.

Lack of OPEC Spare Capacity. Second, in the current conflict there are serious doubts about the real level of OPEC spare production capacity. One estimate (*Business Week*, March 7, 2003) is that OPEC (omitting Iraq and Venezuela) can only produce an increase of 1.1 million barrels per day. In contrast OPEC's spare capacity in July 1990, before the Iraqis invaded Kuwait was 5.2 million bbl per day. While Venezuelan production is gradually coming back on line after a crippling strike, it will be some time before production and exports are back to their pre-strike levels. There is also very little non-OPEC spare capacity at this time.

Nigerian Production Problems. Nigeria is the fifth-largest source of U.S. crude oil imports. In 2002 the country accounted for about 6% of total U.S. imports of crude oil and about 3% of total U.S. consumption. Slightly before the start of the Iraq War an election-related dispute between the *Ijaw* and *Itsekiri* tribes in the oil producing West Niger Delta area began to escalate with the intervention of the Nigerian military.

Violence has reached a point that the major companies, ChevronTexaco Corp and Royal Dutch/Shell, have undertaken the unprecedented act of pulling out staff and shutting down production (Peel and Beard, 2003). The result has been a drop in Nigerian production of nearly 40% (Farivar 2002). Elections are complicating the Nigerian government's attempts to resolve the strife. Perhaps because of this the *Ijaw* are making political demands regarding voting boundaries that will be hard for the government to meet and thus for the conflict to be quickly resolved.

Low Inventories. As noted above, inventories are extremely low. As of March 14, 2003 commercial crude oil stocks stood at approximately 270.2 million barrels. This figure is just above the minimum threshold at which the government warns shortages may occur. Crude stocks have never been this low at this time of year going back to 1982, when weekly figures were first recorded. Weak inventories are on target to be the lowest at the end of March since 1974.

Conclusions

Credible forecasts of oil prices are difficult to make at this time only twelve days into the conflict. Clearly many yet unknown military and market events will play out in the coming days that would modify any forecast made at this time. Several impressionistic observations can be drawn however:

1. Military events do not appear to be driving the oil markets nearly to the extent they did in the first Gulf War. For one thing, low inventories, and little surplus capacity for production mean that every event on the supply side will have a magnified effect on trader expectations (Cummins, Bahree and Herrick, 2003)—the oil markets are very jittery (Jelacic, 2003).
2. The oil markets appear to have retained their acceptance of the essence of the highly optimistic scenario—otherwise prices would be much higher. In addition, most traders while appearing to react to hour by hour news breaks on the war (Reilly, 2003), probably can not interpret this information in a way that provides insights to future market fundamentals—the failure to take Basra on during the first week of the conflict is not good news, but how does this fact really impact on future oil markets? Even burning oil wells failed to halt the slide of oil prices in the early days of the war (Morrison, 2003). Much of this news probably just results in trades that cancel each other out.
3. Because of a series of unresolved issues over the use of the Strategic Reserve, developments in Nigeria (and perhaps Venezuela), low inventories, limited spare capacity in the oil exporting countries, delays in getting Iraq production back on line, and possible terrorist threats to facilities in the Gulf, the markets will continue to be volatile (Cummins and Bahree, 2003), but averaging around \$28-30 through the duration of the war. The forward markets will retain their downward slope, with the steepness of the curves largely reflecting concern over supplies in the short term.
4. In terms of the questions posed at the start of this *Strategic Insight*, it seems the counter-intuitive rule of selling right before the start of a conflict and buying right after hostilities begin is the best strategy—at least based on the conflicts noted here.

One question remains however: after twelve days since hostilities began on the initial assumption of a short war, why hasn't there been a spike in oil prices in the \$40 range as predicted by most of the optimistic oil scenarios? As another wag put it, "the markets seem to prefer bad news to uncertainty."

For more insights into contemporary international security issues, see our [Strategic Insights](#) home page.

To have new issues of Strategic Insights delivered to your Inbox at the beginning of each month,

email ccc@nps.navy.mil with subject line "Subscribe". There is no charge, and your address will be used for no other purpose.

For Further Reading

Behravesh, Nariman, "Iraq War Scenarios," *Global Insight* (February 2003)

Bird, David, "Prices Drop, But For How Long?," *Dow Jones Newswire*, March 20, 2003

Cummins, Chip and Bhushan Bahree, "Oil Prices May Face More Volatility," *Wall Street Journal*, March 19, 2003.

Cummins, Chip, Bhushan Bahree and Thaddeus Herrick, "Oil Markets Have Less Margin of Error than in Last Iraq War," *Wall Street Journal*, March 11, 2003

Farivar, Masood, "Nigerian Situation Bad, May Worsen, Oil Analysts Say," *Dow Jones Newswires* March 26, 2003).

Lex: "Oil," *Financial Times*, March 21, 2003.

Galibon, J. "Analyzing the Forward Price Curve," in *Managing Energy Price Risk* London: Risk Publications, ENRON Capital and Trade Resources, 1995.

Hebert, H. Joseff, "Different Oil Scenarios Should U.S. Invade Iraq," *Associated Press*, January 5, 2003.

Hoyos Carola, "US Not to Release Oil from Strategic Stockpile," *Financial Times*, March 21, 2003.

IMF, "[The Impact of Higher Oil Prices on the Global Economy](#)" Washington: International Monetary Fund, December 8, 2000.

Jelacic, Nerma, "Crude Oil Prices Rise on Supply Jitters," *Financial Times*, March 28, 2003.

Looney, Robert, "Market Effects of Naval Presence in a Globalized World: A Research Summary," in Sam J. Tangredi ed., *Globalization and Maritime Power* Washington, NDU Press, 2003, pp.103-132.

Looney, Robert, David Schrady and Ron Brown, "Estimating the Economic Benefits of Forward-Engaged Naval Forces" *Interfaces* 31:4 July/August 2001, pp. 74-86

Looney, Robert and David Schrady, *Estimating Economic Benefits of Naval Forward Presence*. Final Report, Naval Postgraduate School Technical Report NPS-OR-01004, October 2000.

McKay, Peter "Technology Helps Oil Traders to Deal with War News Quicker," *Wall Street Journal*, March 21, 2003.

Morrison, Kevin, "Talk of Burning Wells Fails to Halt Slide in Oil," *Financial Times*, March 21, 2003.

OECD Policy Brief: OECD Projections Paris, OECD, December 2000

Peel, Michael and Alison Beard, "Chevron Closes Niger Delta Operations," *Financial Times*, March 24,

2003.

Perry, George "[Author's Final Version 11/28/01](#)" in PDF format.

Reilly, David, "Commodities Report: Active Investment: News on War Fuels Trading on Future Markets," *Wall Street Journal*, March 24, 2003.

Siddiqi, Moin A. "The Threat of War Underpins World Oil Markets," *The Middle East* December 2002

United States Energy Information Administration, This Week in Petroleum, "[Crude Oil Imports from Venezuela Increase Significantly](#)" March 5, 2003.

United States Energy Information Administration, This Week in Petroleum, "[Forward Fundamentals](#)" November 20, 2002.

Walsh, Kenneth T. "Future Shock?: Or Unlike the 1991 Gulf War, Will a New Attack on Iraq Bring Cheap Oil and Faster Growth?," *U.S. News and World Report* (September 30, 2002).

Wolf, Martin, "The Markets are Too Eager to Discount the Cost of War," *Financial Times*, March 26, 2003.

[CCC Home](#)

[Naval Postgraduate School](#)