



Consumer Federation of America

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STATEMENT OF DR. MARK COOPER

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on

EXCESSIVE SPECULATION IN ENERGY COMMODITIES

Before the

**Subcommittee on Agriculture, Rural Development, Food and Drug Administration and
Related Agencies,
Appropriations Committee
United States House of Representatives
Hearing on Review of Legislation Amending the Commodity Exchange Act**

July 10, 2008

MR. CHAIRMAN AND MEMBERS OF THE COMMITTEE,

My name is Dr. Mark Cooper. I am Director of Research at the Consumer Federation of America. We greatly appreciate the opportunity to testify today on the immense burden that the speculative bubble in energy commodities is placing on American households.

The story has been told many times, but the lessons have still not been learned. The lack of effective prudential regulation of financial and commodity markets leads to excessive speculation, bubbles and bursts that disrupt the economy and cost consumers hundreds of billions of dollars. Too much money chasing too few goods in the commodity markets has contributed to the price spiral, amping up volume, increasing volatility and adding to risk. We must turn down the volume in commodity markets and sound prudential regulation is the key to restoring order.

THE FAILURE OF PRUDENTIAL REGULATION OF COMMODITY MARKETS HAS COST OIL CONSUMERS HUNDREDS OF BILLION OF DOLLARS

Two and a half years ago I prepared a report for the Attorneys General of Illinois, Iowa, Missouri and Wisconsin that described and explained the 2005-2006 price bubble in natural gas.¹ A few months later I prepared a similar analysis dealing with oil for the Attorney General of Wisconsin, which reached the conclusion that excessive speculation was pushing up the price of oil.² In the past two years the Senate Permanent Committee on Investigations has confirmed my findings,³ as have numerous other reports.⁴

In the years since my reports first came out, as demonstrated in my comments today, the speculation in oil alone has cost the economy about \$285 billion. If we add in similar effects on natural gas, then the total reaches half a trillion dollars. This places a huge burden on household budgets. Average annual household expenditures on gasoline have increased by \$1200. For households in rural areas, the increase has been over \$1500 per year.

With such huge stakes for consumers, it is encouraging to see that Congress is actively seeking to **restore prudential regulation** to the commodity futures markets and disappointing to

see a group of Op-ed page economic columnists outraged by the fact that Congress understands that some markets can fail sometimes and that prudential regulation can do some good⁵ I emphasize **restore prudential regulation** because one thing the Op-ed economists never acknowledge is that the financial instruments, trading practices, and loopholes that are the target of the current policy debate did not exist or were rarely utilized just a decade ago. Commodity futures markets performed their important functions of smoothing the operation of physical markets for three quarters of a century without the contrivances that have opened the door to excessive speculation in the past decade. Bad policy and lax oversight created the conditions for the speculative bubble; good policy and effective oversight can burst the bubble, restoring these markets to their proper role in society.

Because I have written the technical side of the analysis and presented it to Congress several times in recent weeks,⁶ I submit those for the record, but I want to use my testimony today to respond to the arguments made by the Op-ed economists. They are big names, in big newspapers that get a lot of notice and the surge of columns around the time of Congressional hearings is certain to get your attention. I frequently agree with them, but they are dead wrong on this issue.

**MULTIPLE CAUSES OF RISING PRICES:
EXCESSIVE SPECULATION PLAYS AN IMPORTANT ROLE**

The Op-ed economists are simply unwilling to accept the proposition that financial market can become dysfunctional or overshoot. They insist that whatever price the market puts on a barrel of oil must be right, except, of course, for the price last year, which was half of today's price. In that case, last year's price must have been wrong because it must have been too low. In the world of Op-ed economics it would appear that markets can only err on the low side.

The analysis of the current oil market must start from the recognition that oil prices have been rising for quite some time, as Exhibit 1 shows. The price increases between 2002 and 2005 reflected a tight market situation that produced the sharpest sustained increase in prices since the Arab oil embargo. Between 2002 and 2005 prices tripling from just over \$17/bbl to just over

\$52/bb, or about \$0.73 per month. The 2005 price of just over \$50 per barrel is right in the middle of the range where the oil industry executives have told Congress that the economic cost of delivering a barrel of oil is today.⁷ In the two and a half years after January 2005, however, prices have been increasing over four times as fast, over \$3.00 a month, rising to about \$145/bbl in recent weeks. If the 2002-2005 trend had continued, the price of oil today would be about \$65/bbl (see Exhibit 2).

Thus, we are not saying that markets are not tight or that prices should not have increased, but we are suggesting that the explosion of prices on top of an already rapid price increase was excessive. Speculation would not be having the effect it is if fundamentals were not so tight, but there is no doubt that speculation is making matters much worse. With the real marginal economic cost of a barrel of oil is in the range of \$35 to \$60 per barrel, adding a cartel rent for OPEC which is targeting \$70 to \$80 per barrel,⁸ and even a geopolitical risk premium,⁸ we conclude that the current price at about \$140 per barrel includes a large speculative premium. We think a speculative premium of \$40 to \$50 per barrel is excessive.

The effects of speculation are evident in much more sophisticated models than the simple trend line analysis in Exhibit 2. A recent paper from the Japanese Ministry of Economy Trade and Industry (METI) has echoed my conclusion and the conclusion of the Senate Permanent Subcommittee on Investigations.⁹ We reach a similar conclusion when we compare the output of the results of the Energy Information Administration's *National Energy Modeling System*, which is a market fundamentals model used to produce the price projections in the *Annual Energy Outlook*,¹⁰ to actual prices. As Exhibit 3 shows, the model did just fine predicting the price of crude one year in advance for 1995 to 2002. It then began to deviate on the low side. The magnitude of the underestimation for this year is just about \$50 per barrel. This is another good indicator of a speculative premium.

Thus, a multi-causal explanation of rising oil prices is necessary, one that combines rising economic costs, rising cartel rents, **and** speculation, but the Op-ed economists seem unable to accept such an explanation. In a multi-causal world, Congress must pick its spots for action. There is not a lot Congress can do to influence the rising economic cost of finding oil and OPEC's ability to collect cartel rents is difficult to challenge in the near term, but there is something Congress can do about excessive speculation. Even if you believe that the social, national security and environmental costs of oil consumption (the externalities) demand aggressive policies to end our national addiction to oil,¹¹ allowing cartels and speculators to rip the public off is not the way to solve the problem. Maybe we need to get to \$145/bbl oil by 2020, but accelerating that price increase to 2008, with extremely low elasticities of supply and demand, just punishes consumers and the economy, while it enriches members of the oil cartel and speculators, who do not put the money to work solving the problem.

**THE RECENT EXPLOSION OF OIL PRICES:
FUNDAMENTALS LEAVE A GREAT DEAL UNEXPLAINED**

The claim that the problem is solely due to physical market fundamentals just does not fit the facts. What the Op-ed economists want you to do is get out an electron microscope and focus on minute changes in supply and demand that are barely perceptible and not closely correlated with price changes, arguing that in a jittery market these minuscule changes trigger huge price swings. At the same time they ask you to ignore the most obvious changes in trading patterns that are visible to the naked eye and highly correlated with changes in price.

As Exhibits 5 and 6 show, both short term and long term fundamentals had been essentially constant over the past six years. The short term measure most frequently cited is spare OPEC capacity (see Exhibit 5). While it has fluctuated, it shows no significant downward trend. In fact, over this period, the correlation between excess capacity and price is positive, not negative; which is, of course backwards.

Similarly, the best long-term measure of capacity – the reserve to consumption ratio – is also increasing slightly while prices are increasing (see Exhibit 6). Again, upon close examination we find that the correlation is slightly positive, which is contrary to the claim and expectations. These oil market numbers do not include a doubling of biofuel production, representing a growth of about 1 million barrels per day, equal to about half of the OPEC excess capacity.

If fundamentals did not change and are unlikely candidates as the cause of the explosion in prices, we have to find something that did change. A broad range of analysts and physical traders now point to the explosion of trading as the cause (see Exhibit 7).¹² There is no doubt that there has been a huge influx of money into these markets and a dramatic increase in the number of open positions. The volume of trading has increased four-fold in the past six years, while the value of trading has increased over twelve times and the price has risen a well.

This is just correlation. But the correlation between our causal factors and reality is a lot stronger than the correlation between the Op-Ed economists' causal factors and reality. At least it is in the correct direction; our account is more plausible.

CLOSE EXAMINATION OF CROSS-COMMODITY COMPARISONS STRENGTHEN THE CASE FOR A SPECULATIVE BUBBLE IN OIL

Although simple correlation of prices and the market fundamentals do not support their account, the Op-ed economists do rely on other simple correlations to try to make their point. One of the favorites is the rhetorical device of finding commodities that are not traded on exchanges but experience price increases.

You see iron ore isn't traded on a global exchange; its price is set in direct deals between producers and consumers. So there's no easy way to speculate on ore prices. Yet the price of iron ore, like that of oil, has surged over the past year. In particular, the price Chinese steel makers pay to Australian mines has jumped 96 percent¹³

Granted, raw materials prices have exploded across the board. From 2002 to 2007, oil prices rose 177 percent, corn 70 percent, copper 360 percent and aluminum 95 percent... Did speculators really cause *all* of those increases? If so, why did some prices go up more than

others? And what about steel? It rose 117 percent – and has increased further in 2008 – even though it isn't traded on commodities futures markets.

Recently, the giant mining company Rio Tinto disclosed an average 85 percent price increase in iron ore for its Chinese customers. That affirmed that physical supply and demand – not financial shenanigans – is setting prices: Iron ore isn't traded on futures markets.¹⁴

What these comparisons teach us is unclear for a number of reasons.

First as noted above, we do not claim that there are no physical market fundamentals that are pushing up prices, rather that speculation is magnifying the problem. For most of the comparisons, crude increased a great deal more than the other commodities. Moreover, not only has oil increased most, but the volume of trading of oil increased most as well, particularly in the past couple of years as new pension fund and index fund moneys have flowed in (see Exhibit 8). Again the correlation analysis supports our explanation.

Second, there is a logical policy contradiction created by invoking a comparison between commodities that are traded on exchanges and those that are traded bilaterally. If bilateral physical markets work to transmit price signals, then damping down trading in exchanges won't do much harm. Traders can do bilateral deals for physical crude. In fact, for most of the history of energy commodities, there were no exchanges or exchanges played a small role. Bilateral markets were the rule and they worked just fine.

Third, the empirical claim is dubious. The Op-ed economists point to a few recent deals made in iron and steel, but the price trend in the U.S. for oil and related products is radically different than that for iron and steel (see Exhibit 9). Comparing the producer price index for crude oil and the primary products derived from it (gasoline and diesel) to iron and steel and metals, supports our explanation, not theirs. The pricing pattern is similar to the patterns we have seen throughout the empirical analysis.

Things were fairly stable across commodities in the 1998 to 2002 period, and then the oils began to lift off, exploding in the past year. Iron, steel and metals rose modestly and then ticked up

in the past couple of months. The difference is a good candidate for a speculative bubble. In the five and a half years from January 2002-to May 2007 oil prices increased by about 250 percent, while iron and steel prices had increased 100 percent, underscoring the much larger increase in crude prices. Over the past year, as measured by the producer price index, the surge in crude prices has been 100 percent, compared to the surge in iron prices of 20 percent. Whether and how the recent Chinese deals will be transmitted through to the market remains to be seen (some of it may have been in reaction to the earth quake which suggests an insufficient use of iron to reinforce concrete in construction).

These comparisons do not disprove the existence of a speculative bubble; they make a good case for the usefulness of bilateral trading. Of course, the Op-ed economists will argue that iron was too low because it had not kept up with oil.

THE LINK BETWEEN TRADING AND RISING PRICES

Our explanation does not stop with correlation, however. We go a couple steps further in to turn correlation into a proper causal explanation. First, the patterns of price increases we have observed above are coincident with changes in commodity market policy and trading behavior (see Exhibits 10 and 11). We identify specific policy changes that led to changes in behavior that triggered increases in both prices and volatility. This close temporal coincidence strengthens the causal claim.

Second, we identify the conceptual mechanisms through which speculation translates into higher commodity prices.¹⁵ As prices and volatility rise in a market, it gets harder and harder to convince people who have the physical commodity in the ground to part with it. They have to be bribed with higher prices to lift the oil not only because they can expect a higher price in the future, but also because they demand a higher risk premium to insure against the chance that they are selling

at the bottom of volatile price swings. This basic fact has been clear in the academic literature for quite some time¹⁶ and it is finally penetrating to the popular press.

Another financial factor behind the price rise that hasn't been talked about much on Capitol Hill or elsewhere is reduced hedging by oil companies on futures markets, says Larry Goldstein, a longtime energy analyst. In the past, crude producers would offer buyers a portion of their energy output in future years in order to protect themselves if prices pulled back. But energy companies got burned as prices kept rising during the past two years and have since cut back on selling untapped production – forcing prices for energy futures even higher.¹⁷

Some of the Op-Ed economists do not get this basic fact, arguing that “Investors who buy paper oil do not alter the demand for physical oil.”¹⁸ Others admit that it can happen, although they doubt that it is happening now –

“Under some circumstances, speculation in the oil futures market can indirectly raise prices, encouraging producers and other players to hoard oil rather than making it available for use.

Whether that's happening now is a subject of highly technical dispute. Suffices it to say that some economists, myself included, make much of the fact that the usual telltale signs of a speculative price boom are missing.”¹⁹

In theory, high futures prices might reduce physical supplies by inspiring hoarding. But that's not happening. Inventories are modest.²⁰

The Op-ed economists insist that there has to be evidence of hoarding, narrowly defined, to make a colorable claim of manipulation and they point to the failure to build stock as evidence that there is no hoarding. Excessive speculation is not about manipulation, but structural incentives to hold out (not withhold) for a higher price before producers will bring supplies to market. In this context the evidence would not be the obvious build up of stocks above the ground, but the build of raw materials in the ground, since suppliers are willing to wait to deliver and insist on a higher price.

There is more than anecdotal evidence to support this alternative view. The Energy Information Administration reports that proved reserves increased by 27.5 percent between 2002 and 2007. Production increased by only 12.5 percent. As a result, the reserve to production ratio increased by 14.7 percent. This includes Canadian oil sands reserves starting in 2003. If we exclude that from the total, production growth equaled reserve growth. However, the effect of rising prices

is to make more resources economic, so there is no reason to exclude these resources. The Op-ed economists cannot claim we need high prices to stimulate the search for alternatives, and then exclude the very reserves that are rendered economic by higher prices. Moreover, even without the oil sands, the reserve to production ratio is 36 years and the question becomes why a seven-fold increase in price did not lead to an acceleration of production and a decline in the reserve to production ratio. The answer is the incentive to keep crude in the ground. The OPEC cartel engages in explicit supply management,²¹ while the oil companies call it capital discipline.²²

Recognizing the difference between manipulation and excessive speculation is critical. The central issue is not manipulation, like the Hunt's in silver, or Enron in electricity, or Amaranth in natural gas, although there may be some of that in the present market. The central issue is a broader structural problem of excessive speculation. Dismissing the possibility of manipulation is a rhetorical point that proves little. Even here we get conflicting accounts of how futures market manipulation might work. On the one hand we are told that manipulation of electricity markets was possible because it cannot be stored,²³ on the other hand we are told that manipulation of oil markets is impossible because it is difficult and expensive to store.²⁴ The right answer is that the difficulty of transportation and storage increases the ability to push the price up, just as it makes manipulation more feasible.

THE INCENTIVE TO PUSH PRICES UP

The above discussion explains how excessive speculation raises the price of the physical commodity. In order to have a complete explanation, we must also offer a theory of why speculators push them up, how they profit by driving prices up. The Op-ed economists are fond of pointing out that if every commodity transaction matches a buyer and a seller, then winners cancel out the losers no matter how high the price (ignoring the fact that the public is the loser when it pays the higher price).

Traders can profit from a rising price in a variety of ways. As long as there is more new money coming in that is willing to bid the price up, the old money in the market benefits by staying long. Given the entry of a series of new pots of money – first banks, then hedge funds, then pension funds, then index funds – this upward spiral is sustainable and profitable.

It is easier to ensure the inflow of funds when you are “advising” the new money what to do and the upward spiral of prices when you are hyping the market with reports about how high the prices will go.²⁵ Traders can engage in wash trades to push the price up.

As account values rise, excess margins and special miscellaneous accounts allow the trader to take money out or leverage more trading, to keep the upward spiral going.

Traders and exchanges benefit from transaction fees that grow with value.

The fact that longs must equal the shorts glosses over the different interests of different kinds of traders. Speculators can be net long (and therefore benefit from constantly rolling over contracts at higher prices) in markets that the regulator cannot see (over the counter) or through affiliates in regulated markets that are not well tracked.

Although we do not approach the issue from the point of manipulation, the historical accounts of hundred of corners and squeezes and the dozens of fines in energy markets in recent years do attest to the motive and opportunity that exists for traders to attempt to push the market up to profit.

SPECULATION IS THE SURPRISE, NOT FUNDAMENTALS

Unable to deal with inconvenient facts, the Op-ed economists resort to surprises and emotions to fill the gap in the analysis.

“When unexpectedly high demand strains existing production, prices rise sharply as buyers scramble for scarce supplies.”²⁶ “After years of ignoring the rather obvious fact that oil is a finite resource, the world has suddenly become acutely aware of that reality.”²⁷ Well functioning market are

not supposed to be surprised. Indeed, in our account, far from ignoring the facts, the markets were dealing with the facts in the price run up from \$17 to \$50 in 2005. The trend line goes to \$65 in 2008. The surprise is not the tight market, it is the speculative bubble.

Two recent pieces of analysis presented to the Energy and Commerce Committee by energy economists provide data that ties our account together. In Exhibits 10 and 11 we identified periods of trading by policy changes that affected trading behavior, primarily by attracting different kinds of players and trading strategies into the market. The upper part of Exhibit 12 shows a categorization of the periods that parallels ours which sees three broad structures – traditional, fundamentals (demand and supply) and financial. The lower part of Exhibit 12 shows the correlation between open market positions and price. We have argued that the fundamentals period began in 2002 and data in the exhibit supports that view. The basic point is that a speculative bubble has been added to the underlying price increase driven by fundamentals.

Exhibit 13 shows the finding cost curve and uses that cost curve to predict crude prices. The rise from about \$20 in 2002 to about \$70 in 2008 is consistent with our earlier trend line analysis and the EIA market fundamentals model. Thus, price tracked fundamental closely until 2006, when the speculative bubble began to inflate.

INCONVENIENT FACTS AND NONECONOMIC EXPLANATIONS

In the final analysis, even the electron microscope cannot find changes in fundamentals that account for the explosion of prices in recent months, so the Op-ed economists are forced to abandon economic explanations and embrace psychology.

Everyone in the oil market is attuned to every little twitch that has the potential to damp supply or increase demand. That's why, for instance, when Libya announced on Thursday that it might cut oil production, oil jumped more than \$5. Meanwhile, when Brazil discovers a huge new oil field, the market shrugs. That is not speculation at work – its market psychology. There's a big difference. If there is a bubble, that's what is causing it.²⁸

In the end, if it is just psychology, we would urge policy makers to ask themselves whether they are obligated to let the psychos run wild in a market as vital as oil. We submit that you are not. If the traders in this market have become irrationally attuned to “every little twitch” that might increase prices, but disregard facts that might lower prices, it is hard to conclude that the market is functioning properly. The psychos need a little sedation to restore balance to their perspective. Prudential regulation has the benefit of both preventing excessive speculation and sedating the psychos, not to mention allowing the physical traders to reenter the market and use its price discovery and risk management functions.

REGULATORY REFORM IS THE WAY TO SOLVE THE PROBLEM

We urge you not to let the smoke and mirrors of the Op-ed economists dissuade you from your central mission to protect the public from abuse. The Congress is absolutely correct to conclude that it must address the problem of excessive speculation and correct in concluding that the CFTC cannot be trusted to effectively address the problem. With the commodities markets overwhelmed by speculation and the Congress empowering other agencies to do the job that the CFTC has failed to do, the CFTC has changed its tune, belatedly admitting that it did not have sufficient information to perform its primary function of preventing excessive speculation and recognizing that foreign boards of trade do not exercise effective regulation of trading. Begging foreign exchanges for data and foreign regulators to act responsibly is not only embarrassing; it is absurd when the CFTC has not put its own house in order. The CFTC’s proposals are too little too late.

There are five areas in which reform is necessary, with a variety of policy making institutions needing to take action. We recognize that this is a tall order, but a half a trillion dollars sucked out of the economy and the pocketbooks of American households by the speculative bubble of recent years demands you take action now.

Chase out the bad guys

All traders must register and be certified (for honesty and competence, like bankers and brokers).

All trading must be reported across all transactions

Eliminate the funny money

Raise margin requirements

Increase capital reserve requirements

Reduce the ability to push prices up

Lower position limits and tie limits and margin policies to needs of physical traders

Lengthen settlement windows

Ban conflicts of interest (analyst's reports that enrich analyst's portfolios)

Restore the proper functioning of commodity markets and their regulators

Enforce meaningful speculative limits

Do honest analysis (classify traders correctly)

Close the loopholes (foreign boards of Trade exemptions, the Enron and swaps)

Create minimum criminal penalties for violation of commodity laws

Redirect investment to productive long-term uses

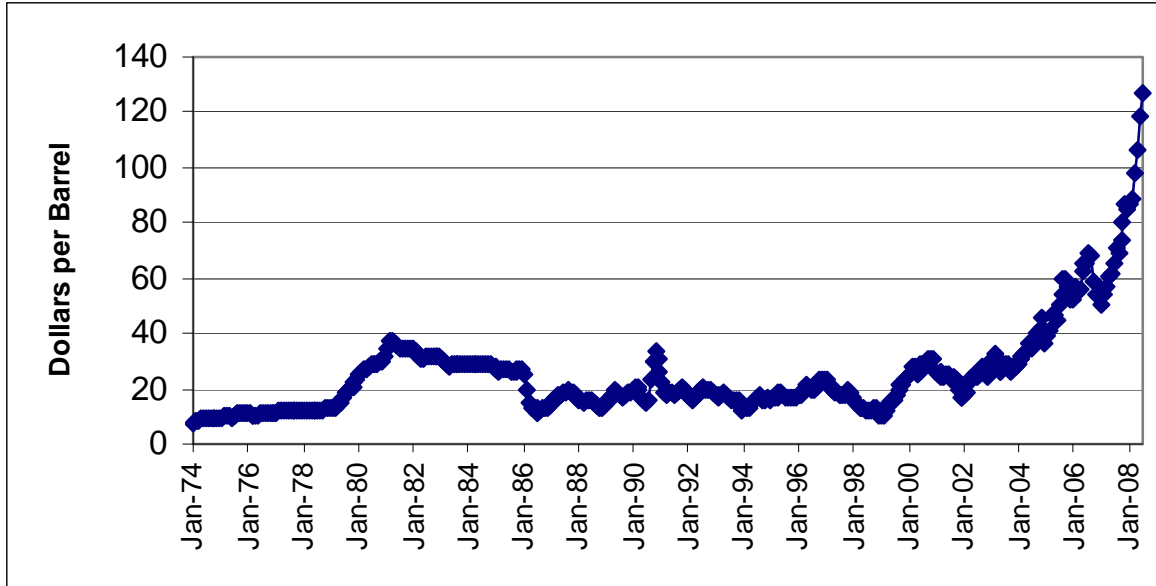
Put a tax on short-term capital gains

Move pension funds out of speculation

Ban institutional index funds

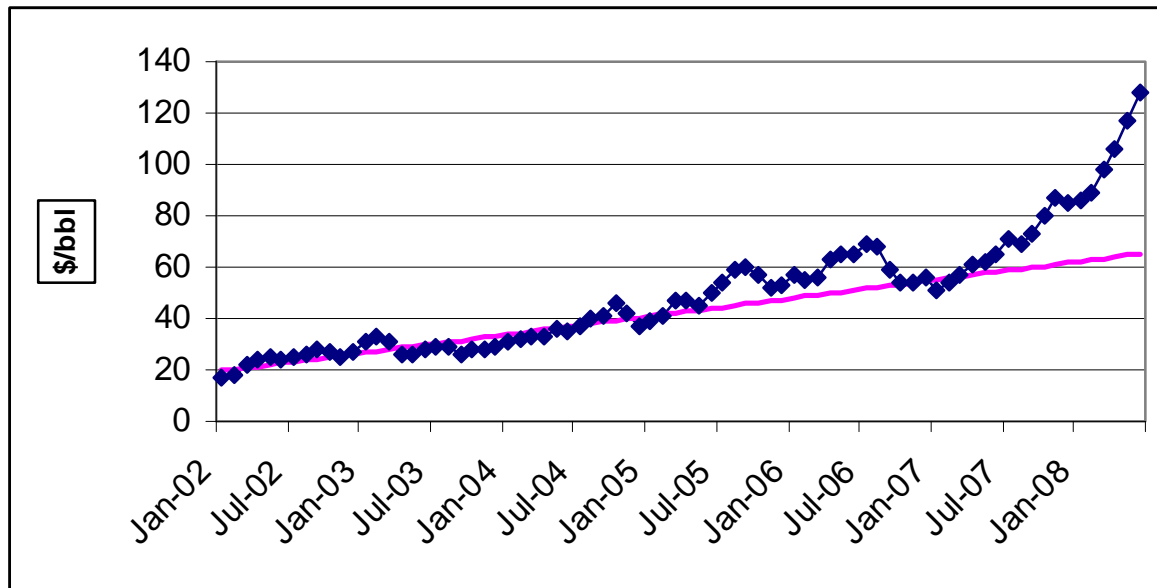
EXHIBITS

**EXHIBIT 1:
LONG TERM TREND OF CRUDE OIL PRICES**



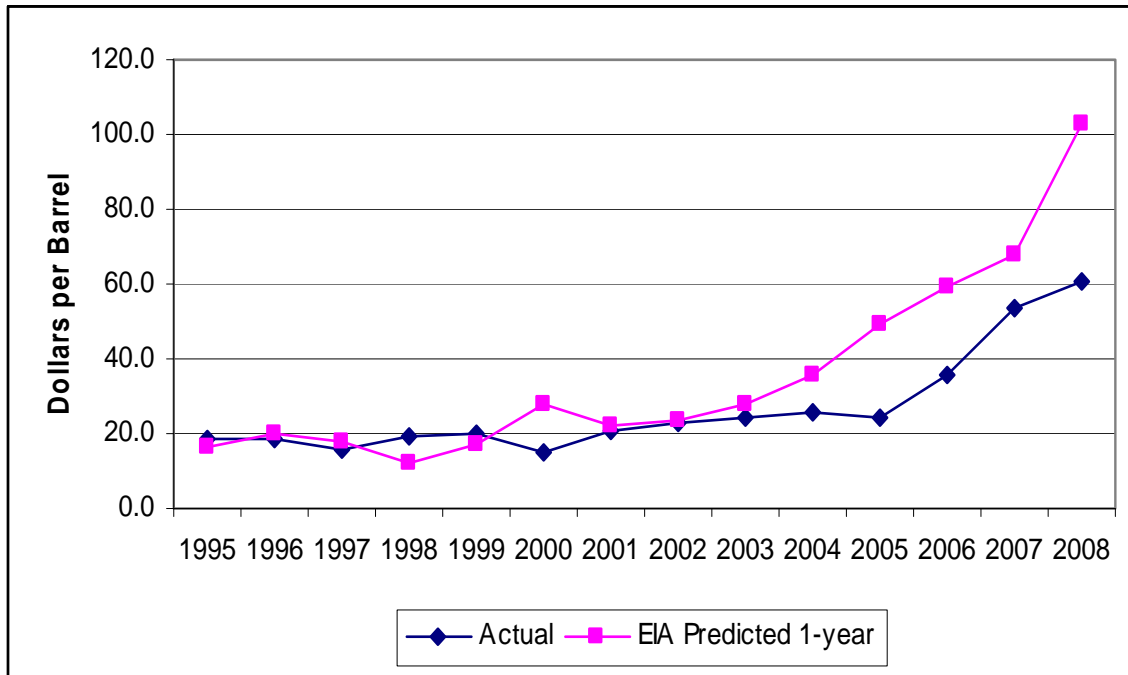
Source: Energy Information Administration, data base, *Refiner Acquisition Cost of Crude*.

**EXHIBIT 2:
CRUDE PRICES COMPARED TO TREND LINE (1/2002-1/2005)**



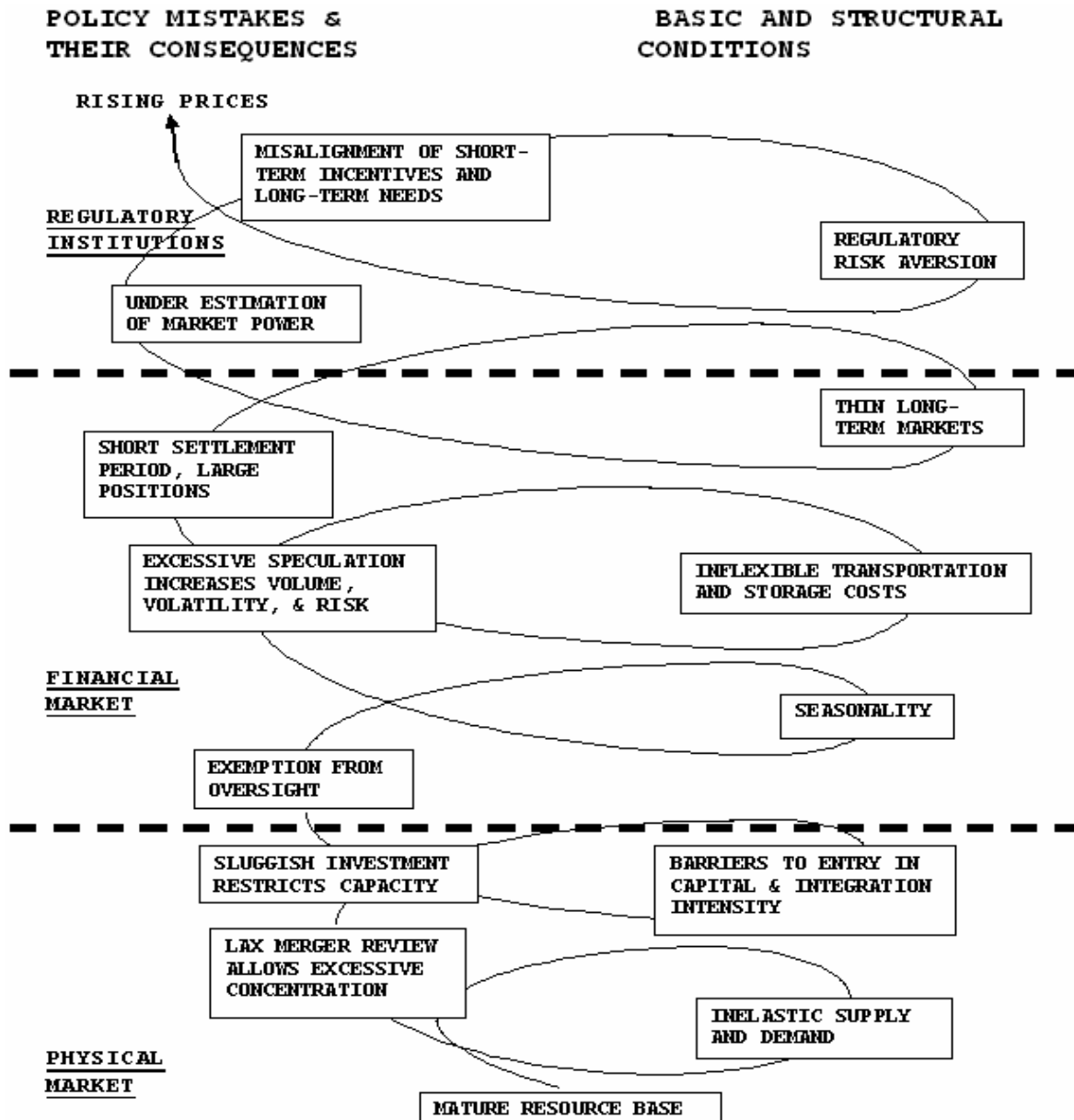
Source: Energy Information Administration, data base, *Refiner Acquisition Cost of Crude*.

**EXHIBIT 3:
EIA CRUDE OIL PRICE PREDICTIONS (I-YEAR FORWARD) COMPARED TO ACTUAL PRICES**



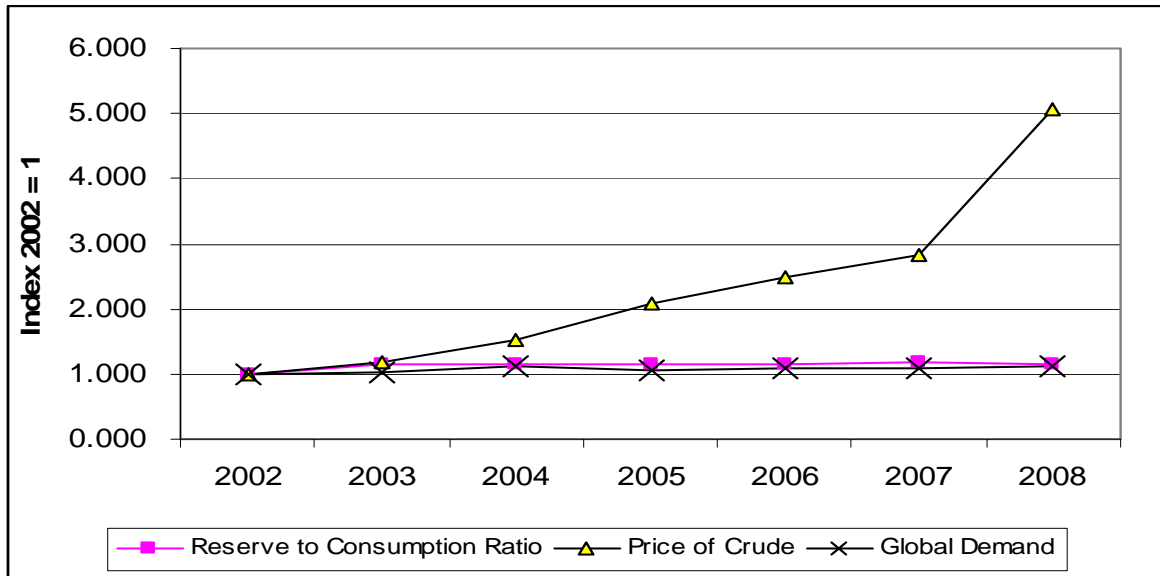
Source: Energy Information Administration, *Annual Energy Outlook: Retrospective Review, Evaluation of Projections in Past Editions (1983-2006), Annual Energy Outlook, 2006, 2007, 2008. Landed Cost of Crude*, is used for actual cost.

EXHIBIT 4:
 PHYSICAL, FINANCIAL AND REGULATORY FACTORS IN THE ENERGY PRICE SPIRAL



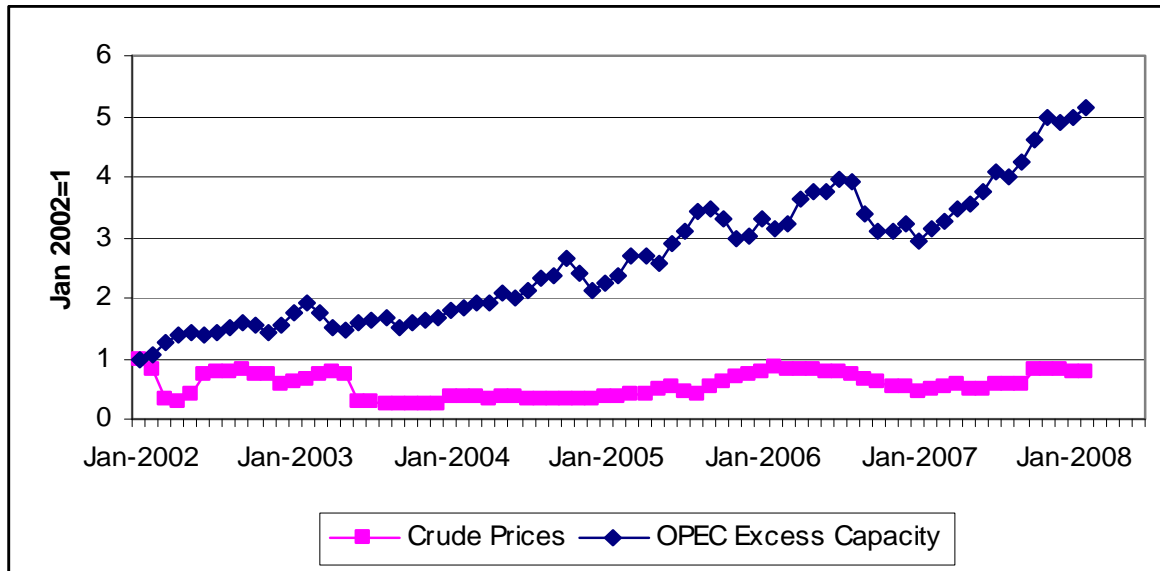
Source: Mark Cooper, "The Failure of Federal Authorities to Protect American Energy Consumers from Market Power and Other Abusive Practices," *Loyola Consumer Law Review*, 19:4 (2007), p. 318.

**EXHIBIT 5:
LONG-TERM FUNDAMENTALS:
GLOBAL DEMAND AND RESERVE TO CONSUMPTION RATIO, COMPARED TO PRICE OF CRUDE**



Source: Energy Information Administration, data base, *Refiner Acquisition Cost of Crude, International: World Oil Balance, Short Term Energy Outlook – OPEC Oil Production Capacity.*

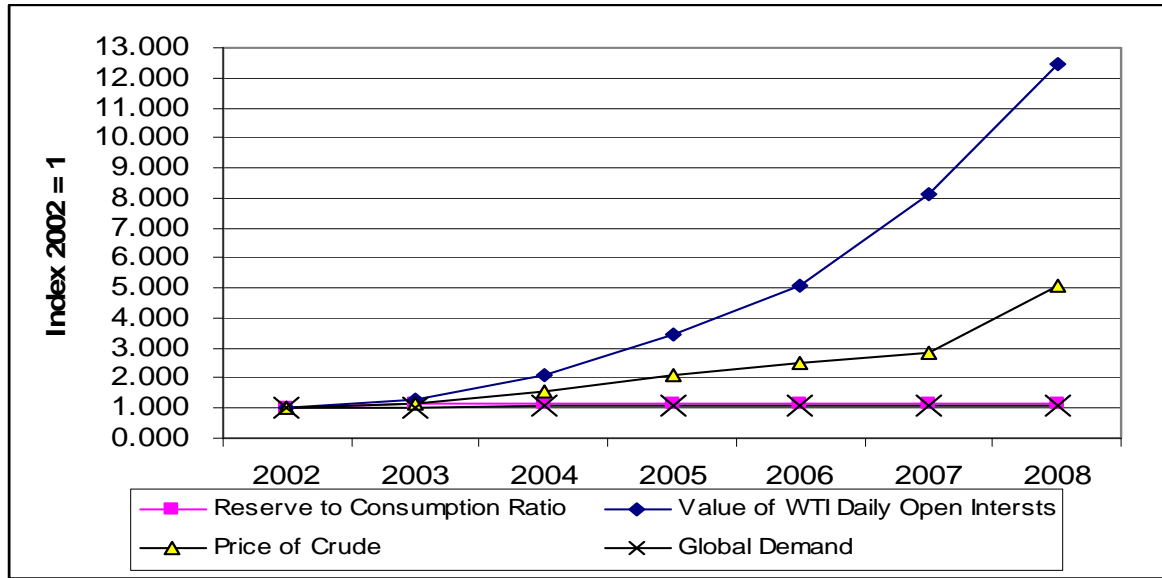
**EXHIBIT 6:
OPEC EXCESS CAPACITY COMPARED TO THE PRICE OF CRUDE**



Source: Energy Information Administration, data base, *Refiner Acquisition Cost of Crude, International: World Oil Balance, Short Term Energy Outlook – OPEC Oil Production Capacity.*

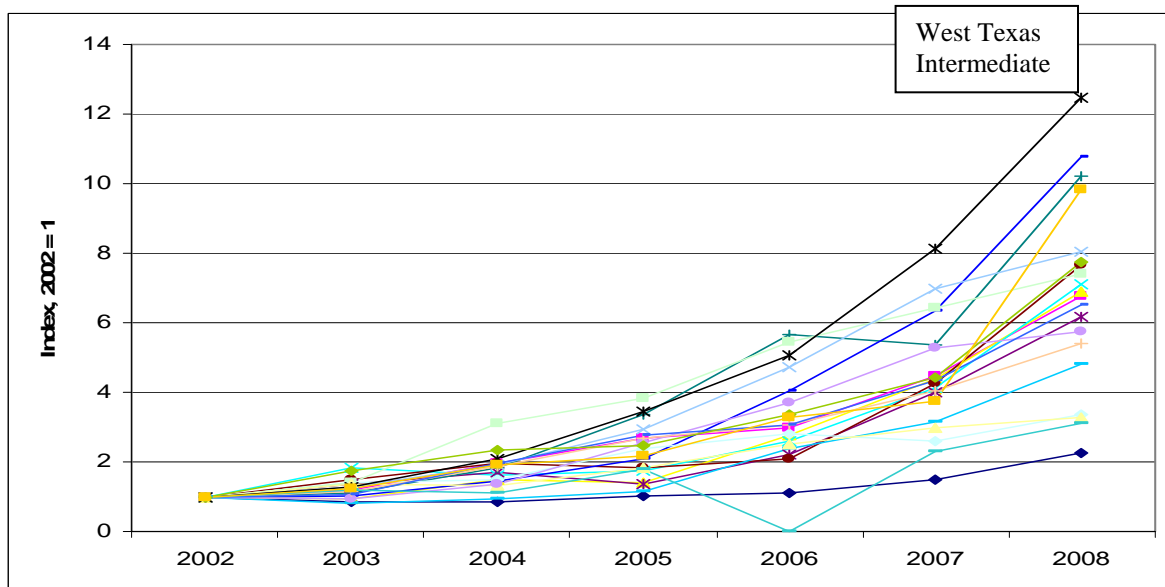
EXHIBIT 7:
EXHIBIT 7:

AVERAGE DAILY VALUE OF OPEN POSITIONS ON WEST TEXAS INTERMEDIATE, CRUDE PRICES, LONG-TERM FUNDAMENTAL (RESERVES AND DEMAND)



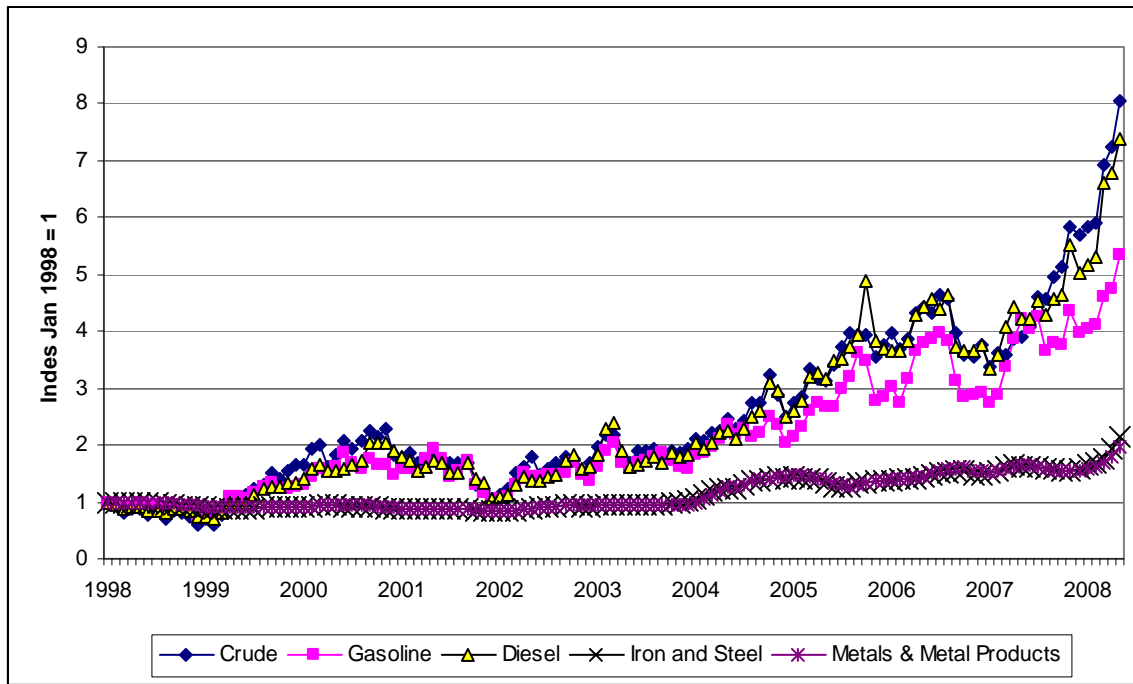
Source: EIA, Refiner Acquisition Cost of Crude, International: World Oil Balance, Short Term Energy Outlook – OPEC Oil Production Capacity. Testimony of Michael Masters, Managing Member/Portfolio Manager, Masters Capital Management, LLC, Committee on Homeland Security and Governmental Affairs, United States Senate, May 20, 2008, Note 16 for WTI Open positions.

**EXHIBIT 8:
AVERAGE DAILY DOLLAR VALUE OF OPEN INTEREST: 20 INDEX COMMODITIES**



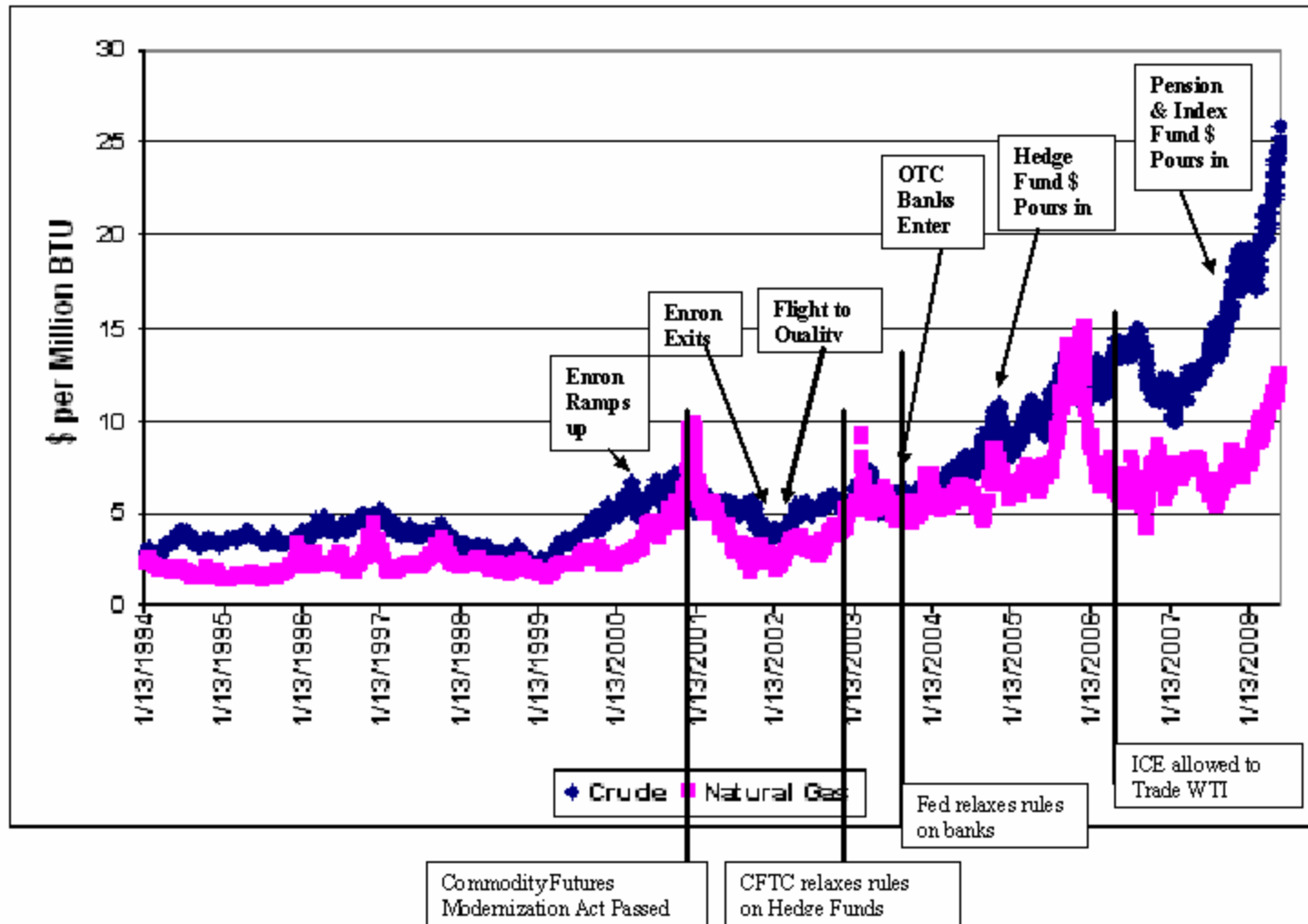
Testimony of Michael Masters, Managing Member/Portfolio Manager, Masters Capital Management, LLC, Committee on Homeland Security and Governmental Affairs, United States Senate, May 20, 2008, Note 16.

**EXHIBIT 9:
PRODUCER PRICE INDICES FOR CRUDE, GASOLINE, DIESEL, IRON, STEEL AND METALS**



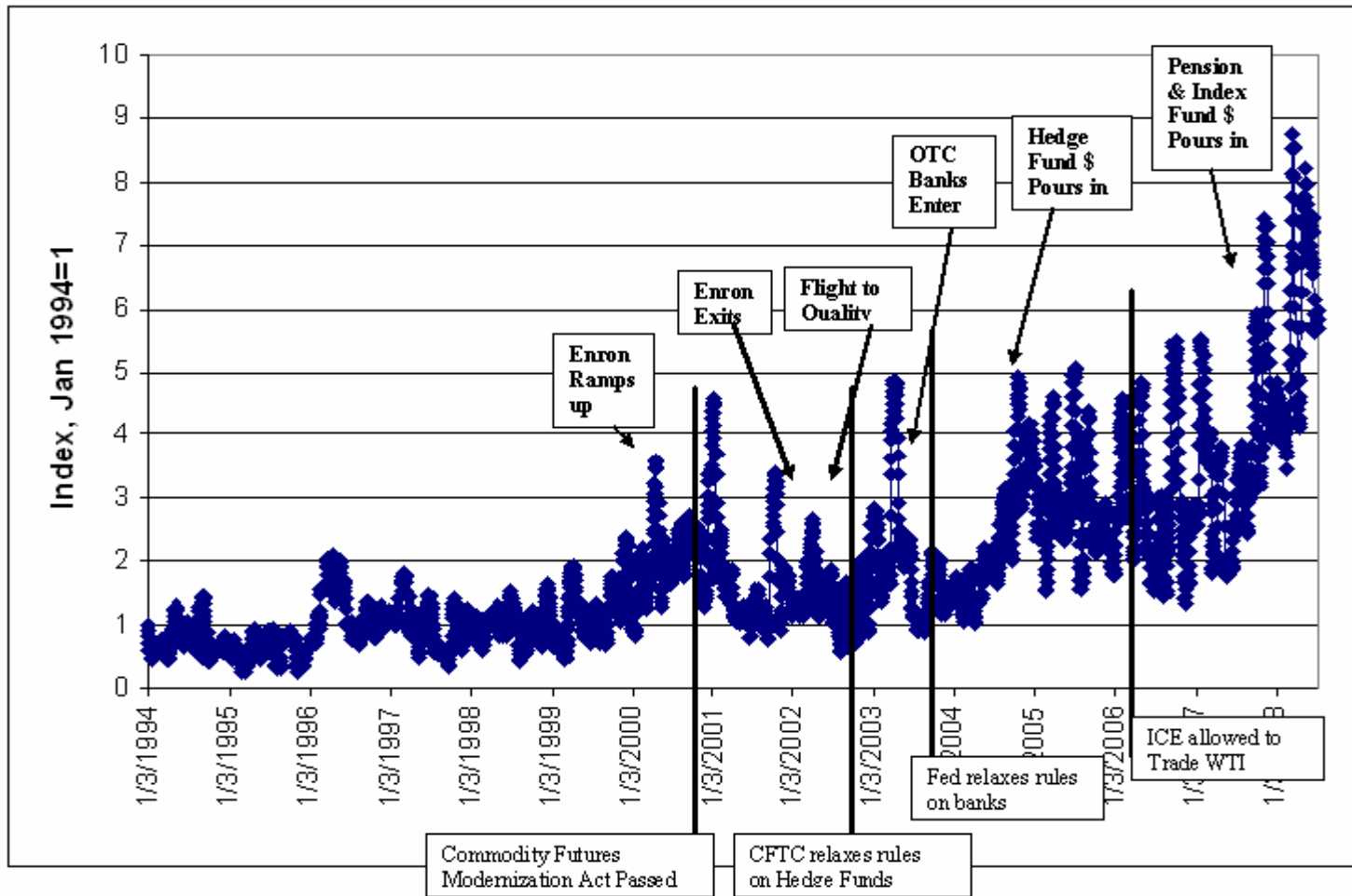
Source: Bureau of Labor Statistics, Producer Price Index.

**EXHIBIT 10:
ENERGY SPOT PRICES, DEREGULATION AND CHANGES IN TRADING ACTIVITY**



Source: Energy Information Administration, Database and Mark Cooper, *The Role of Supply, Demand and Financial Commodity Markets in the Natural Gas Price Spiral*, p. 8.

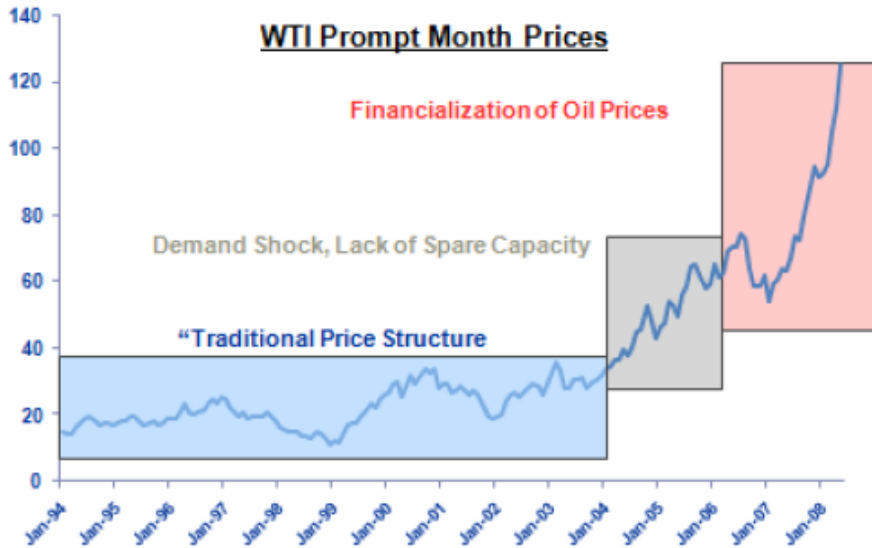
EXHIBIT 11:
SPOT PRICE VOLATILITY DEREGULATION AND CHANGES IN TRADING ACTIVITY
(30-DAY MOVING AVERAGE OF THE STANDARD DEVIATION OF THE DAILY SPOT PRICE)



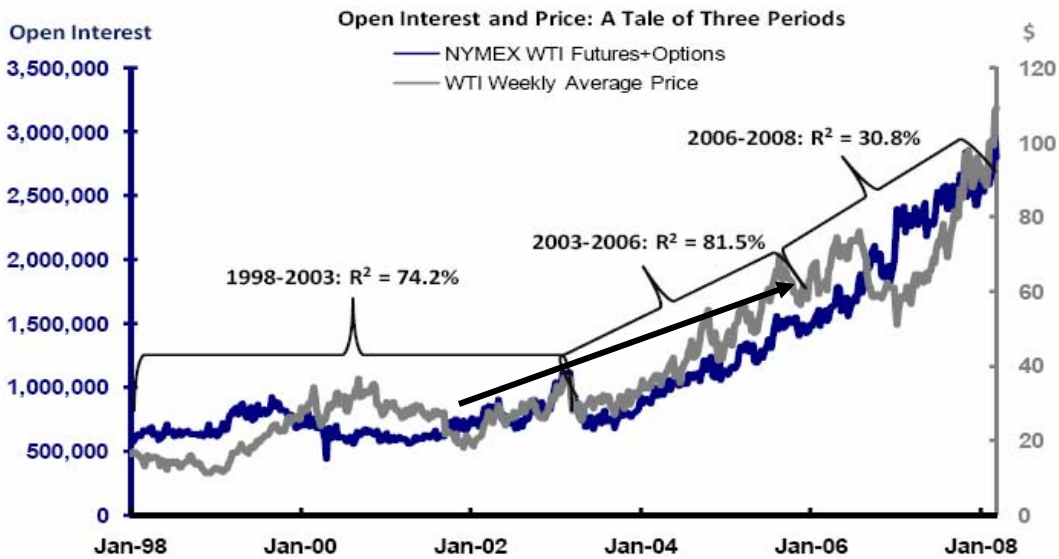
Source: Energy Information Administration, Database and Mark Cooper, *The Role of Supply, Demand and Financial Commodity Markets in the Natural Gas Price Spiral*, p. 8.

Exhibit 12:

Oil Prices and Structural Trends



The Mirror Cracked: New Players, New Models, New Opportunities | Page 3

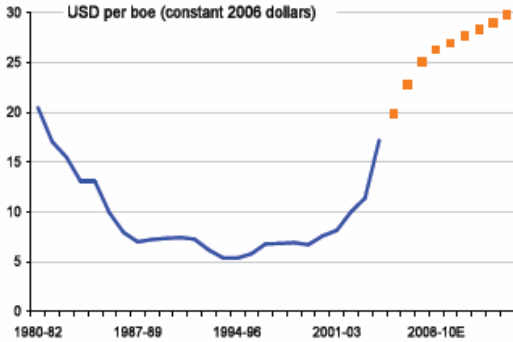


Source: "Testimony of Roger Diwan Regarding Energy Speculation: Is greater Regulation Necessary to Stop Price Manipulation," Subcommittee on Oversight and Investigations, Committee on Energy and Commerce, U.S. House of Representatives, June 23, 2008, pp. 2, 8

Exhibit 13:

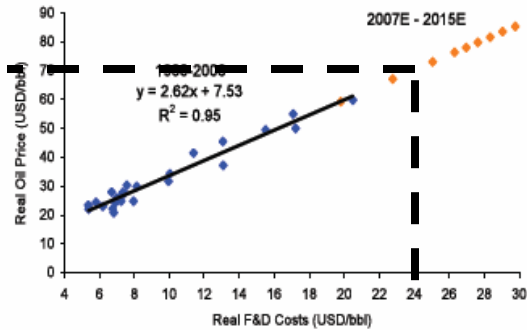
What Does It Cost to Find a Barrel?

Worldwide Finding Costs (USD/bbl)



Source: DOE/EIA, Author

Oil Prices & Finding Costs Are Related



Outlook

- We estimate that finding and development costs have risen 20% per annum in real terms over the 2006 to 2008 period, and slower rates after that. This implies that F&D costs are likely to hit USD25/bbl in 2009 and possibly USD30/bbl in 2015.
- F&D costs have tended to be closely related to the oil price. Since 1980 we find that the oil price has tended to equal to 2.6x F&D costs plus USD7.5. This multiplier take into account taxes and gross margin.
- To get oil to USD200/bbl on a cost basis seems like a stretch- F&D costs of USD40/bbl and a multiplier of 5x, however USD80/bbl in the 2012-13 timeframe is very consistent with this data and USD100/bbl oil is possible.

Testimony of Adam Sieminski, Subcommittee on Oversight and Investigations, Committee on Energy and Commerce, U.S. House of Representatives, June 23, 2008, p. 7.

ENDNOTES

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- ¹ Mark Cooper, *The Role of Supply, Demand and Financial Commodity Markets in the Natural Gas Price Spiral, A Report Prepared for the Midwest Attorney General Natural Gas Working Group (Illinois, Iowa, Missouri, and Wisconsin)* (March, 2006)
- ² Mark Cooper, *The Role of Supply, Demand, Industry Behavior and Financial Market in the Gasoline Price Spiral* (for the Wisconsin Attorney General, August, 2006).
- ³ Senate Permanent Subcommittee on Investigations, Committee on Homeland Security, *The Role of Market Speculation in Rising Oil and Gas Prices: A Need to Put the Cop Back on the Beat* (June 27, 2006); *Excessive Speculation in the natural Gas Market* (June 25 and July 9, 2007).
- ⁴ Akira Yanagisawa, *Decomposition Analysis of the Soaring Crude Oil Prices: Analyzing the Effects of Fundamentals and Premium* (Institute of Energy Economics, March 2008; Robert J. Shapiro and Nam D. Pham, *An Analysis of Spot and Futures Prices for Natural Gas: The Roles of Economic Fundamental, Market*.
- ⁵ Paul Krugman, "Fuel on the Hill," *New York Times*, June 27, 2008; Joe Nocera, "Easy Target, But Not the Right One," *New York Times*, June 28, 2008, p. B8; Sebastian Mallaby, "Nixonian Fallacy," *Washington Post*, June 30, 2008; Robert J. Samuelson, "Who's Behind High Prices," *Washington Post*, July 1, 2008.
- ⁶ Mark Cooper, "Testimony on Oversight of Energy Markets and Oil Futures," before the Joint Hearing of the Senate Appropriations Subcommittee on Financial Services and General Government and the Committee on Agriculture, Nutrition and Forestry, United States Senate, Jun 17, 2008; Testimony on Energy Market Manipulation and Federal Enforcement Regimes," before the Committee on Commerce, Science and Transportation, United States Senate, June 3, 2008; see also "The Failure of Federal Authorities to Protect American Energy Consumers from Market Power and Other Abusive Practices," *Loyola Consumer Law Review*, 19:4 (2007).
- ⁷ J. Stephen Simon, Senior Vice President ExxonMobil, Select Committee on Energy Independence and Global Warming, put the cost at \$50-\$55. John Hofmeister, President of Shell Oil Co. put the cost at \$35-\$60 per barrel. John Lowe, Executive Vice President of ConnocoPhillip, put the figure at \$90 per barrel, which appears to include OPEC cartel rents. Adam Siemiski's Testimony Subcommittee on Oversight and Investigations, Committee on Energy and Commerce, U.S. House of Representatives, June 23, 2008, p. 7, suggests a cost of \$70, at the margin.
- ⁸ We do not condone OPEC's illegal management of supplies to create cartel rents and support policies to counteract that rent collection.
- ⁹ Akira Yanagisawa, *Decomposition Analysis of the Soaring Crude Oil Prices: Analyzing the Effects of Fundamentals and Premium* (Institute of Energy Economics, March 2008), p. 5, "According to the METI paper, during the second half of 2007, when the physical price of West Texas Intermediate crude averaged \$US90 a barrel, market speculation, geopolitical risk and currency factors were responsible for \$US30-\$US40 of the price." The average WTI "fundamental price," consistent with the underlying supply/demand situation, was around \$US60/barrel during the December half-year, according to the paper, citing research for the Institute of Energy Economics in Japan
- ¹⁰ EIA, *NEMS International Energy Module (IEM): Model Documentation Report*, p. 2, "To summarize the model searches for a world price of oil compatible with supply-demand equilibrium in each region. Non-OPEC world demand and supply are determined by a set of price-quantity relationships, and in equilibrium the difference between world demand and non-OPEC world supply equals OPEC production. OPEC production is determined by an exogenously specified output path. Output of a price run includes forecast of the world oil price, OPEC production, world petroleum production and consumption, net imports by regions OPEC revenue, and spare OPEC capacity."
- ¹¹ Krugman, p. A19, "Regulating futures markets more tightly isn't a bad idea, but it won't bring back the days of cheap oil. Nothing will. Oil prices will fluctuate in the coming years – I wouldn't be surprised if they slip for a while as consumers drive less, switch to more fuel efficient cars and so on – but the long-term trend is surely up. Most of the adjustments to high oil prices will take place through private initiative, but the government can help the private sector in a variety of ways, such as helping develop alternative technologies and new methods of conservation and expanding the availability of public transit.
- ¹² Yanagisawa, Siemiski, "Testimony of Roger Diwan Regarding Energy Speculation: Is greater Regulation Necessary to Stop Price Manipulation," Subcommittee on Oversight and Investigations, Committee on Energy and Commerce, U.S. House of Representatives, June 23, 2008; Testimony of Michael Masters, Managing Member/Portfolio Manager, Masters Capital Management, LLC, Committee on Homeland Security and Governmental Affairs, United States Senate, May 20, 2008; "Testimony of Fadel Gheit," Subcommittee on Oversight and Investigations, Committee on Energy and Commerce, U.S. House of Representatives, June 23, 2008; Thomas Evans, Citi Futures Perspectives, July 3, 2008; Lehman Brothers, *Oil Cot-com*, May 29, 2008.
- ¹³ Krugman, p. A19
- ¹⁴ Samuelson, p. A1.
- ¹⁵ See Cooper, Natural Gas, Chapter IV.

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- ¹⁶ Hans R. Dutt and Lawrence E. Harris, "Position Limits for Cash-Settled Derivative Contracts, *The Journal of Futures Markets*," 25 (2005), p. 497, "Even when the settlement of cash-settled contracts are not purposefully manipulated, the settlement mechanisms may increase underlying volatility when hedgers unwind their hedges if they have no incentive to control their trading costs. This generally is the case when hedgers trade out of their positions at the same price that determine the final cash settlement price." Robert J. Pyndyck, "The Dynamics of Commodity Spot and Futures Markets: A Primer," *The Energy Journal*, 22(2001), p. 12, emphasis in original, "Increased volatility increases the value of producers' *operating options*, options to produce now (as an "exercise price" equal to the marginal production cost and with a "pay-off" equal to the spot prices), rather than waiting for possible increases or decreases in price. These options add an opportunity cost to current production: namely the cost of exercising the option rather than preserving them. This increase in volatility increases the opportunity cost of current production." Although Stephen Craig Pirrong, *The Economics, Law and Public Policy of Market Power Manipulation* (Boston, Kluwer, 1996), focuses on market manipulation, the conditions that facilitate manipulation also facilitate excessive speculation, particularly with the influx of new money, "[B]y demanding excessive deliveries a long induces distortion in the spatial and temporal distribution of consumption, transportation and storage. Shorts must pay current owners of the commodity increasingly higher prices in order to compensate current owners of the commodity for the surplus foregone. 9pp. 24-25). "[A] trader who does not possess any informational advantage is able to acquire market power as long as the flow of orders from other traders to the futures market is sufficiently volatile and large relative to the size of deliverable supply... Put another way, the existence of "nose traders" makes fraud possible." (p. 12)
- ¹⁷ Nelson C. Schwartz, "Asleep as the Spigot," *New York Times*, July 6, 2008, Business Section, p. 7.
- ¹⁸ Mallaby, p. A11
- ¹⁹ Krugman, p. A19.
- ²⁰ Samuelson, p. A11.
- ²¹ EIA, *Annual Oil Market Chronology*, provides a chronology of OPEC's supply management policies.
- ²² Cooper, Oil, chapter II. The current controversy over tens of thousands of idle leases, while oil companies "hold out" for more attractive leases, even though high prices make them all worth working, highlights an important issue. The claim that a lack of drilling resources makes it impossible to exploit the leases only proves the point that the current prices are excessive on the supply side. If we face a vertical supply curve in a classic economic welfare analysis, then price increases result in pure wealth transfers from consumers to producers and do not contribute to efficiency. Consumers did respond to the price increases in 2002-2006, as demonstrated by a CBO study (Congressional Budget Office, *Effects of Gasoline Prices on Driving Behavior and Vehicle Markets*, January 2008), but the elasticity is quite low on the demand side as well. A near vertical demand curve means that price increases result in huge wealth transfer from consumers to producers and small efficiency gains.
- ²³ Nocera, B8, "But remember, Enron was manipulating electricity prices, not oil, which was possible mainly because electricity cannot be stored." By getting power plants to shut down for hours at a time, Enron was able to create artificial shortages and jack up the price.
- ²⁴ Mallaby, p. A11. Every paper claim they buy is a paper claim they will later sell because they have no intention of converting their paper into real oil stocks. Oil is too expensive and cumbersome to store. A speculator is not going to show up in Cushing, Okla., when his futures contract matures and drive away with a tanker truck full of oil
- ²⁵ Goldman Sachs, *Global Energy: Oil, \$100 Oil Reality, part 2: Has the Super-Spike End Game Begun?*, May 5, 2008; Morgan Stanley, *Commodity Shipping: Current Crude Oil Shipping Patterns Suggest \$150/bbl WTI by July 4th*, June 5, 2008.
- ²⁶ Robert J. Samuelson, p. A11.
- ²⁷ Nocera, p. B8.
- ²⁸ Nocera, p. B8.