



Consumer Federation of America

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**STATEMENT OF DR. MARK COOPER
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on

**EXCESSIVE SPECULATION IN COMMODITY MARKETS
AND
THE COLLAPSE OF MARKET FUNDAMENTALISM**

**Permanent Subcommittee on Investigations
Committee on Homeland Security and Government Affairs
Hearing on Excessive Speculation in the Wheat Market
United States Senate**

July 21, 2009

Summary

The debate about whether excessive speculation contributed to the run-up in commodity prices is over. The reports of this committee on oil, natural gas and most recently wheat, as well as my own analyses of oil and natural gas, not to mention dozens of others, leave no doubt that excessive speculation was an important cause of problems in commodity markets. The only question on the table is what we should do to prevent excessive speculation from afflicting these markets in the future.

The speculators will continue to blaviate about market fundamentals being the sole cause of the problem, so it is critical to walk through the elements of the correct explanation, which this Committee's extensive research supports. To reach the correct solution to the problem, we need to not only lay to rest the claim that market fundamentals explain the recent gyrations in commodity markets, but also to bury the discredited theory of market fundamentalism on which that claim stands. This is not just a play on words, but a critical step toward a solution. The theory of market fundamentalism was the cornerstone for the adoption of policies that created the conditions for the surge in excessive speculation. Bad policy played a key role in creating the decade of volatility. Bad theory was used to justify bad policy. Adherence to the theory blinds us to the correct policy.

It is time for us to abandon the market fundamentalist view that sees regulation and antitrust as the *ex post* clean up after the occasional market failure, and to return to the New Deal view which understood that regulation is the *ex ante* prophylaxis to prevent market failure. We must restore the institutions of prudential regulation that served us well for half a century so that commodity and financial markets can be returned to their proper, constructive role in society.

For the financial system to play its proper role in society, there are three key functions it should provide. "Manage risk, facilitate transparency and promote fairness among market actors." Failure to properly execute these functions results in inefficiency, starves the economy of the resources it needs to thrive and can lead to financial panics, manipulation, swindles and fraud.

Similarly, we must keep the vital function of commodity markets in mind as we study the collapse of market fundamentalism in the sector. When a well-regulated commodity market exists, there is a healthy relationship exists between commodity markets and the real economy. The commodity markets facilitate the functioning of the real market by discovering price and allowing real production to be adjusted to meet the needs of the real economy. The function is to smooth the flow of commodities from people who produce the goods to people who consume them. When this relationship is disrupted because of inadequate regulation, excessive speculation undermines the ability of the market to provide its vital functions for the real economy – driving prices too high, but simultaneously reducing (rather than increasing) supply, creating volatility that makes it more difficult, not easier, to plan production, and forcing commercial traders out of the market.

Market fundamentals are an inadequate explanation for commodity price movements

- There are multiple causes of the rising level and volatility of commodity prices and excessive speculation plays an important role
- Fundamentals leave a great deal unexplained in the explosion of oil prices.
- There is a direct link between trading and rising prices
- There are strong incentive to push prices up

The collapse of market fundamentalism as an economic theory

- The efficient market hypothesis, the income inequality hypothesis and the “less government the better” hypotheses are all wrong.
- There are fundamental flaws in unregulated markets that lead to market failures
 - Lack of transparency and asymmetric information
 - Perverse incentives
 - Agency
 - Conflicts of interest
 - Unfairness/inequality

Free markets hid information, as the Committee has shown in the Amaranth investigation. Perverse incentives exist in the unidirectional interest of index traders and the incentive of large traders to pump up volume to collect fees, as well as the creation of commodities as asset classes, which undermines the function of the market as an aid to the flow of physical goods. Conflicts of interest are strong where the large commercial traders both hold assets and give advice, hyping the market up to increase the value of their assets. The escalation of price and volatility, which drove physical traders out of the markets, represented a basic unfairness and inequality that harmed small physical traders.

Recommendations

In light of the inability of market fundamentals to explain commodity market gyrations and the collapse of market fundamentalism, it is time for policymakers to abandon the market fundamentalist view that sees regulation and antitrust as the *ex post* clean up after the occasional market failure, and to return to the New Deal view which understood that regulation is the *ex ante* prophylaxis to prevent market failure.

- Chase out the bad guys
 - All traders must register and be certified for honesty and competence.
 - 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 position limits and margin policies to needs of physical traders
 - Lengthen settlement windows
 - Ban conflicts of interest (analyst's reports that enrich analysts' 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 loopholes)
 - 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

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 present our views on commodity market speculation. This Committee has tackled a hugely important issue over the past two years by challenging the received wisdom that commodity markets always get the price right and regulators can do nothing to improve the functioning of the markets. The importance of your enterprise has grown as the economy has sunk into the worst recession since the great depression.

THE DEBATE ABOUT EXCESSIVE SPECULATION IN COMMODITY MARKETS IS OVER

The debate about whether excessive speculation contributed to the run-up in commodity prices is over. The reports of this committee on oil,¹ natural gas² and most recently wheat, as well as my own analyses of oil and natural gas,³ leave no doubt that excessive speculation was an important cause of problems in commodity markets. The only question on the table is “what should we do to prevent excessive speculation from afflicting these markets in the future?”

The speculators will continue to blivate about market fundamentals being the sole cause of the problem, so this testimony will walk through the elements of the correct explanation, which this Committees’ extensive research supports. In order to reach the correct solution to the problem, we need to lay to rest not only the absurd claim that market fundamentals explain the recent gyrations in commodity markets, but also bury the discredited theory of market fundamentalism on which that claim rests.

This is not just a play on words. It is a critical step toward reaching a solution to the problem. The discredited theory of market fundamentalism was the cornerstone for the adoption of policies that created the conditions for the surge in excessive speculation. Bad policy played a key role in creating the decade of volatility, as shown by our empirical analysis below: Bad theory was used to justify that policy.

Therefore, the testimony is divided into three parts.

In the first part I explain why market fundamentals cannot account for the gyrations in commodity markets. Excessive speculation played a critical role.

The second part presents an analysis of the collapse of market fundamentalism as is made apparent by the melt down of financial markets.

The third part of the testimony presents our policy recommendations.

After we have blown away the fog of market fundamentalism in its empirical and theoretical incarnations, it is easy to see the path to restoring commodity markets to their proper role in the economy.

Thus our analysis launches from a positive perspective – analyzing what actually happened – but moves to the normative, concluding with recommendations about what Congress should do to correct the problem.

A valid scientific claim that A causes B requires three critical elements:

Temporal Sequence: A should precede B

Correlation: A and B should move together in the expected directions, and

Explanatory Linkage: There needs to be a mechanism that shows how and why A would move B.

The first two elements are entirely empirical. The third is frequently inferential. Although there are occasions where one finds a smoking gun – A plans to do something to move B – in the social sciences we are frequently required to infer that A caused B based on plausible theories, backed up by circumstantial evidence.

The policy relevance of scientifically valid causal claims is that, based on such explanations, policy makers can adopt policies to change A and expect that the effect will be to change B. In the case before the committee today; if excessive speculation is an important cause of rising and volatile commodity prices, then policies to dampen excessive speculation will have the effect of dampening the upward spiral and volatility of commodity prices. Policy makers might desire that outcome for a number of reasons, like mitigating the impact of unnecessarily high and volatile commodity prices on consumers or restoring the commodity markets to their proper function of smoothing and facilitating the operation of physical commodity markets.

**PART I:
MARKET FUNDAMENTALS ARE INADEQUATE
AS AN EXPLANATION FOR COMMODITY PRICE MOVEMENTS**

WHEN THE BUBBLE FINALLY BURST

In June of 2008, with oil prices at about \$120 per barrel, I was asked by Senator Cantwell at a hearing of the Commerce, Science and Transportation Committee⁴ whether there was a speculative bubble in oil. I not only emphatically answered yes, but I also stated that absent speculation, the price of oil would be in the range of \$40 to \$80 per barrel, depending on the ability of OPEC to extract cartel rents from oil consumers. At the time, I attributed about \$40 per barrel to excessive speculation. By the middle of July the speculative component had expanded to \$65 per barrel, but then the air went out of the speculative bubble over the course of the summer. As the CFTC announced stricter oversight in response to Congressional pressure and liquidity in the economy began to dry up, speculative money was drained out of the commodity markets. The price of crude oil

plummeted. By the beginning of October, when the passage of the Troubled Asset Relief Program was enacted, which declared a crisis of liquidity, the price of oil stood just above \$80 per barrel. It has traded between about \$30 and \$70 for over nine months. As the economy reflates and liquidity is restored, the speculators will rush back in if regulators allow them to. Indeed, there is already concern that speculators are creeping back in, which accounts for the increase from \$40 to \$70.

This interpretation of the bursting of the commodity bubble is consistent with the explanation we gave for how the bubble got inflated in the first place. Therefore, we revisit the explanation that led us to reject the claim that market fundamentals were the sole cause of the wild gyrations in the oil market and to predict so well what would happen when the speculative bubble burst.⁵ Back in June of 2008 the Congress was looking hard at commodity markets and discovering that excessive speculation was a major cause of the dramatic increase in price and volatility. Naturally, it was pressing regulators to do something about it because the commodities that were being driven by speculation play an important part in the real economy.

The market fundamentalists were up in arms at the prospect that Congress or regulatory agencies might actually do something to reduce excessive speculation. Since they believed that only market fundamentals could cause price changes, they argued that Congressional action would be totally misguided. The market fundamentalism message was carried by the big name op-ed economists of the major national newspapers.⁶ Their columns, timed to coincide with major Congressional hearings, were intended to blunt the effort to fix the problem.

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

The Op-ed economists were simply unwilling to accept the proposition that financial market can become dysfunctional or overshoot. They insisted that whatever price the market put on a barrel of oil must be right, except, of course, for the price a year earlier, which was half as high. In that case, the previous 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 oil market in June-July 2008 must start from the recognition that oil prices had 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 tripled 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 increased over four times as fast, over \$3.00 a month, rising to about \$145/bbl at that time. If the 2002-2005 trend had continued, the price of oil would have been about \$65/bbl (see Exhibit 2) in mid-2008.

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 have the effect it did if fundamentals were not so tight, but there is no doubt that speculation made matters much worse. With the real marginal economic cost of a barrel of oil 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, we conclude that the price at about \$140 per barrel includes a large speculative premium. We think a speculative premium of \$60 to \$70 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 paper from the Japanese Ministry of Economy Trade and Industry (METI) echoed our conclusion and the conclusion of the Senate Permanent Subcommittee on Investigations.⁹ We reached 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 2008 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 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 us 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 us 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 were essentially constant over the period from 2002 to 2008. 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 had been a huge influx of money into these markets and a dramatic increase in the number of open positions. The volume of trading increased four-fold in the period from 2002 to 2008, 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.

THE LINK BETWEEN TRADING AND RISING PRICES

Our explanation does not stop with correlation, however. We go a couple of steps further 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 8 and 9). 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.¹³ 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 time¹⁴ 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.¹⁵

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.”¹⁶ 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. Suffice 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.”¹⁷

In theory, high futures prices might reduce physical supplies by inspiring hoarding. But that’s not happening. Inventories are modest.¹⁸

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 up 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,¹⁹ while the oil companies call it capital discipline.²⁰

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,²¹ on the other hand we are told that manipulation of oil markets is impossible because it is difficult and expensive to store.²² 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. It is easier to sustain the upward spiral of prices when you are hyping the market with reports about how high the prices will go.²³ 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.”²⁴ “After years of ignoring the rather obvious fact that oil is a finite resource, the world has suddenly become acutely aware of that reality.”²⁵ Well functioning markets 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 that pushed the price up to \$145 per barrel.

Two pieces of analysis presented to the Energy and Commerce Committee by energy economists provide data that ties our account together. In Exhibits 8 and 9 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 10 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 11 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, 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.²⁶

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.

PART II: THE COLLAPSE OF MARKET FUNDAMENTALISM AS AN ECONOMIC THEORY²⁷

In the year since I offered this explanation of the speculative bubble in commodities, the meltdown of financial markets has opened another layer of empirical evidence to reject the claim that market fundamentals are the sole cause of the gyrations in the commodity markets. Simply put, the economic theory on which that claim rests has been thoroughly refuted.

Although this analysis uses the financial markets as the vehicle for demonstrating the failure of market fundamentalism, this analysis has direct relevance to the examination of commodity markets for a number of reasons.

First, commodity and financial markets share many characteristics as places where paper is traded.

Second, the Commodity Futures Modernization Act of 2000 is kith and kin with the Financial Services Modernization Act of 1999. They share more than similar names. Their structure and intent were to reduce and in some areas eliminate the prudential regulation that was put in place by the New Deal. Indeed, they were the final Acts in the ill-advised, decade-long assault on the fabric of the New Deal. They both instantaneously opened the door to a wave of abuses that the institutional structure of the New Deal had prevented.

Third, for half a century after the New Deal, prudential regulation of financial transactions ensures that the primary purpose of commodity and financial markets in providing important support for the real economy took precedence. The theory of market fundamentalism ignored this important function of these markets in our economy. Finance became an end in itself, rather than a means to the end of a robust real economy in the financial markets; commodity futures became asset classes, traded to increase transaction profits, as described above, rather than instruments for smoothing the flow of physical commodities in the real economy.

Fourth, the CFMA and the FSMA were implemented by an administration that was totally captured by market fundamentalism and which had no sense whatsoever of the important function of these markets in supporting the real economy. The economy has suffered mightily because these financial markets have failed.

Fifth, the bubbles in commodities and financial instruments unfolded in lock step and reinforced one another. They were propelled by the same ill-advised macro economic policies that created vast quantities of liquidity that sought excessive returns in trading profits, rather than meaningful employment in the real economy.

Finally, and above all, the same flaws in market fundamentalism that have become apparent in the meltdown of the financial sector afflict the commodity futures markets. If public policy intends to fix these markets, it must address those underlying flaws

A variety of terms have been applied to the system that has been in place for the last thirty years: “Casino Capitalism,”²⁸ “Speculative Management,”²⁹ “wild west capitalism”³⁰ but the term market fundamentalism has recently been used by both Joseph Stiglitz,³¹ a Nobel laureate economist at Columbia University and a former head of the Council of Economic Advisors under President Clinton, and George Soros,³² a prominent hedge fund manager. We think this is an apt description of the economic ideology that has governed the last thirty years, not only because it captures the content of the economic principles on which the economic system rested, but also because it conveys the sense of a religious belief based on faith rather than fact, which is very much the way advocates and apologists for market fundamentalism act. We use the term market fundamentalism to describe an ideology that rests on several basic principles and assumptions. The cornerstone is the efficient market hypothesis.³³

- The pursuit of private interest through unregulated markets is all we need to promote the public good, because markets inevitably create efficiency, growth and stability.³⁴
- The efficient market hypothesis is the main pillar of market fundamentalism, but there are two other tenets that immediately and inevitably follow from that first premise.
- The inequality that inevitably results from the working of the unregulated market is not considered to be a problem. Indeed, it is deemed a necessity by some.³⁵
- Idolizing the market, market fundamentalism must denigrate government. The less government the better is the mantra.³⁶

Whatever we call it, the key point is that as long as the institutional structures of the New Deal remained in place in the financial sector, financial crises remained manageable.³⁷ It was the major financial deregulatory policies and laws of the 1990s that let “Casino Capitalism” run wild.³⁸ Financial market deregulation was the last of a series of deregulation decisions driven by market fundamentalist ideology that led to disaster. Just as the deregulation of electricity quickly led to the California meltdown, the deregulation of commodity markets led to the Enron debacle, and the deregulation of telecommunications in 1996 played a key part in the technology stock bubble, the passage of the Financial Services Modernization Act in 1999, which repealed the Glass Steagall Act, and the passage of the Commodity Futures Modernization Act in 2000, which prevented the regulation of over-the-counter derivatives, undermined prudential regulation of financial and commodities

markets, intensified the financial crises, and laid the groundwork for the economy-wide meltdown.³⁹ The remarkable ability of prudential regulation to prevent financial crises has been documented by the Congressional Oversight Panel,⁴⁰ which notes that financial crises were a permanent fixture of financial markets in the period before the New Deal institutions of prudential regulation were put in place and in the period after it and after they were torn down by the irrational exuberance of market fundamentalism for deregulation, as shown in Exhibit 12. The fifty-year period of New Deal prudential regulation was remarkably and uniquely free of such crises in the U.S.

Left to its own devices the market fails to consistently achieve its primary function of efficiently allocating resources to uses. Economic theory could envision a more efficient outcome without regulation only by ignoring or downplaying the flaws in the market, but reality could not produce the theoretical outcome because the flaws inevitably assert themselves. The market fundamentalist model has come crashing down. The weakness of the theory was admitted by none other than Alan Greenspan, in Congressional testimony in October 2008. Greenspan, one of the leading architects and advocates of deregulation of financial markets, admitted to a major flaw in the theory.

Those of us who looked to the self-interest of lending institutions to protect shareholders' equity, myself included, are in a state of shocked disbelief... I made a mistake in presuming that the self-interests of organizations, specifically banks and others, were such that they were best capable of protecting their own shareholders and their equity in the firms."⁴¹

Note that Greenspan's admission is not specific to the financial sector but is a general proposition about economic incentives. Lacking this vital underpinning, the whole theory unravels.

The efficient market hypothesis is wrong. Unregulated markets do not automatically create a stable, growing economy. In each of the sectors, there is a critical market failure that prevents the sector from doing what it is supposed to do, efficiently allocating resources to uses. Because the nature of the economic activity varies from sector to sector, the precise form of the market failure will vary, but there are repeated patterns. In the finance sector we now know that self-interest is not enough to ensure prudential behavior.⁴² Even the most sophisticated financiers fail to assess risk when financial instruments become too complex and the financial incentives to ignore risks become too strong.⁴³ The inability to assess and indifference to the risk of default and the difficulty of resolving assets in default undermines the central function of financial markets. The ascendancy of finance undermined and drained resources from the real economy.⁴⁴

The income inequality hypothesis is wrong. Trickle down economics does not produce a stable growing economy. Inequality is not a necessary condition for economic progress. To the contrary, inequality is a sufficient condition for economic meltdown. Inequality created by regressive tax cuts for corporations and the wealthy does not provide savings and investment to fuel real economic expansion. A narrow distribution of wealth

does not create a stable base for economic growth, because wealth is not sufficiently spread to support demand.

The “less government the better” hypothesis is wrong. The public sector is not inherently inept, and the private sector is not inherently skillful.⁴⁵ The charges of public sector ineptitude pale in comparison to the ineptitude, fraudulent accounting, irrational lending and underwriting, and conflict-of-interest-driven abuse in the unregulated and under-regulated markets created by market fundamentalism.⁴⁶ Stable economic growth is not the outcome of small government for two reasons. First, it undermines effective oversight of the economy, which plays a key role in establishing the conditions for meltdown. Second, when the efficient market and inequality fallacies start to push the economy off the tracks, the “less government fallacy” prevents public policy from taking the measures necessary to prevent the wreck or put the economy back on track quickly.

The unraveling of the theory is important because it signals the malfunction of the financial sector in the economy. The launch point for the COP analysis is the identification of the critical role that the financial sector plays in society. “A well-regulated financial system serves a key public purpose: if it has the power and if its leaders have the will to use the power, it channels savings and investment into economic activity... A healthy financial system, one that allows for the efficient allocation of capital and risk, is indispensable to any successful economy.”¹

For the financial system to play its proper role in society, the COP report argues, there are three key functions it should provide. “Manage risk, facilitate transparency and promote fairness among market actors.”² Failure to properly execute these functions results in inefficiency, starves the economy of the resources it needs to thrive and can lead to financial panics, manipulation, swindles and fraud.³

Similarly, we must keep the vital function of commodity markets in mind as we study the collapse of market fundamentalism in the sector. As the COP suggests for financial markets, when a well-regulated commodity market exists, a healthy relationship exists between commodity markets and the real economy. The commodity markets facilitate the functioning of the real market by discovering price and allowing real production to be adjusted to meet the needs of the real economy. The function is to smooth the flow of commodities from people who produce the goods to people who consume them. When this relationship is disrupted because of inadequate regulation, excessive speculation undermines the ability of the market to provide its vital functions for the real economy – driving prices too high, but simultaneously reducing, not increasing supply, creating volatility that makes it more difficult, not easier, to plan production, and forcing commercial traders out of the market.

¹ COP Report, pp. 2...4.

² COP Report, p. 11.

³ COP Report, p. 8.

CRITICAL CHALLENGES

The unraveling of the theory can be linked to a series of endemic problems that afflict inadequately regulated markets. There are six interconnected patterns of harmful conduct that stem from the configuration of the incentive structure that market fundamentalism fosters in the financial sector (see Exhibit 13). The first five are broadly applicable across many sectors of the economy; the sixth applies uniquely to the financial sector. Asymmetric information and agency problems are exploited by individuals to promote private interests at the expense of the proper functioning of the economy. Conflicts of interest, which are allowed in the name of deregulation, overwhelm the system. Perverse incentives and lax oversight misallocate resources and create an endemic fraud problem. The pervasive pattern of unfairness and inequality creates inefficiency and starves the real economy of resources.

The financial sector suffers a moral hazard problem made worse by market fundamentalism. Where risks can be shifted to third parties, they will be, to raise profits.

Transparency and Asymmetric Information

A flaw in markets that receives a great deal of attention in discussions of the current financial crisis is information transparency.⁴⁷ Transparency is a central problem, and the availability of timely and relevant information is seen as a critical factor to achieving efficient outcomes, since lack of transparency makes it difficult to evaluate risk and achieve efficient outcomes. “After all, the fundamental risk/reward corollary depends on the ability of market participants to have confidence in their ability to accurately judge risk.”⁴⁸ The availability of information is central to the operation of efficient markets, but left to its own devices the market will under produce information because it is a public good.⁴⁹ Asymmetric information wreaks havoc with market functioning. It is for this observation that Stiglitz won his Nobel Prize.⁵⁰

Cooper, identifies the crucial role of information as follows:

Therefore, according to efficient market theory asset price bubbles are prevented by investor’s appetite to buy assets on the cheap and sell them when too expensive. It follows that an asset price bubble can only be formed if investors are willing to buy assets when they are already overpriced, implying that asset bubbles require investors to behave irrationally. This line of reasoning leads to the irrational investor defense of the Efficient Market Hypothesis: to disprove market efficiency it is necessary to prove that investors behave irrationally...Buried deep within the Efficient Market Hypothesis is the unstated assumption that investors always have to hand the necessary information with which to calculate the correct price of an asset. If this assumption turns out to be false and investors are sometimes denied the necessary information to make informed judgments about asset prices, or worse still if they are given misleading information, then it becomes possible for asset price bubbles to form without investors behaving irrationally.⁵¹

This observation suggests a simple typology of conditions for asset bubbles based on the distribution of information and the tendency of investors to gain in rational action (see Exhibit 14. It seems that the set of conditions where bubbles are not possible is small, if not null.

Perverse Incentives

Market fundamentalism has a pervasive incentive problem. There is an engine of instability in the structure/conduct heart of the unregulated financial market. Fees from making deals became a huge source of income and the quality of the deals mattered less and less.⁵² The deals can be sold by conflict-ridden brokers and supported by loans from conflict-ridden banks or securitized by conflict-ridden investment banks and rated by conflict-ridden credit ratings agencies and moved off the balance sheets so that more deals can be made and more fees earned. The broad breakdown results from “devoting relatively little attention to risk assessment,” exhibiting “a willingness to issue extraordinarily risky loans.”⁵³ These risky loans were attractive as a result of a perverse set of incentives affecting financial institutions that “could sell them quickly in secondary markets while earning large fees from bundling them. Credit rating agencies (who were paid by the issuers) awarded their triple-A seal of approval because they failed to properly evaluate the risk of securitized instruments.”⁵⁴

As long as more money could be pulled in, the day of reckoning could be pushed off. Easy credit and shaky accounting practices create an upward spiral,⁵⁵ and tax policy makes it all the more rewarding. Easy money and regressive tax policy accelerate the upward spiral. Bad practices tend to drive out good. Bursting bubbles reveal blatant fraud that was hidden beneath the froth – Enron, Worldcom, Madoff.

In an environment that emphasizes short-term stock market returns and allows risk takers to take out earnings quickly, practices degenerate.⁵⁶ As the bad actors get their short-term rewards, the good actors become desperate to keep up. The process affects lending,⁵⁷ accounting,⁵⁸ executive compensation,⁵⁹ underwriting⁶⁰ and home mortgages.⁶¹ As the former CEO of Citibank put it: “When the music stops, in terms of liquidity, things will be complicated. But as long as the music is playing, you’ve got to get up and dance.”⁶²

Our financial catastrophe, like Bernard Madoff’s pyramid scheme, requires all sorts of important, plugged-in people to sacrifice our collective long-term interests for short-term gain. The pressure to do this in today’s financial markets is immense. Obviously the greater the market pressure to excel in the short-term, the greater the need for pressure from outside the market to consider the longer term. But that’s the problem: there is no longer any serious pressure from outside the market. The tyranny of the short-term has extended itself with frightening ease into the entities that were meant to, one way or another, discipline Wall Street, and force it to consider its enlightened self-interest.⁶³

Firms made short-term underwriting fees for packaging mortgage-backed securities that have since become known as “toxic assets.” Traders booked short-term profits trading them (or simply marking them up). Executives pushed their subordinates to take more risk because they would yield more profits, and bigger bonuses. Nobody had any incentive to worry about whether those securities would “blow up.” Too much bonus money was at stake.”⁶⁴

Agency

The separation of ownership and control has long been recognized as a social problem for the capitalist economy, but the incentive structures of market fundamentalism make it more or less urgent. “Financial actors do not always bear the full consequences of their decision and therefore are liable to take (or impose) more risk than would otherwise seem reasonable. For example, financial institutions generally invest other people’s money and often enjoy asymmetric compensation incentives, which reward them for gains without penalizing them for losses.”⁶⁵ Stiglitz sees a powerful interaction between information, agency, incentive structures and conflicts of interest. Because of imperfect information, it is often difficult to make sure that an agent does what he is supposed to do. Because of the failure to align incentives, it is often the case that he does not.

Conflicts of Interest

Conflicts of interest pervade the financial system. We have already mentioned, in the information discussion above, the critical problem that conflicts of interests involving credit rating agencies and investment banks played in the current financial crisis. But conflicts of interest can take many other forms as well.

When a single entity owns both an insured business (e.g. a commercial bank) and an uninsured business (an investment bank), or both regulated and unregulated subsidiaries that deal with each other, there is a powerful conflict of interest. Profit can be increased with imprudent loans by having the insured (regulated) entity, which is not supposed to get into risky lines of business, subsidize the uninsured (unregulated) ventures that do get into riskier businesses. Where management can enrich itself at the expense of stockholders, with gimmicks, such as improperly accounted stock options, there is a pervasive conflict of interest. The most prominent change in attitude toward potential conflict of interest was the decision to repeal the ban on comingling investment activities and commercial banking.

At the extreme, where agents not only pursue their interests at the expense of shareholders and the public, but also do so illegally, conflicts of interest become fraud. Fraud is not unique to market fundamentalism, but the institutional structure creates a fertile field for an endemic fraud problem. High stakes, lax oversight, creative accounting and a short-term perspective are conducive to fraud. The line between the illegal, immoral and ill-advised becomes blurred in this hothouse environment.

Given the structural conduciveness to fraud and the structurally induced race to the bottom in accounting and ethics, it is fair to argue that market fundamentalism has a uniquely endemic fraud/abuse problem. That said, it is important to recognize that the problem will not be solved just by attacking the illegal fraud. That must be done through enforcement, but public policy must address the underlying structures that give rise to and permit the fraudulent activity to become so pronounced. The catharsis of just throwing the criminals in jail and declaring victory will not suffice. It becomes a strategy to sidestep or avoid the more meaningful and fundamental reforms of market structure.

Unfairness/Inequality

The five flaws in unregulated financial markets discussed above have been recognized as creating the potential for market failure in unregulated markets. The COP adds a sixth problem – unfairness, which it argues also contributes to the malfunctioning of the system. Unfairness in transactions, it argues, can starve the system of resources, raising costs and restricting activity. Unfairness involves two categories of problems.

Unfair dealings can be blatant, such as outright deception or fraud, but unfairness can also be much more subtle, as when parties are unfairly matched... If one party to a transaction has significantly more resources, time, sophistication, or experience, other parties are at a fundamental disadvantage... Unfair dealings affect not only the specific transaction participants, but extend across entire markets, neighborhoods, socioeconomic groups, and whole industries... As those consequences spread, the entire financial system can be affected as well... Unfairness... causes a loss of confidence in the marketplace. ⁶⁶

Unfairness in transactions not only threatens the flow of resources into the system, but it results in the misallocation of resources, as lenders take advantage of overmatched borrowers. The wrong people get loans at the wrong prices from the point of view economic efficiency. This conceptualization expands on the treatment of unfairness as an outcome of the market – inequality – i.e. we frequently see inequality as inequity; here we see it as inefficiency.

This broader conceptualization of the importance of unfairness/inequality as a supply-side issue fits the financial crisis in another sense, which is a demand side problem. The severe increase in inequality of income and resources that took place during the reign of market fundamentalism resulted in a failure of incomes to keep up with the rapid expansion of the production capacity of the economy and the rising cost of necessities – housing, education, health care, and energy – put severe stress on household budgets.⁶⁷ They plunge into debt to maintain their living standard.⁶⁸ Savings are too low, and concentrated wealth creates rampant speculation rather than productive investment in the real economy.⁶⁹ The tide may rise, but it does not lift all boats. Instead, the rip currents of inequality are so strong that the middle class is capsized and drowns in an ocean of debt. The supply-side and the demand-side of excessive inequality intersect in an inadequate national savings rate.

Each of these problems has been in evidence in the speculative bubble that afflicted commodity markets. Inadequately regulated markets hid information, as the Committee has shown in the Amaranth investigation and as we learned when the CFTC reclassified traders to show that the vast majority of activity in some of these markets was speculation. Perverse incentives riddle the structure, from the unidirectional interest of index traders, to the incentive of large traders to pump up volume to collect fees, as well as the creation of commodities as asset classes, which undermines the function of the market as an aid to the flow of physical goods. Conflicts of interest are strong where the large speculators hold assets and give advice, hyping the market up to increase the value of their assets. The escalation of price and volatility, which drove physical traders out of the markets, represented a basic unfairness and inequality that harmed small physical traders.

Other Flaws

In the financial sector moral hazard is a unique and prominent problem. In many sectors of the economy, we find other unique problems that challenge market fundamentalism's account of how the economy works. There are structural problems that lead to market failure, for which market fundamentalism does not have an adequate response. In commodity markets, particularly for energy commodities, there is another source of market failure in market structure – low elasticities of supply and demand, high barriers to entry, and the difficulty of storage. These accentuate the vulnerability to excessive speculation and market volatility.⁷⁰

In the two and a half years between the end of 2005 and the middle of 2008, which I have identified as the period of the speculative bubble, speculation in oil alone has cost the economy about \$285 billion.⁷¹ 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.

PART III REGULATORY REFORM IS THE WAY TO SOLVE THE PROBLEM

In light of the inability of market fundamentals to explain commodity market gyrations and the collapse of market fundamentalism, it is time for policymakers to abandon the market fundamentalist view that sees regulation and antitrust as the *ex post* clean up after the occasional market failure, and to return to the New Deal view which understood that regulation is the *ex ante* prophylaxis to prevent market failure.

Too much money chasing too few goods in the commodity markets has created the upward spiral, amping up volume, increasing volatility and adding to risk. We must turn down the volume in commodity markets. Sound prudential regulation is the key to restoring order.

The failure of the CFTC to act responsibly in the past and the weak-kneed reaction to the dire crisis in commodity markets in the present ensure that Americans will continue to be the victims of excessive speculation. Congress must enact broad reforms that close the loopholes, remove the discretion that was given to the CFTC and compel it to do its job.

The policy prescriptions we derived from a proper understanding of the bubble, before it burst led us to recommend policy changes in five areas.⁷² The proposals to reform prudential regulation in the wake of the financial meltdown have moved strongly in this direction. It is vital that reform of prudential regulation of commodity markets move in the same direction. Our recommendations bear repeating.

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

The CFMA created a market in over the counter trading that is beyond regulatory scrutiny. These dark markets have played a prominent role in major manipulations. Without comprehensive registration and reporting, there will always be room for mischief that is out of sight to the regulator. Large traders should be required to register and report their entire positions in those commodities across all markets. Registration and reporting should trigger scrutiny to ensure the good character, integrity and competence of traders.

Eliminate the funny money

Raise margin requirements

Increase capital reserve requirements

We need to restore the balance between speculation and productive investment. Margin requirements on organized exchanges are a fraction of the margin requirements on stocks. If it is cheaper to put your money into speculation, why bother with real investment. The margin requirement for commodity trading among non-commercial traders should be fifty percent higher than the margin requirement for investment in stocks, but more lenient terms should apply to physical traders. Capital requirements should be increased to further reduce the amount of leverage in these markets and dampen excessive risk taking.

Reduce the ability to push prices up

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

Lengthen settlement windows

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

Large position limits and short settlement periods invite efforts to influence prices. They should be reformed to reduce the risk. The practice of hyping prices by firms that stand to profit from the predictions should be banned.

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 loopholes)

Create minimum criminal penalties for violation of commodity laws

Public policy must return the futures markets to their function of supporting the operation of physical markets. Speculation should not be allowed to dominate these markets, and limits should ensure that genuine commercial traders are a substantial majority of the market by imposing strict speculative limits. Traders must be properly classified to ensure this outcome.

We must not only close the Enron-loophole, which allowed vast swathes of trading to take place with no oversight, but also ensure vigorous enforcement of registration and reporting requirements. We must take back the authority we have given to foreign exchanges and stop abandoning authority to private actors.

Failure to comply should result in mandatory jail terms. Fines are not enough to dissuade abuse in these commodity markets because there is just too much money to be made.

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

We must level the playing field between long-term productive investment and short-term speculative gains, with a tax on short term capital gains between 33 and 50 percent to make holding productive investments for long periods as attractive as flipping short term financial paper.

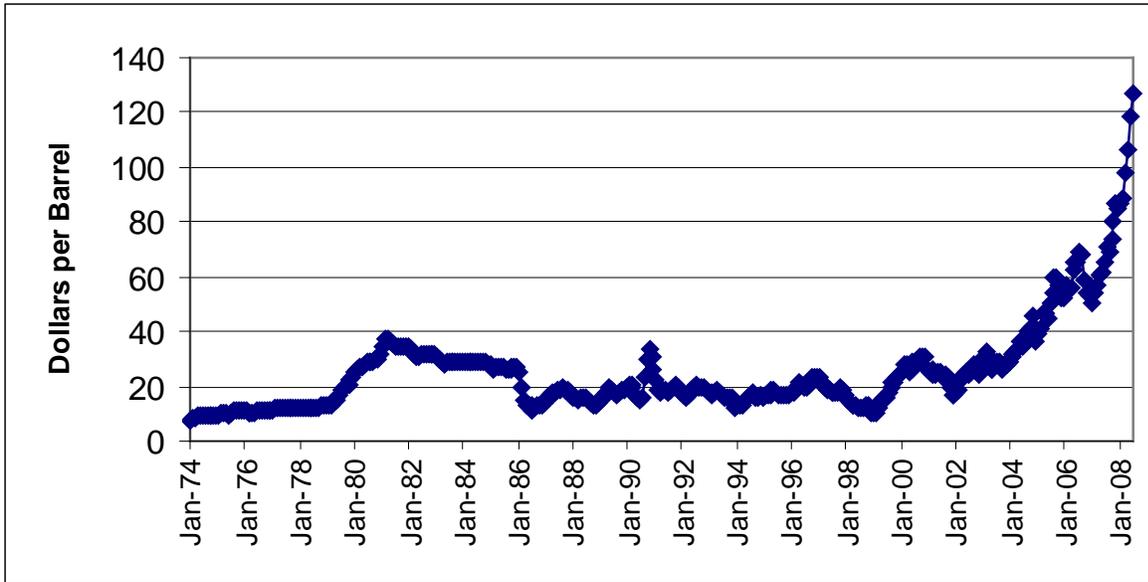
Speculators will insist that they will just go abroad, but the Congress need not fear such an outcome. If the U.S. is determined to assert jurisdiction over trading in the U.S. and

for U.S. commodities, foreign exchanges will comply. To survive they desperately need to have access to legal instruments for U. S. traded commodities. Individuals may chose to become expatriates and move to countries that chose not to comply, or they may break the law, but vigorous enforcement will put a stop to it. I suspect that the vast majority of traders do not want to live in places like Zimbabwe or Leavenworth, Bangladesh or Sing Sing.

If we do not do more than the halfhearted approaches that are on the table, we will continue to lurch from crisis to crisis. American consumers are suffering needlessly from this speculative bubble in vital necessities. It is time for thorough reform and re-regulation of the financial commodity markets.

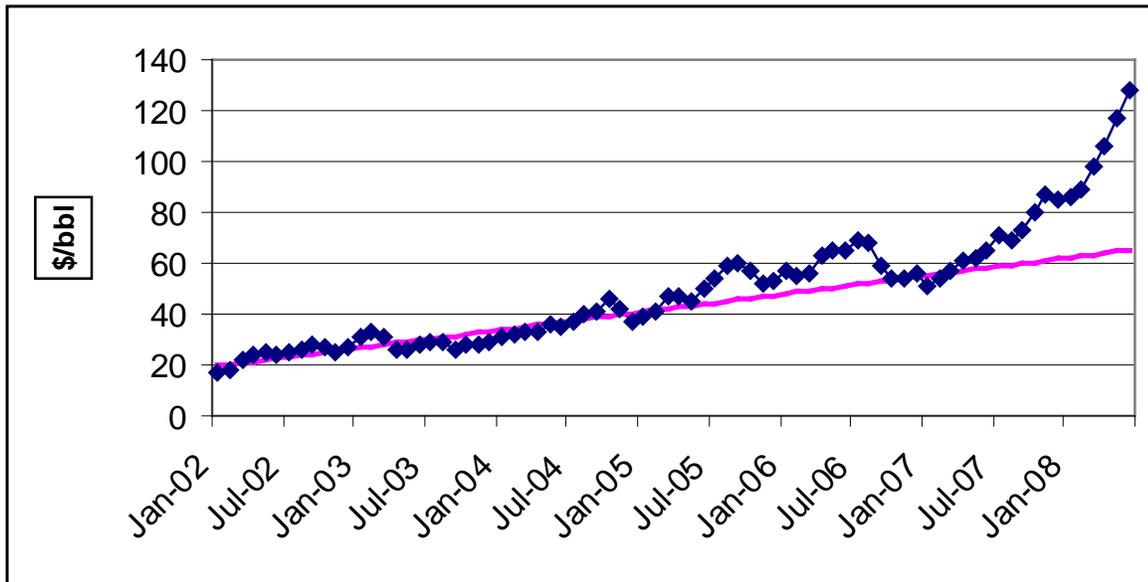
EXHIBIT'S

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



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

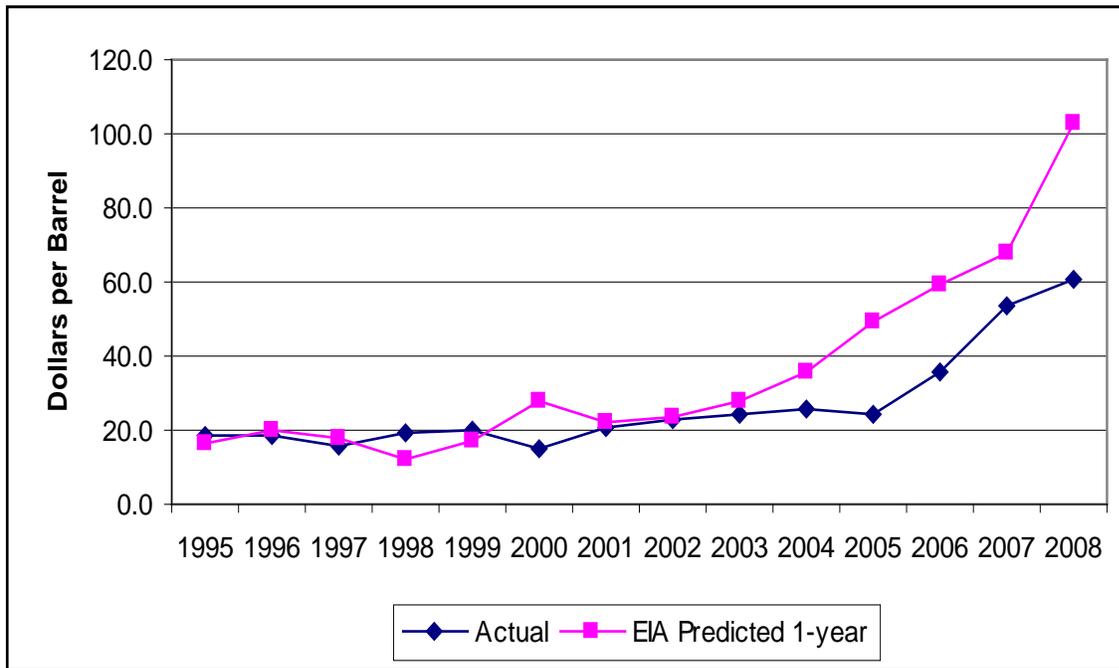
**EXHIBIT 2:
CRUDE PRICES COMPARED TO TREND LINE (1/2002-1/2005)**



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

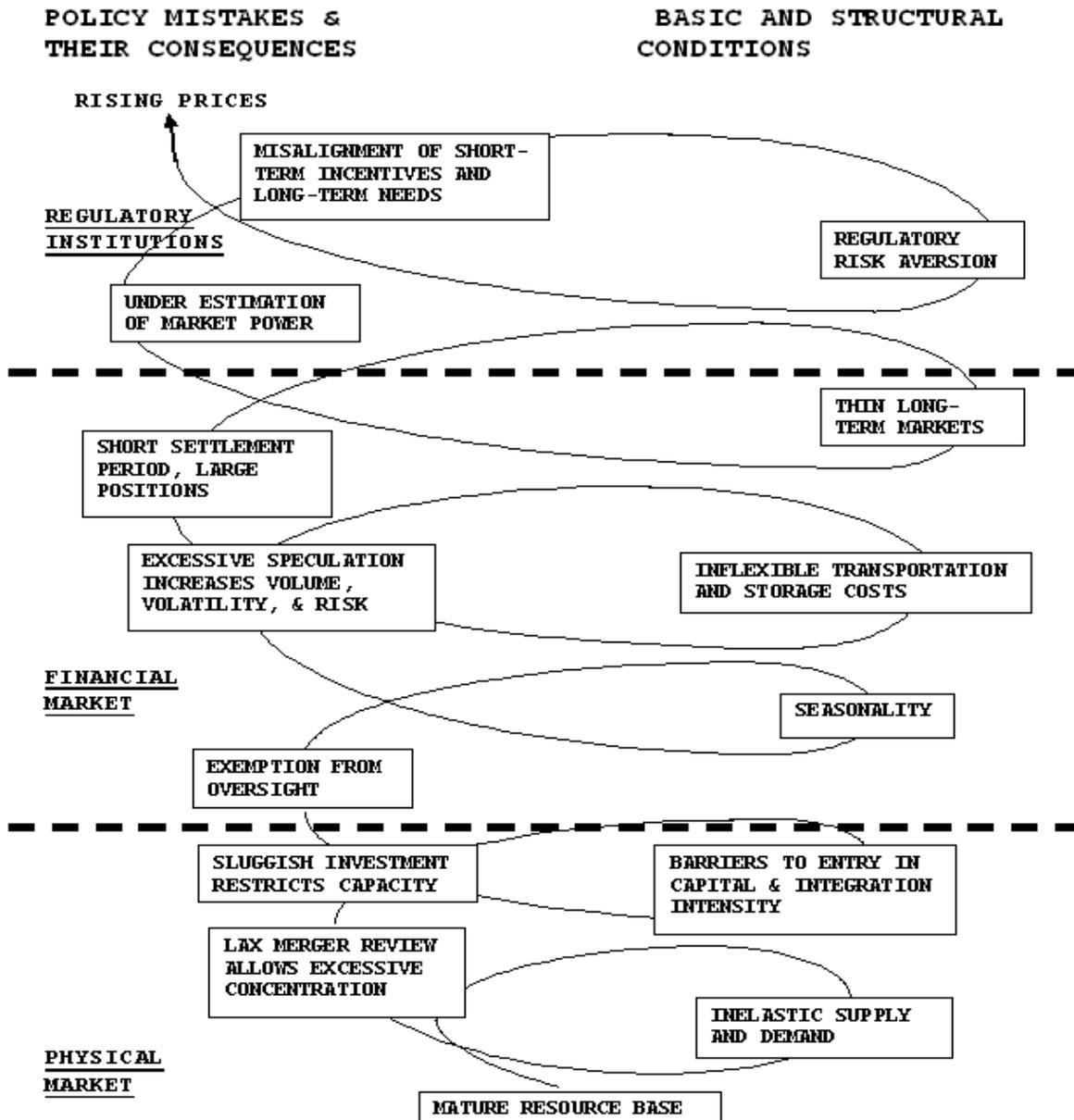
EXHIBIT 3:

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.

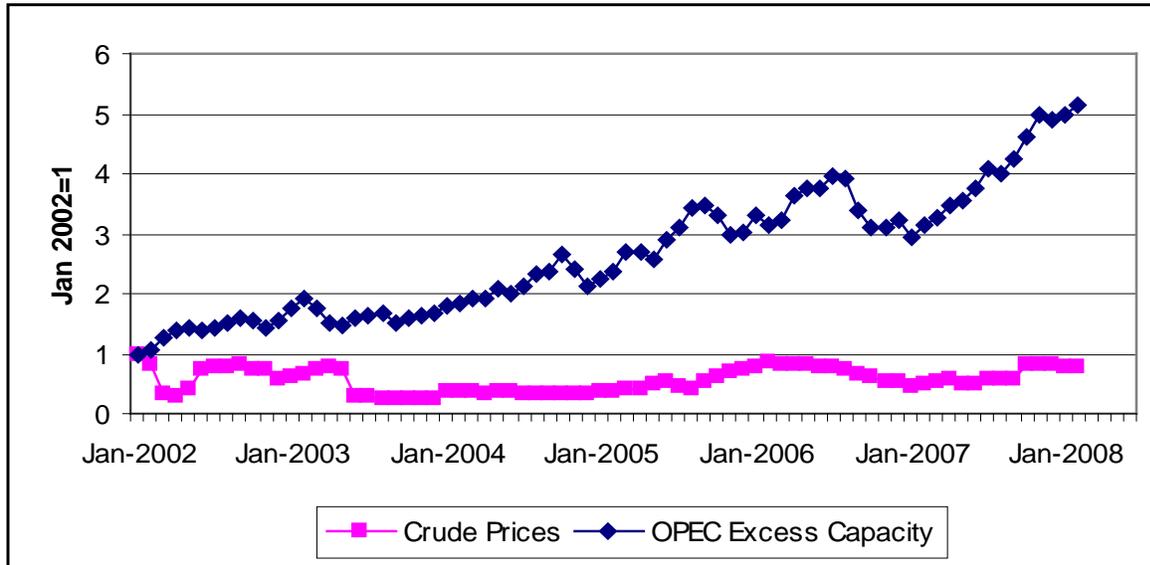
**EXHIBIT 4:
PHYSICAL, FINANCIAL AND REGULATORY FACTORS IN THE ENERGY PRICE SPIRAL**



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:

OPEC EXCESS CAPACITY COMPARED TO THE PRICE OF CRUDE

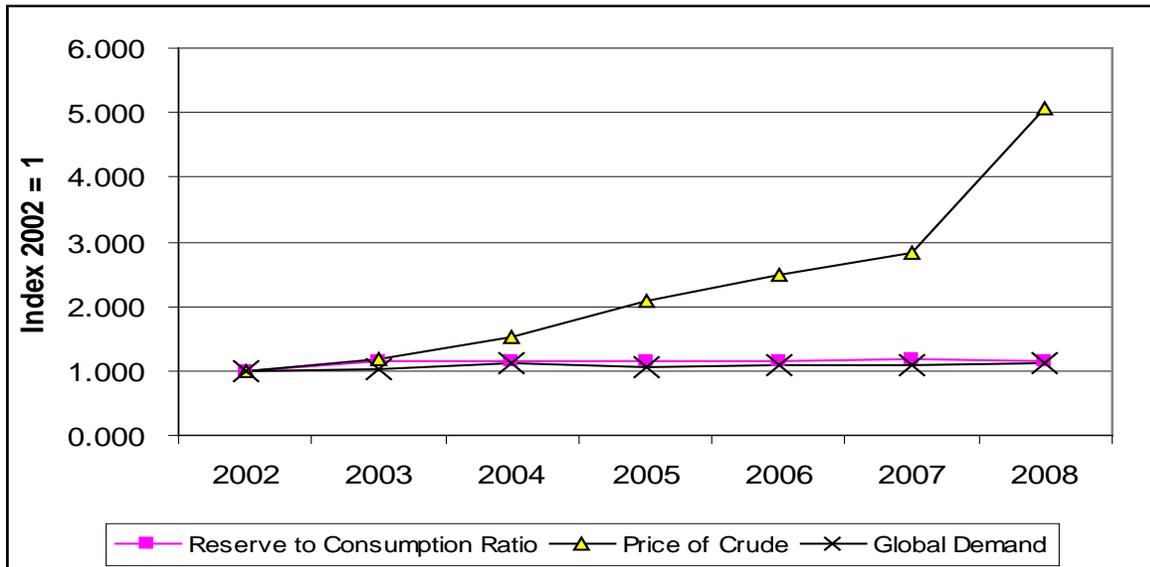


Source: Energy Information Administration, database, *Refiner Acquisition Cost of Crude, International: World Oil Balance, Short Term Energy Outlook – OPEC Oil Production Capacity.*

EXHIBIT 6:

LONG-TERM FUNDAMENTALS:

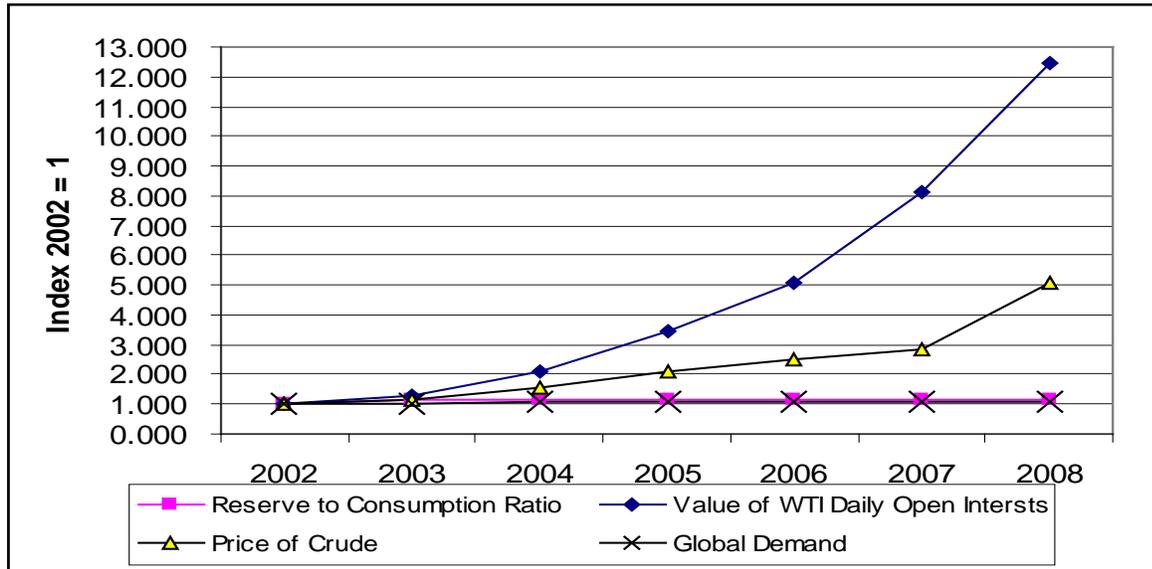
GLOBAL DEMAND AND RESERVE TO CONSUMPTION RATIO, COMPARED TO PRICE OF CRUDE



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

EXHIBIT 7:

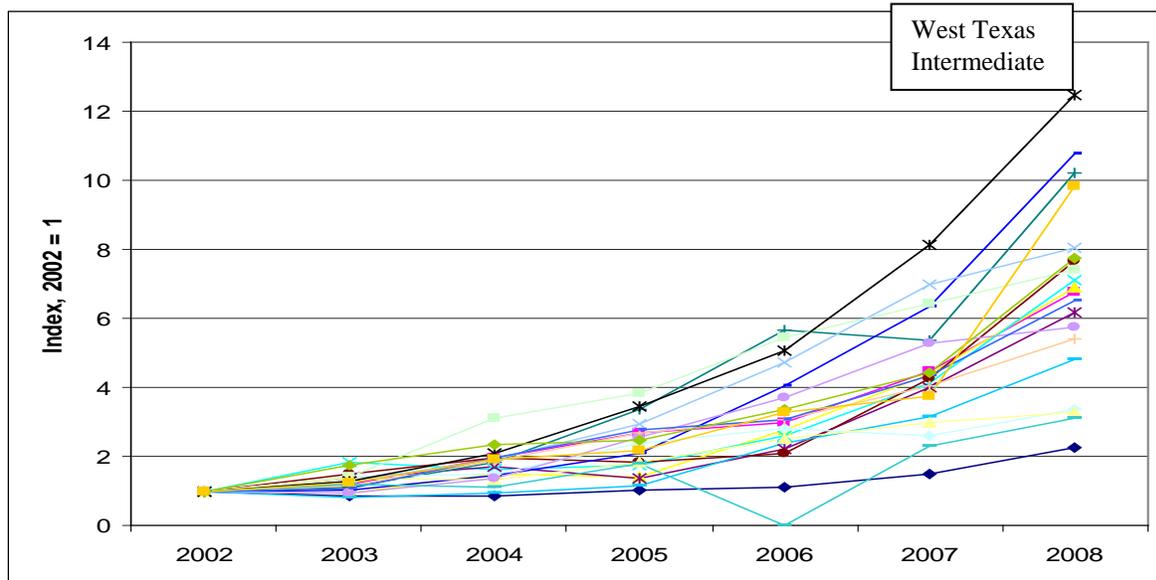
AVERAGE DAILY VALUE OF OPEN POSITIONS ON WEST TEXAS INTERMEDIATE, CRUDE PRICES, LONG-TERM FUNDAMENTAL (RESERVES AND DEMAND)



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.

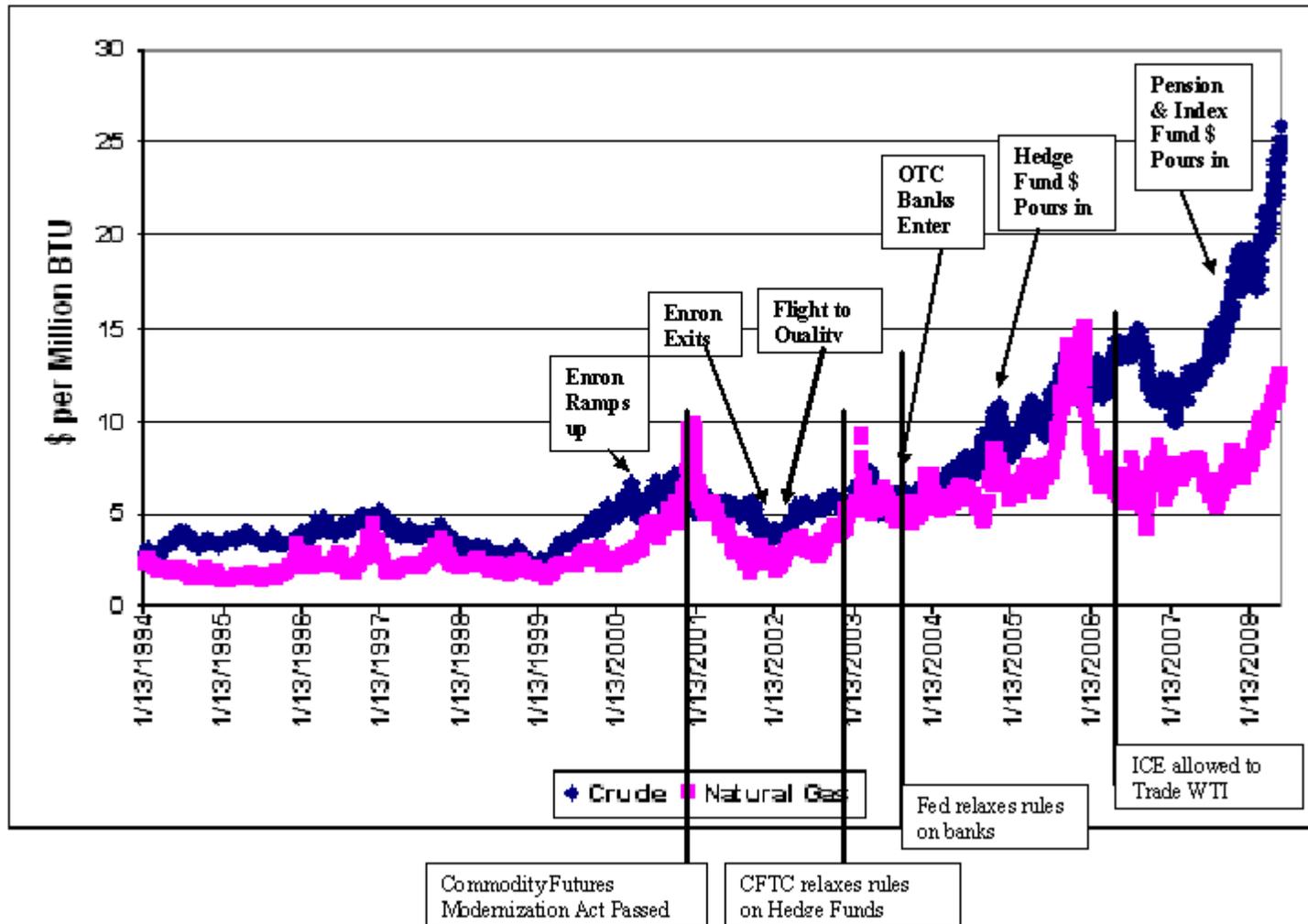
EXHIBIT 8:

AVERAGE DAILY DOLLAR VALUE OF OPEN INTEREST: 20 INDEX COMMODITIES



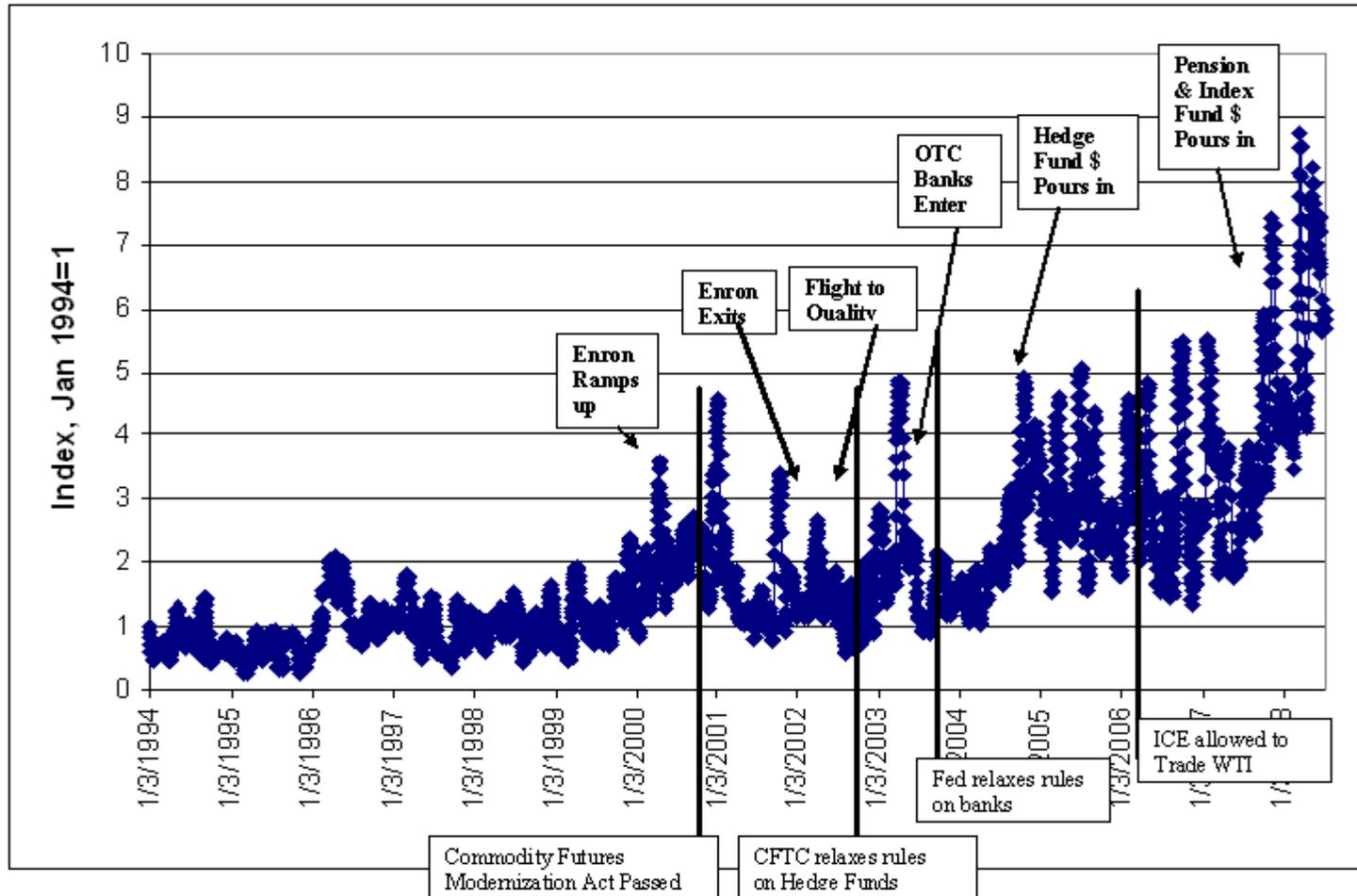
Testimony of Michael Masters, Managing Member/Portfolio Manager, Masters Capital Management, LLC, Committee on Homeland Security and Governmental Affairs, United States Senate, May 20, 2008, Note 16.

**EXHIBIT 8:
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.

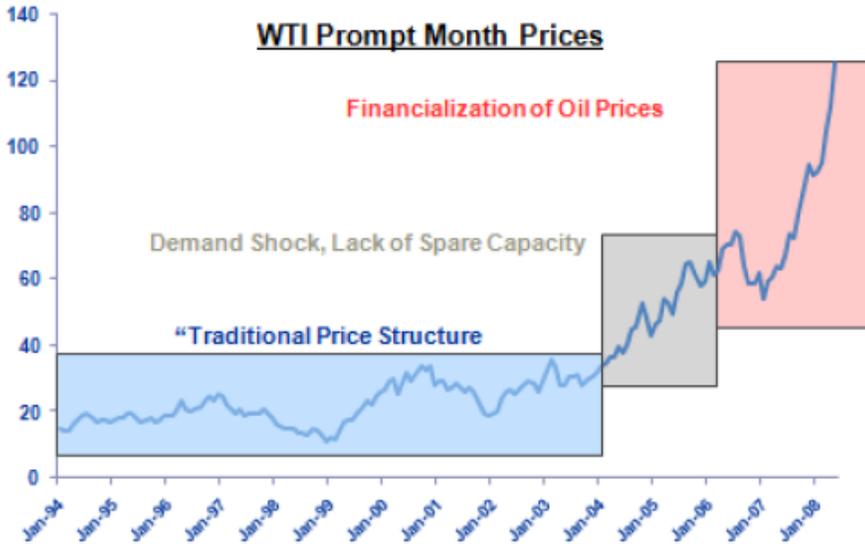
**EXHIBIT 9:
SPOT PRICE VOLATILITY DEREGULATION AND CHANGES IN TRADING ACTIVITY
(30-DAY MOVING AVERAGE OF THE STANDARD DEVIATION OF THE DAILY SPOT PRICE)**



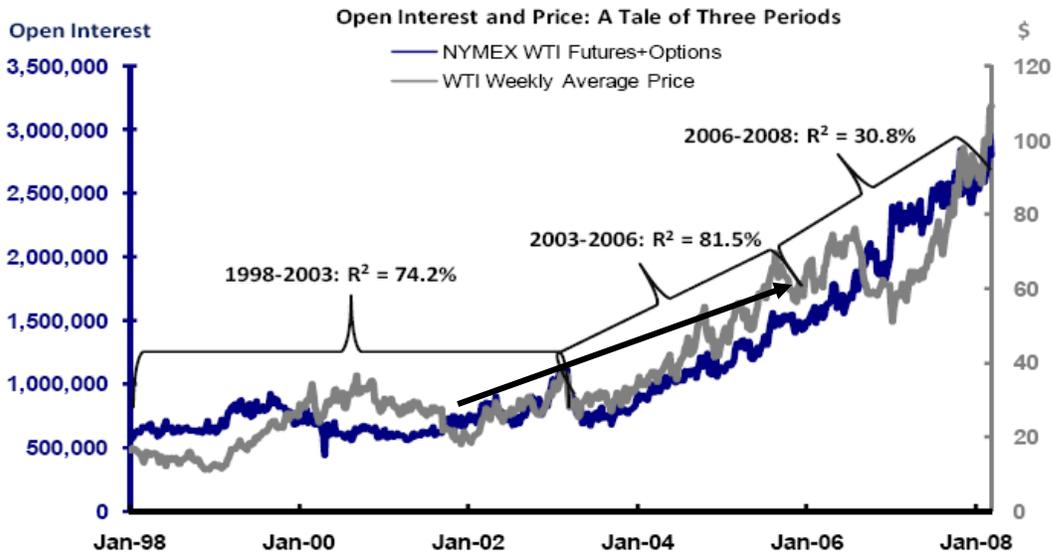
Source: Energy Information Administration, Database and Mark Cooper, *The Role of Supply, Demand and Financial Commodity Markets in the Natural Gas Price Spiral*, p. 8.

Exhibit 10:

Oil Prices and Structural Trends



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

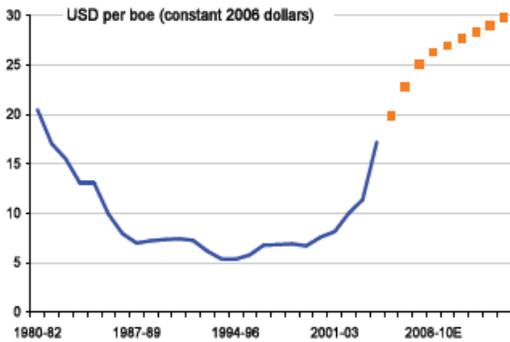


Source: “Testimony of Roger Diwan Regarding Energy Speculation: Is greater Regulation Necessary to Stop Price Manipulation,” Subcommittee on Oversight and Investigations, Committee on Energy and Commerce, U.S. House of Representatives, June 23, 2008, pp. 2, 8

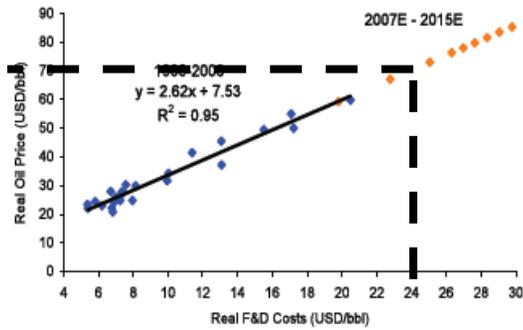
Exhibit 11:

What Does It Cost to Find a Barrel?

Worldwide Finding Costs (USD/bbl)



Oil Prices & Finding Costs Are Related



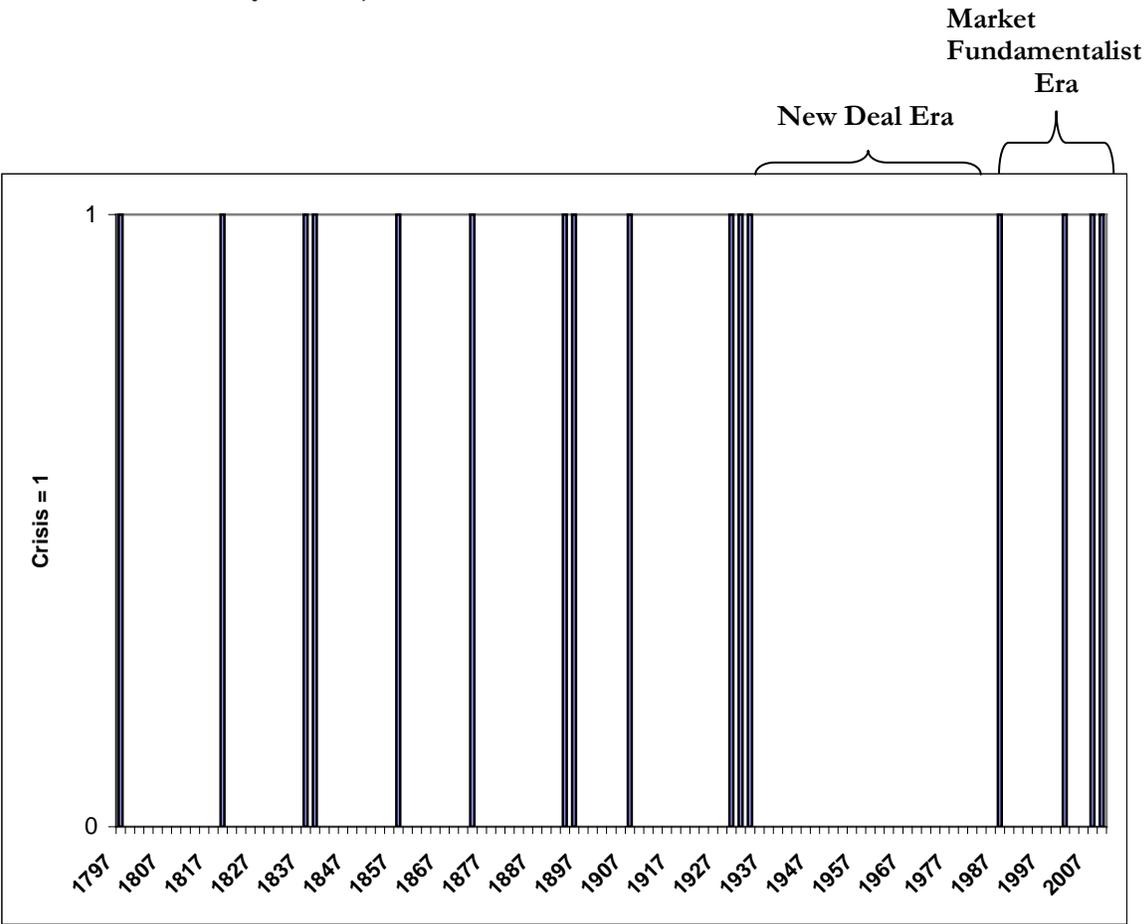
Source: DOE/EIA, Author

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.

Exhibit 12: History of Major Domestic Financial Crises



Sources: Congressional Oversight Panel, *Special Report on Regulatory Reform*, January 29, 2009.

**Exhibit 13:
Institutional Weakness and Behavioral Flaws in Deregulated Financial Markets**

The purpose and function of a healthy financial system is to channel savings and investment into economic activity; efficiently allocating capital and risk is indispensable to any successful economy.

The purpose and function of a healthy commodity market is to facilitate the planning and flow of commodities between producers and users

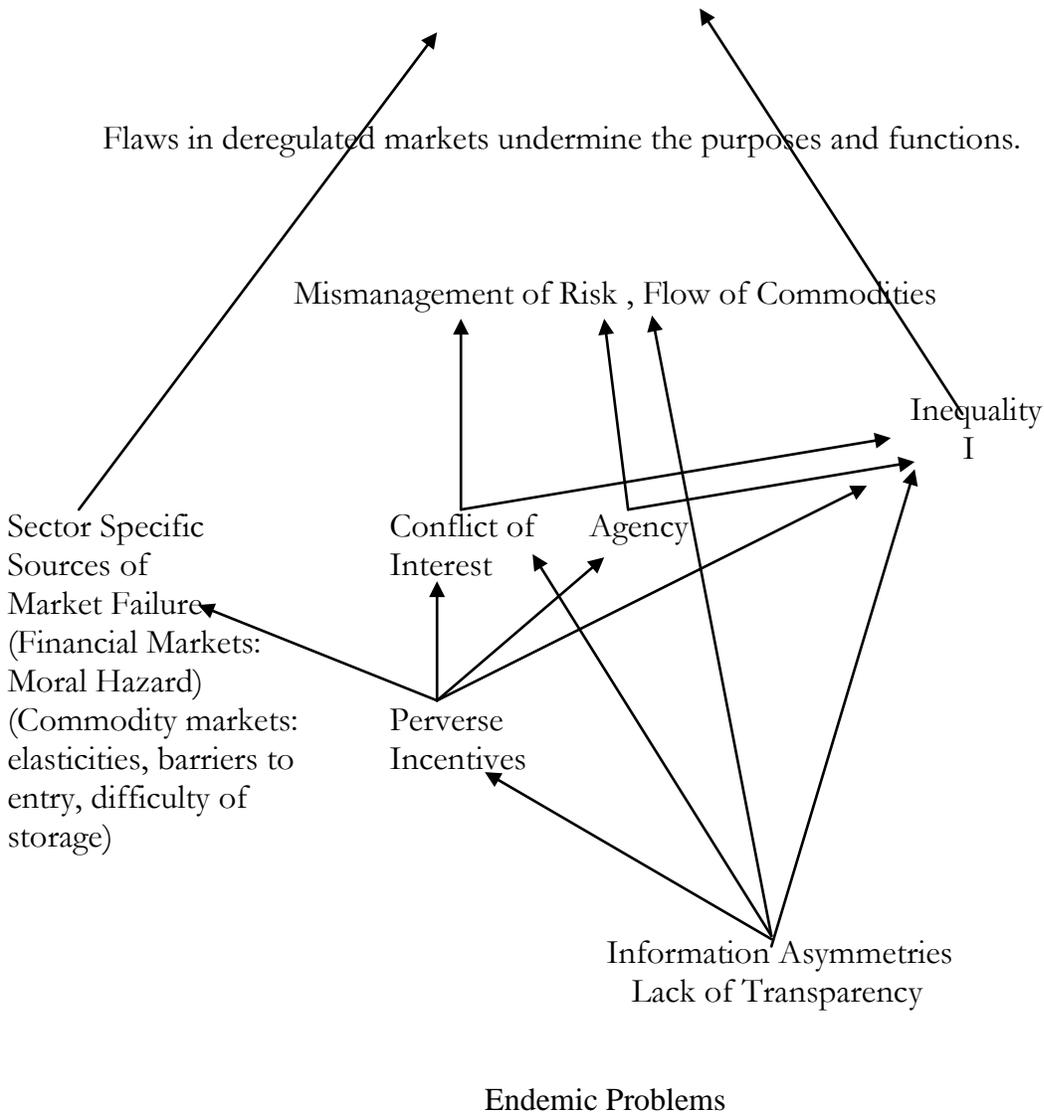


Exhibit 14: Conditions for Asset Bubbles

		Distribution of Information	
		Perfect	Imperfect
Investor Behavior	Perfect	Bubble not Possible	Bubble Possible
	Bounded Rational or Irrational	Bubble Possible	Bubble Possible

ENDNOTES

¹ 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).

² Senate Permanent Subcommittee on Investigations, Committee on Homeland Security, *Excessive Speculation in the Natural Gas Market* (June 25 and July 9, 2007).

³ 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); *The Role of Supply, Demand, Industry Behavior and Financial Market in the Gasoline Price Spiral* (for the Wisconsin Attorney General, August, 2006).

⁴ "Energy Market Manipulation and Federal Enforcement Regimes," Committee On Commerce, Science And Transportation, United States Senate, June 3, 2008.

⁵ This section is drawn from "Testimony of Mark Cooper on Excessive Speculation In Energy Commodities," Agriculture Committee, United States House of Representatives, July 10, 2008

⁶ 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.

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 See Cooper, Natural Gas, Chapter IV.

¹⁴ 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. pp. 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)

¹⁵ Nelson C. Schwartz, "Asleep as the Spigot," *New York Times*, July 6, 2008, Business Section, p. 7.

¹⁶ Mallaby, p. A11

¹⁷ Krugman, p. A19.

¹⁸ Samuelson, p. A11.

¹⁹ EIA, *Annual Oil Market Chronology*, provides a chronology of OPEC's supply management policies.

²⁰ 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.

²¹ Nocera, B8, "But remember, Enron was manipulating electricity prices, no 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.

²² 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

²³ 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.

²⁴ Robert J. Samuelson, p. A11.

²⁵ Nocera, p. B8.

²⁶ Nocera, p. B8.

²⁷ This section draws from Mark Cooper "The Failure Of Market Fundamentalism: What Are The Issues In The ICT Sector? The New Economics of ICT: Implications of Post-Neoclassical Economics for the Information Communications Technology Sector, Columbia University, March 20, 2009; Mark Cooper and Barbara Roper, *Reform of Financial Markets: the Collapse Of Market Fundamentalism and the First Steps to Revitalize the Economy*, April 2009; Mark Cooper, "State Regulators, Commodity Markets, And The Collapse Of Market Fundamentalism, Joint Session of the Consumer Affairs and Gas Committees on "Excessive Speculation in Natural Gas Markets: How To Safeguard Consumers," National Association of Regulatory Utility Commissioners, February 17, 2009; "Testimony of Dr. Mark Cooper Too Big to Fail? The Role of Antitrust Law in Government-Funded Consolidation in the Banking Industry," Subcommittee on Courts and Competition Policy, Committee on the Judiciary, United States House of Representatives, Marc 17, 2009.

²⁸ Susan Strange, *Casino Capitalism*, 1986.

²⁹ Dan Krier, *Speculative Management* (State University of New York Press: New York, 2005); Robert Shiller, The Taming of "Speculative Capitalism," *Japan Times*, April 2007.

³⁰ Roubini: "Anglo-Saxon model has failed," *FT.com*, February 3, 2009. <http://www.ft.com/cms/s/0/89829f7a-f1d1-11dd-9678-0000779fd2ac.html>

³¹ Stiglitz, *The Roaring Nineties* (New York: Norton, 2003).

³² George Soros, *The New Paradigm for Financial Market* (New York: Public Affairs Press, 2008).

³³ Robert Pollin, *Contours of Descent* (New York: Verso, 2005), pp. 12-13 points out the contradictory outcomes of market fundamentalism, noting that under the neoliberal market system "two simple market forces, self-interest and competition, are wellsprings for the prodigious of effort and material abundance that are so evident in the United States and other advanced capitalist

countries. However, if free market capitalism is a powerful mechanism for creating wealth... a neoliberal policy approach... also produces severe difficulties in terms of inequality and financial instability, which in turn diminishes the market mechanism's ability to even promote economic growth. "

³⁴ Pollin, *Contours* (p. 13), identifies "three fundamental problems that result form a free market system," which correspond roughly to the three market fundamentalist hypotheses. The efficient market hypothesis is closest to what he calls the Keynes problem, which identifies both the problem of the business cycle and the problem of speculation: "In a free market economy, investment spending by business is the main driving force that produces economic growth, innovation and jobs. But... spending by business is likely to fluctuate... when financial market convert long-term assets into short-term commitments for investors, this also fosters a speculative mentality in the markets. What becomes central for the investor is not whether a company's products will produce profits over the long-terms, but rather whether the short-term financial market investors *thing* a company's fortunes will be strong enough in the present and immediate future to drive the stock price up. Because of this, the financial market is highly susceptible to rumors, fads and all sorts of deceptive account practices, since all of these can help drive the stork price up in the present, regardless of what they accomplish in the longer term.

³⁵ Greg IP and John D. McKinnon, "Bush Reorients Rhetoric, Acknowledges Income Gap," *Wall Street Journal*, March s26, 2007, "top White House economic officials still don't consider today's inequality - the growing share of income going to those at the top - an inherently bad thing; they believe it simply reflects the rising rewards accruing to society's most skilled and productive members." IN contrast to the view that inequality does not matter, Pollin, *Contours*, identified a second problem in market economies (p. 13) which involved the fact that " in a free market economy generally, workers have less power than employers in this bargaining process because workers cannot fall back on other means of staying alive if they fail to get hired in a job... unless some non-market forces in the economy, such as government regulations or effective labor unions, are able to counteract these market processes, workers will continue to experience weakening bargaining strength and eroding living standard (Pollin, *Contours*, pp. 13...14.

³⁶ A third fundamental problem identified by Pollin, *Contours*, p. 16-17, is "that for market economies to function with some modicum of fairness, they must be embedded in social norms and institutions that effectively promote broadly accepted notions of the common good... [which] argued in favor of government interventions to achieve three basic ends: stabilizing overall demand in the economy at a level that will provide for full employment; crating a financial market that is stable and conducive to the effective allocation of investment funds; and distributing equitably the rewards fro high employment and a stable investment process.

³⁷ Tim Shaffer, "Paul Krugman's Depression Economics," *Reuters*, December 8, 2008, quoting Krugman, "Well, we have about 60 years of financial stability, basically because we had an effectively regulated banking system. Then we fell prey to a combination of excessive optimism and excessive literalism. We started believing that financial markets always work, and we also believed that everything was OK as long as things we call banks were guaranteed, not realizing that lots of things we don't call banks are nonetheless subject to bank runs.

³⁸ "Roubini: Anglo-Saxon model has failed," *FT.com*, February39, 2009. <http://www.ft.com/cms/s/0/89829f7a-f1d1-11dd-9678-0000779fd2ac.html>

³⁹ Stiglitz, *Roaring Nineties*.

⁴⁰ Congressional Oversight Panel issued a *Special Report on Regulatory Reform*, Washington, D.C., January 29, 2009.

⁴¹ "The Financial Crisis and the Role of Federal Regulators," Committee on Oversight and Government Reform, U.S. House of Representative, October 23, 2008.

⁴² George Cooper, *The Origin of Financial Crises: Central Banks, Credit Bubbles and the Efficient Market Fallacy* (New York: Vintage, 2008).

⁴³ Michael Lewis, "The End," *Portfolio Magazine*, December 2008.

⁴⁴ Andy Kessler, "The Demise of a Giant Hedge Fund," *The Weekly Standard*, October 13, 2008.

⁴⁵ Soros, Super Bubble, p. 77. Market fundamentalists blame market failures on the fallibility of the regulators, and they are half right: Both markets and regulators are fallible. Where market fundamentalists are totally wrong is in claiming that regulators ought to be abolished on account of their fallibility... The fact that regulators are fallible does not prove that markets are perfect. It merely justifies reexamining and improving the regulatory environment.

⁴⁶ Stiglitz, *Roaring Nineties*, p. 167, "The offenses of Enron and Worldcom – and of Citigroup and Merrill Lynch – put most acts of political crookedness to shame. The typical corrupt government official pockets a measly few thousand dollars – at most a few million. The scale of theft achieved by the ransacking of Enron, Worldcom, and other corporations in the nineties was in the billions of dollars – greater than the GDP of some nations.

⁴⁷ The Wikipedia definition of moral hazard also points out that several of the other flaws in the financial markets can be seen as different types of moral hazard: "Moral hazard is related to information asymmetry, a situation in which one party in a transaction has more information than another. The party that is insulated from risk generally has more information about its actions and intentions than the party paying for the negative consequences of the risk. More broadly, moral hazard occurs when the party with more information about its actions or intentions has a tendency or incentive to behave inappropriately from the perspective of the party with less information....A special case of moral hazard is called a principal-agent problem, where one party, called an agent, acts on behalf of another party, called the principal. The agent usually has more information about his or her actions or intentions than the principal does, because the principal usually cannot perfectly monitor the agent. The agent may have an incentive to act inappropriately (from the viewpoint of the principal) if the interests of the agent and the principal are not aligned.

⁴⁸ COP Report, p. 3.

⁴⁹ COP Report, p. 13.

⁵⁰ The important role of the imperfect information occurs in several of Stiglitz's arguments: "For the stock market to function well, there needs to be accurate information about what a company is worth so that investors can pay the right price for its shares. By obfuscating the problems inherent in many of the companies they brought to the market or for which they helped raise capital by issuing shares, the banks contributed to the erosion of the quality of information. They were supposed to provide information to investors, to reduce the disparity between informed insiders and outsiders. Instead, asymmetries of information maintained or increased; in many cases, bankers and analysts knew the real state of affairs about the companies they worked with but the public did not. Confidence in the markets declined, and when the correct information came out, share prices declined sharply.

⁵¹ Cooper, p. 112 .

⁵² Stiglitz, *Roaring Nineties*, p. 149, Investment houses became marketers. They did what it took to sell what they could sell.

⁵³ COP Report, p. 9.

⁵⁴ COP Report, p. 9.

⁵⁵ Cooper, p. 105, "The combination of debt-financing and mark-to-market accounting conspire to give price movements in the asset markets a fundamentally unstable positive feedback characteristic."

⁵⁶ Stiglitz, *Roaring Nineties*, p. 143, "Deregulation enhanced the scope for conflicts of interest. It also had the advertised effect of increasing competition. In normal circumstances, increased competition is a good thing. But in the nineties, the banks became so eager for short-term profit that here was a race to the bottom. Each bank knew that its competitors were engaging in similar practices, and if it did not compete, it would be left behind; and each banking officer knew what that meant; small bonuses, perhaps even being fired.

There is good economic research that shows a direct tie between options compensation and an increase in accounting fraud.

⁵⁷ George Cooper, *The Origin of Financial Crises: Central Banks, Credit Bubbles and the Efficient Market Fallacy* (New York: Vintage), p. 60.

⁵⁸ Stiglitz, *Roaring Nineties*, p. 100.

⁵⁹ Stiglitz, *Roaring Nineties* p. 125.

⁶⁰ Stiglitz, *Roaring Nineties* p. 146-148.

⁶¹ Krugman, *Return*, p. 149.

⁶² Cited in Soros, p. 84.

⁶³ Michael Lewis and David Einhorn, "The End of the Financial World as We Know It," *New York Times*, January 4, 2009.

⁶⁴ Joe Nocera, "First, Let's Fix the Bonuses," *New York Times*, February 21, 2009, p. b8.

⁶⁵ COP Report, p. 10.

⁶⁶ COP Report, p. 3.

⁶⁷ Ip and McKinnon, "The typical worker's pay have grown only) .3%, adjusted for inflation, since the expansion began at the end of 2001 while the economy has grown by 16%. The share of total income going to the richest 1% of Americans rose to a postwar record of 17.4% in 2005... Even before Republican's November defeat at the polls, some administration allies were warning that economic insecurity was eroding Republican support. A business coalition hired pollster David Winston to figure out why voters remained so dissatisfied with the economy. His focus groups of middle-income voters in Cincinnati and Pittsburgh found voters going deeper into debt to keep up with rising costs of health care and energy. Executive compensation "is getting to the point where it's obscene, said on focus group participant... But Republican strategists largely ignored the findings. Michael Lewis, "The End," cites the ratio of median home price to income" as " a measure of sanity in housing prices." Noting that it had increased from 3-to-1 to 4-to-1 and was as high as 10-to- in the hot markets. Various aspect of household deficit spending are dealt with in a series of reports from the Levy Institute, see Edward N. Wolff, *Recent Trends in Household Wealth in the United States: Rising Debt and the Middle-Class Squeeze*, June 2007; Robert W. Parenteau, *U. S. Household Deficit Spending: A Rendezvous with Reality*, The Levy Economics Institute, 2007; Dimitri B. Papadimitriou, Edward Chilcote, and Gennare Zezza, *Are Housing Prices, Household Debt, and Growth Sustainable?*, the Levy Institute, January 2006.

⁶⁸ Robert K. Frank, "Why Wait to Repeal Tax Cuts for the Rich?", *New York Times*, December 7,

2008, p. 5, "A robust finding in behavioral research is that people are extremely reluctant to accept cutbacks in their standard of living."

⁶⁹ Joseph Stiglitz, "Capitalist Fools," *Vanity Fair*, January 2009, " The president and his advisers seemed to believe that tax cuts, especially for upper-income Americans and corporations, were a cure-all for any economic disease... The tax cuts played a pivotal role in shaping the background conditions of the current crisis. Because they did very little to stimulate the economy, real stimulation was left to the Fed, which took up the task with unprecedented low-interest rates and liquidity... The flood of liquidity made money readily available in mortgage markets, even to those who would normally not be able to borrow. And, yes, this succeeded in forestalling an economic downturn; America's household savings rate plummeted to zero. But it should have been clear that we were living on borrowed money and borrowed time. The cut in the tax rate on capital gains contributed to the crisis in another way. It was a decision that turned on values: those who speculated (read: gambled) and won were taxed more lightly than wage earners who simply worked hard. But more than that, the decision encouraged leveraging, because interest was tax deductible.

⁷⁰ "The Failure of Federal Authorities to Protect American Energy Consumers From Market Power and Other Abusive Practices," *Loyola Consumer Law Review*, 19:4 (2007).

⁷¹ "Testimony of Mark Cooper on Excessive Speculation In Energy Commodities," Agriculture Committee, United States House of Representatives, July 10, 2008

⁷² "Testimony of Mark Cooper, Oversight of Energy Markets and Oil Futures Contract," Joint Hearing of the Senate Appropriations Subcommittee on Financial Services and General Government and The and the Committee on Agriculture, Nutrition and Forestry United States Senate, June 17, 2008