Rahmaniah Occasional Paper 02

The Financialization of the Oil Market and the Increasing Impact of Financial Institutions in the Pricing of Crude Oil

Roger Diwan

Al-Rahmaniah Cultural Center
Abdulrahman Al-Sudairy Foundation

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The Rahmaniah Occasional Paper Series *is a select presentation of papers offered at the Rahmaniah Annual Seminar, a forum on current, socio-economic and international affairs as they pertain to Saudi Arabia. The Seminar is organized by the Rahmaniah Cultural Centre and its participants include more than forty scholars, lawyers and businessmen from Saudi Arabia, the Arab countries, the U. S. and Europe. The Rahmaniah Cultural Centre is sponsored by the Abdulrahman Al-Sudairy Foundation. The Seminar is held annually in Al-Ghat.*

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The Financialization of the Oil Market and the Increasing Impact of Financial Institutions in the Pricing of Crude Oil

Executive Summary

Questions regarding the role played by the financial industry caused alarm during the atmosphere of erratic and volatile price movements as WTI crude oil prices rose to $148 in July 2008 and crashed soon after. There is little doubt that financial players such as hedge funds, pension funds, large brokers and banks have now become the dominant players – at least intermittently – in oil markets. According to the latest data provided by the U.S. Commodities Futures Trading Commission (CFTC), these players represent at least 75 percent of the futures market, and this number probably underestimates their prominence, since it does not take into account the large inventory of swaps and other oil-based derivatives not traded on exchanges. The two largest index funds – the S&P GSCI and Dow Jones UBS commodity index funds – now have an open interest that is over 75 percent of the that found on the exchanges, and this is not counting the fact that – according to Goldman Sachs' marketing material on the GSCI – "the open interest of the GSCI contract significantly understates the true liquidity of the GSCI" when derivatives, swaps, structured notes and index replication are taken into account. Paper markets are now at least thirty times bigger than physical markets by the recognition of the CFTC. This is probably a conservative calculation, with 60- to 100-to-1 being closer to reality.

Clearly, the financialization of oil price formation has been very controversial and has generated fierce debate and palpable tension between consumers and financial institutions, producers and financial players, passive and active financial investors, brokers and regulators, and the various factions of policy makers around the world. Available public data cannot show a simple and stable correlation between the involvement of the financial players and oil prices. Alternatively, previous models that showed clear correlation between oil prices and fundamentals have ceased to work after 2006, as the financialization of oil prices began to take place. However, all the evidence does show that this financialization has increased the amplitude of price movements – greatly increasing price volatility – and this is likely to continue as oil prices must now adapt not only to changes in the oil fundamentals, but also to the behavior of financial actors.

While few can deny that the involvement of non-industry players has benefited commodity markets by vastly improving liquidity, it is also true that the speculative buying and use of commodities as an asset class of the last few years has dramatically altered the forces that shape oil prices. Now, oil markets represent a large swathe of participants and a growing number of financial products in an increasing number of markets – some of them regulated, some not. It is this explosion that represents what I call the financialization of oil – an inadvertent big bang that has now put financial players in the driver seat in the setting of overall prices. In that sense, the financialization of oil has coupled the fate of oil prices to portfolio balancing across

asset classes, and has linked oil prices directly to the rest of the financial sphere – not only indirectly, as it used to be in the 1990s. Now, economic news impacts not only oil price expectations, but also asset allocation decisions by institutional investors on how to position their portfolios.

Most controversial in this new financialization is the fact that oil and other commodities are now actively used as an asset class of their own. Therefore, the holding of oil futures is not only linked with views on the forward supply and demand fundamentals of petroleum, but increasingly more with the outlook on a set of global investment opportunities and risks that need to be finely tuned via asset allocations among different financial instruments – including equities, fixed income bonds, currencies and other instruments. This categorization of commodities as a distinct asset class that can diversify a portfolio and potentially boost returns is the reason behind the rapid take-off of a new kind of investment vehicle – commodity index funds. The emergence and subsequent explosion of investment vehicles tracking commodity futures indices in the past four years has provided investors with a new, easy and cheap option for gaining exposure to commodities. Oil has taken the lion's share of these new vehicles.

This is why oil price formation has increasingly moved away from the physical to the financial realm, even as the interaction between these two forces is complex, multi-dimensional and evolving. The recent emergence of clear price correlations between oil prices and currencies, interest rates, and inflation expectations for the first time illustrates how oil and other commodities have become financialized

and linked. These parallel price movements cannot be explained by oil fundamentals alone but by the inclusion by money managers of oil and commodities investments as a viable alternative in a portfolio of investments. Oil and commodities are now fully integrated into portfolio diversification strategies as well as for hedging against inflation and event risk. Gold has long served a similar hedging function – as a metal and as a store of value for investors – due to its history as a currency, in and of itself, as well as its cultural prominence, but this is new ground for a consumable commodity such as oil. This inadvertent big bang is as revolutionary for oil markets as the breakup of Standard Oil or the creation of OPEC.

Investments in commodities, although an old concept, became very popular with institutional investors sometime around 2005 to 2006. The rationale of the large institutional investors' renewed interest in commodities has been clearly linked with tighter global fundamentals, but since then, we have seen an exponential growth in the instruments that give institutional investors exposure to oil as a commodity. Moreover, this exposure to alternative investments, and commodities in particular found an easy financial vehicle through which it could play out – namely, the commodity index funds created by the large brokerage firms. After 2004, we saw a large number of paper and marketing brochures from the large brokers extolling the virtues of increasing exposure to commodities as an asset class, no matter what short-term fundamentals indicated. The different arguments to buy and hold commodities as part of a portfolio can be summarized by the following four rationale:

1. oil, minerals and other commodities tend to move in the opposite direction from stocks and bonds, so they reduce volatility in an uncorrelated portfolio;
2. commodities have a positive correlation with inflation and, to changes in the rate of inflation, providing a natural hedge against inflation;
3. commodities provide long-term returns and volatility at least comparable to, if not better than, equities, and
4. commodities provide protection against some economic and political surprises that is not offered by stocks and bonds.

Unlike the more active investors and speculators such as hedge funds and banks' proprietary trading desks, who move in and out of positions on both the long and short sides fairly rapidly (in days or weeks, if not even faster), institutional investors – mostly pension funds – are unidirectional because they cannot short instruments, and tend to maintain and roll these positions for a very long time (as long as months or years), often using these index funds, or swaps that replicate them.

These passive actors – institutional investors that go and stay long in oil – are what the CFTC calls the "massive passive". They do not create liquidity, but do add demand for oil, and thus have "contorted oil markets in a way that has rendered the historical hedging for business purposes moot», according to Bart Chilton, one of the CFTC>s five commissioners.

The 2008 historic run-up in oil prices has spurred calls for

action, regulatory supervision and reform from oil-producing and consuming countries alike. The intense scrutiny applied in the US by the CFTC since 2009 is the broadest and most meaningful response to the financialization of oil markets. These calls for action culminated in months of debate in the US Senate, where finally a bill emerged on May 20th that will reshape the US financial industry on a scale unseen since the aftermath of the Great Depression. Derivatives reform played a central role in the debate over the financial reform bill, and commodity derivatives will now face a new set of rules when the bill is signed into law. This highly technical and legal fight centers around two major issues: how to bring transparency to the derivatives market and how to enforce position limits for commodities derivatives. The large brokers and swap dealers fought these two limitations bitterly and lost. The US has passed sweeping legislation regulating the derivatives markets and as we write this paper, the financialization of oil markets is entering a new phase where US regulators, and probably soon European ones, will have the ability to monitor and limit the activity of financial players in commodities markets. A new chapter is about to begin.

In this paper, we will discuss the impact of financial players in the price formation of oil, and look at the evidence found in the poor data available to make sense of the size of the involvement of these players in oil price movements. We will discuss how this involvement has been made possible by changes in both financial regulation and financial innovation, and how the recent US regulatory

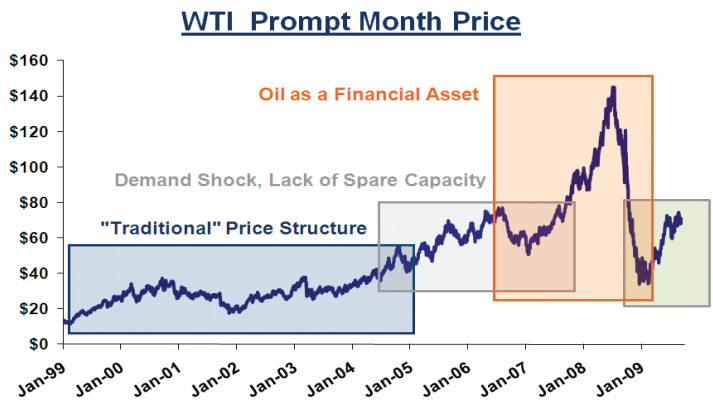
changes have been shaped to bring greater transparency, simplicity and monitoring to all derivatives instruments in general, and specifically, commodities.

1. A brief history of recent price formation

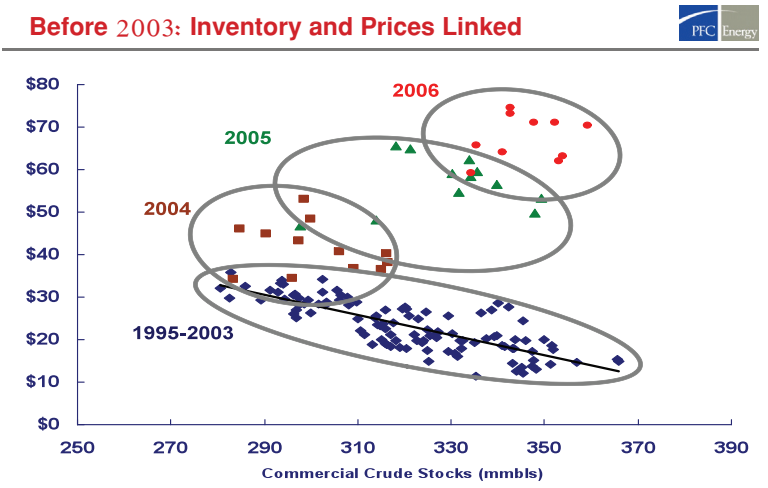
I would first like to provide a simplified explanation of oil price formation in the last ten years, and show how a number of structural changes have led to what I call the extreme financialization of oil markets in the last three years or so, when fundamentals have taken a step back in providing a plausible explanation for oil price levels and fluctuations.

By looking at oil prices in the last ten years, we can observe four distinct periods, with price formation going through a number of structural shifts. In the first two periods, prices were clearly driven by supply-demand fundamentals, while in the last two, financial considerations have become, by far, the determining drivers.

Oil Prices and Structural Treds



A "traditional" price structure prevailed in the 1990s through 2004 when a strong correlation existed between oil inventories and crude prices. During this period, prices moved in a relatively narrow band, largely driven by a large spare capacity within the Organization of Petroleum Exporting Countries (OPEC); a very strong correlation existed between stock levels and prices, and changes in stocks, particularly in the US, correlated reasonably well with price movements (see graph below).



The fact that this correlation was made possible by the large amount of shut-in capacity led to a phase of supply complacency and kept prices in a narrow band, between $15 and $25. It meant that oil markets knew that price shocks were unlikely due to the expectation that OPEC would not resist increasing production every time prices were rising and stocks were declining. The internal dynamics in OPEC, stemming from the need for revenues after years of low prices, meant that every time prices rose, any OPEC country with spare capacity had the incentive to increase

production by ignoring their assigned quotas. However, these low prices were stifling investments in productive capacity globally, and spare capacity declined slowly but surely over the 1990s. Rising prices in 1996-1997 were an early sign that markets were getting tighter, but the 1997 Asian crisis and its impact on oil demand helped mask that long-term trend. The fact is that low prices, strong demand growth and lack of investment gradually eroded this spare capacity during the 1990s.

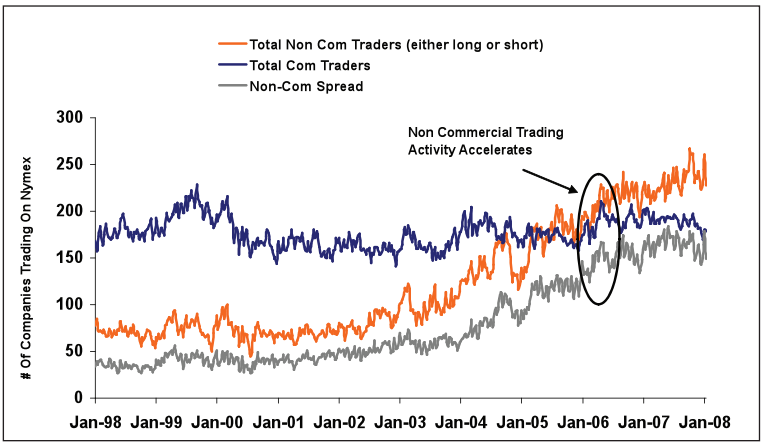
This process of spare capacity erosion accelerated dramatically in 2002-2005 when the world basically faced two consecutive shocks: a supply shock in 2003-2004 when problems in Venezuela and Nigeria – as well as the long interruption in Iraqi exports following the war –reduced supply by over 2.5 million barrels per day (b/d). This was followed by a demand shock in 2004, when global demand increased by close to 3 million b/d. The combination of these two events wiped out most of the remaining spare capacity within OPEC, and left only an estimated 2 to 2.5 million b/d of cushion, most (if not all) in one country, Saudi Arabia. The virtual disappearance of surplus oil production jolted the market, and the lost cushion surprised both consumers and producers, allowing oil prices to double from $35 to $70 as the world adjusted to this new reality in oil markets. The disappearance of spare Saudi production capacity was the most critical element in driving up prices from 2003 to 2007, but that seminal event also had consequences in transforming the perception of oil markets for financial players.

As oil markets learned to live with low spare capacity

after 2003, a new reality emerged as it dawned on oil markets that the low investments of the 1990s were now reflected in the lack of new supply coming from non-OPEC producers. Oil markets, facing low spare capacity, had lost one of its main price stabilizers: the ability to add supply quickly when prices rose. In a market without spare capacity, the price risks were one-sided, and the possibility of supply disruptions loomed large. During that period, we were riding a car with no shock absorbers, and we felt every bump in the road keenly.

Just as importantly, the lack of spare capacity meant that there was little chance that oil market participants would face any attempt by OPEC to bring prices significantly down. In effect, as a cartel, OPEC had lost its ability to control the price ceiling.

The fact that any event risk was bullish on oil price was soon recognized by a small number of financial players who started to invest in oil futures. The chart below, showing the number of registered financial players on the New York Mercantile Exchange (NYMEX), shows that trading by non-commercials – that is, financial players – is dormant until it starts to take off in 2002. Then, we saw the number of financial companies on NYMEX increasing from around 50 to over 250 by 2008 (see graph below). This does not include the firms trading on other exchanges such as the Intercontinental Exchange (ICE), or the less costly and more user-friendly index funds and exchange-traded funds (ETFs) created by the large brokerage houses to meet the rising demand for commodity instruments.



In effect, the initial shock created by the disappearing spare capacity created the seeds of the financialization of oil market: as the OPEC threat of ramping up production was removed as a significant factor in oil markets, a whole set of new actors was drawn into the futures markets, and saw that oil markets had been transformed by the removal of what was seen previously as a prohibitive OPEC risk. In addition, conventional wisdom held that consumer demand would prove elastic as prices climbed above their historical range. In reality, however, demand showed very little response even at the undreamed-of levels of $70 or $80 per barrel. All analysts had underestimated the degree to which oil's long-term price plateau since the late 1980's had diverged from rising incomes, which now was allowing consumers to pay more for oil products while permitting governments to afford subsidies.

Slowly but surely, then, oil markets became an attractive arena for investments for a number of hedge funds and institutional investors. Competitors started emulating their high returns in their own commodity investments. So,

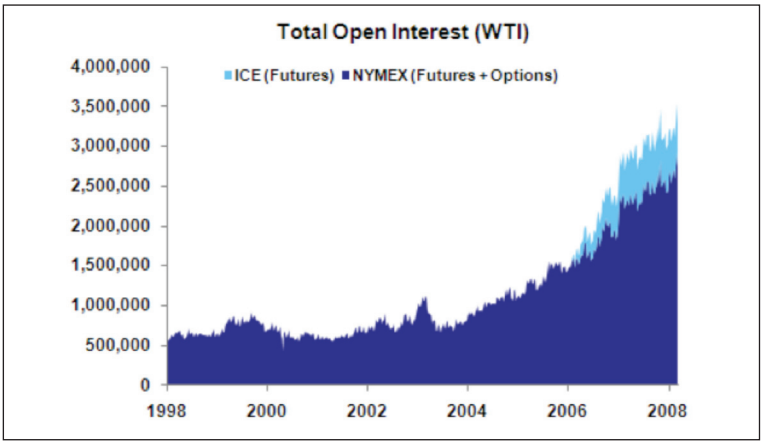
between 2003 and 2006, we saw a large number of funds starting to participate in energy trading. We also saw the creation of pure commodity hedge funds, some of them very large, in effect replicating in the financial market what we have known in the physical markets as the traditional trading companies.

Moreover, it is also important to consider the cost of trading energy commodities versus other assets and the ability to leverage assets for higher returns: hedge funds have to pay 50 percent of the cost of equities upfront while they have to pay only 10 percent upfront for energy commodities. This fact alone allowed funds to provide higher returns during the take-off in oil prices between 2003 and 2008, providing another reason to increase positions in and allocations towards oil and gas. The combination of cheap, abundant money, low spare capacity and low initial payment for owning the commodity was a boon not to be missed.

The best data we have on market participation is the data provided by the CFTC on the open interest for futures and options on NYMEX, and starting in 2006, on ICE. In the chart below, we see that market participation in volumes on these two exchanges increased sevenfold in less than four years, after languishing at the same levels before 2004. This is probably far less than the real increase in participation; the data below represents, in my opinion, only the visible tip of the commodities iceberg.

The invisible part of the iceberg is represented by the OTC and derivatives markets that blossomed after 2006.

Nobody knows the exact size of this market, as the three or four main players run the vast majority of this business and keep information very close to the vests. We know from the quarterly results of the large swap dealers that their commodity business grew tremendously in the last four years, and that their visible positions in the new CFTC data breakout represent a very small fraction of their business, only the residual netting of their positions.

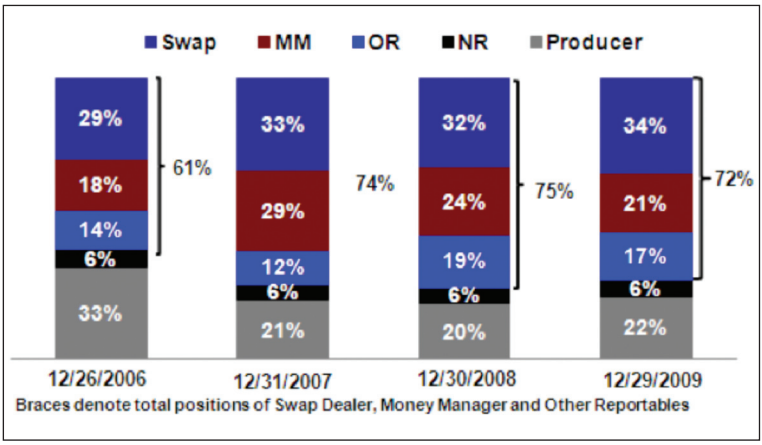


We also know that the commodity desks at all the big banks added a large amount of traders in the past few years. Almost all the European and US global banks have established or are in the process of building similar desks with hundreds of traders each, despite the large staff cut backs seen in the financial industry in the last two years. At this time, there are no commodity traders out of jobs, and the net additions of positions were very large even in 2009. Large banks do not explicitly report their commodities results separately, but all the visible signs points to a growing and very profitable business.

Interestingly enough, until recently, the data released by the CFTC, which divides players into "commercial" and "non-commercial", showed that non-commercial trading steadily increased its share of total open interest on NYMEX until 2006, after which it started to level off. Obviously this seems to contradict my previous assertion. However, we now know that it was not the case on NYMEX, because the previous categorization had included the positions of swap dealers in the "commercial" category. As most of their activities and own speculative positions in oil and gas are really financial, they have been reclassified separately. However, they refuse to provide any information or breakdown to regulatory authorities between their own activities, the activities of their financial clients and the size of the physical hedges they are really conducting.

With the new data categorization released in November by the CFTC, and reclassification of actors from 2006, we see that as open interest grew, the financial players position continued to grow. In fact, at least 75 percent of the volumes on NYMEX are coming from within the financial community (see graph below). Also, some of the producers are taking large financial positions which have nothing to do with their supply or hedging needs. Even if classified as producers, these positions are essentially paper transactions for speculative purpose, similar to the prop trading desk of the large brokers.

Total positions of financial players on NYMEX, re-categorized by the CFTC



Moreover, the launch of the Intercontinental Exchange (ICE) in 2006 saw a very quick influx of financial players on its new electronic platform. ICE, a UK registered company based in the US, was regulated by the FSA in the UK and not the CFTC in the US. The UK regulation did not require ICE to provide market participants' data on the activities of the different categories of investors as the CFTC did. In effect, by allowing ICE to abide by less stringent disclosure requirements, a regulatory arbitrage was created, allowing financial players to keep trading strategies hidden from CFTC disclosure requirements. A number of brokers confirmed that to me the sense that ICE had an even larger percentage of financial players than NYMEX did, probably well above 80 percent.

Finally, the emergence of commodity index funds after 2006 and the spread of derivative instruments offered by large brokers provided a new avenue for a larger number of

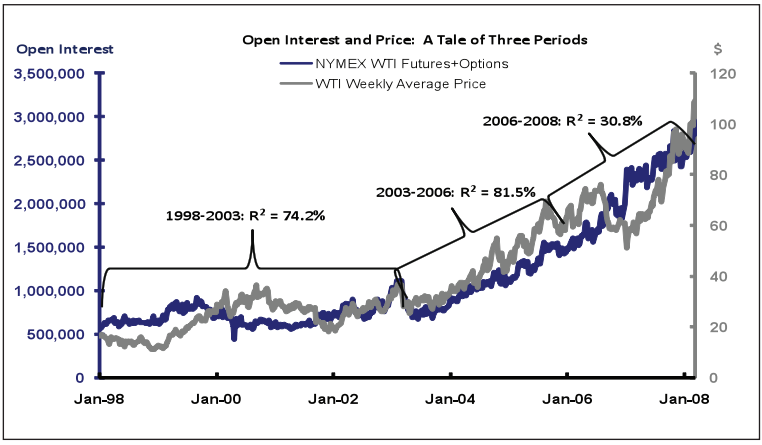
asset managers to participate in the oil market, and a more effective way for the smaller players as the size and cost of the futures contracts became onerous.

After 2007, the usefulness of the data provided by the CFTC becomes more anecdotal as the proliferation of instruments has rendered the conclusions drawn from this data set alone more problematic. The re-categorization of the data in November 2009 has allowed a little more transparency, but much more needs to be done in this domain to have a clear sense of the action of the financial industry in commodities.

Does financial participation influences prices levels directly?

During the early phase of this financialization between 2003 and 2006, we saw a very strong correlation between open interest on NYMEX, and oil prices. During that period, this is the indicator – the flow of money to the futures market – that became the key to predicting oil prices, with a correlation close to 80 percent. Clearly, the fundamentals described earlier, the supply shock followed by the demand shock, and the lack of spare capacity enticed many players to come into the oil market. These financial players understood what was happening to the supply/demand balance and spare capacity front, and bet – correctly – that prices would have to move up and that consumers would be willing to pay higher and higher prices without significantly altering their usage patterns. But it was their actions, and their massive entry into the oil markets that allowed this increase in oil prices. In short, the fundamentals and the

financial dynamics were aligned, creating something of a self-fulfilling prophecy or bubble. As we can see below, the massive increase in money flowing to the oil complex had a direct impact on prices, as a small commodities market was, in effect, transformed by the involvement of the financial players and the massive flow of money they brought with them.



By 2006, the open interest on NYMEX and price correlation rapidly broke down as non-commercial trading diversified, and the instruments used became diversified. The dramatic changes in the structure of supply-demand fundamentals, along with the disappearance of spare capacity, provided a stepping stone for the financialization of oil markets. This transformative period allowed the addition of a lot of depth, liquidity and instruments to oil futures, which used to be small and largely illiquid markets, used only by a few firms. In a way, the emergence of oil as a financial asset was an accident created by the conjunction of the lack of spare capacity in 2004-2006 and the financial boom taking place at the same time.

2. The Scarcity Scare on Wall Street, and the Misuse of Peak Oil Theory

As new players poured into the oil patch, a new set of considerations and narratives started to emerge. First, many of the new analysts and traders had little experience in oil, and had little institutional memory of past cycles and events; secondly, these investors had different time horizons, and finally they needed new rationales to start investing directly in commodities, rather than the more traditional oil and gas equities.

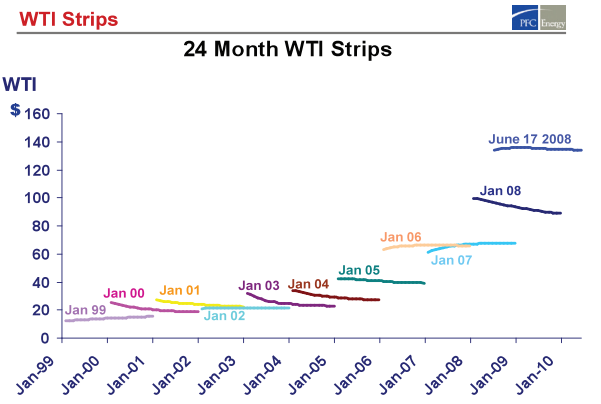
The financial industry started to focus on oil at a time when demand was booming, Saudi spare capacity was at its lowest point in decades, and more importantly, non-OPEC production was stagnant. All these factors created a sense of supply insecurity, and oil markets had to adjust brutally from the supply complacency of the 1990s to a sense of imminent supply scarcity with no apparent solutions on the horizon. Clearly, the popularization of Peak Oil theory had a great deal to do with the direct involvement of many asset managers in oil. The book "Twilight in the Desert" by Matthew Simmons added fuel to the fire by questioning the sustainability of the largest oil field in the world[1].

This supply narrative based on future scarcity within a short time horizon created a number of structural changes in oil markets; after all, if one predicts peak supply in the

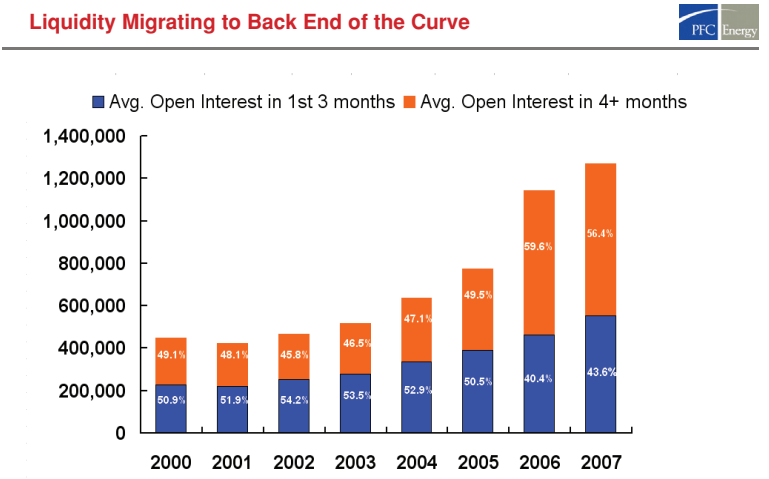
(1) In a way, Mr. Simmons has been the most effective advocate of higher oil prices, and should be thanked by OPEC for achieving in a short time a remarkable turnaround in oil price expectations and realization. In a way, he has been the most effective, if inadvertent, promoter of the producers' goal of higher prices.

next three to five years, then that gives plenty of investment options for asset managers. This is exactly what has happened in the last four years.

As a consequence, long-term prices for oil have shifted significantly upward. In thinking about prices, it is helpful to differentiate between short-term prices, which tend to be fairly volatile and responsive to changes in inventories, and long-term values, which have tended to respond to investment levels, marginal costs, and beliefs surrounding limits to production and the longevity of the cycle. For many years, no matter what the near-term price of oil, the long-term price expectation was extremely stable. Around 2006, oil markets began to put a high value on long-dated oil as evidenced by the contango and much higher prices for long-dated crude. Normally oil in the out years is priced lower than oil in the current periods – reflecting the cost of money and the cost of oil storage – which is called "backwardation" (see graph below). However, the combination of the Asian demand narrative (China and India will need more oil), combined with the supply narrative (no new capacity in the medium term, and Peak Oil theory after that) has now provoked a fundamental shift in the price structure; while prompt prices started increasing, long-dated prices increased even more. So in less than two years, the long-term oil price – the equivalent of the marginal price – rose from $25 to $65. After the summer panic of 2008, when it rose and fell precipitously, it seems to have settled at around $75 since 2009.

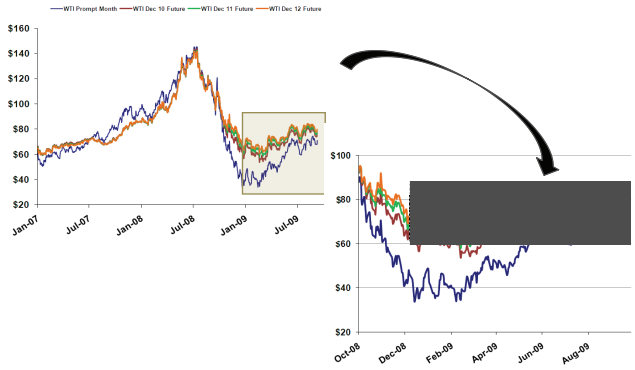


This rapid shift in long-dated crude prices does not reflect a lack of liquidity but quite the contrary. In the graph below, I show that liquidity at the back end of the curve actually increased dramatically, both in percentage and in volume with the financialization of oil markets. Peak Oil theory pushed a number of institutional investors, including very conservative pension funds, to invest a share of their assets directly into long-dated oil instruments. In other words, they started parking money in commodities based on a long-term thesis centered on the scarcity theory.



In a way, it is that long-term view that drove short-term prices up after 2007. The rise in oil prices originally created by the lack of spare capacity was not fully driven by the long-term potential scarcity theory. The drivers changed, but they kept pushing prices up, even after spare capacity increased and short-term concerns disappeared. Once the financial crisis stabilized, front-month oil prices moved quickly from $40 to $65, thereby shrinking the very steep contango created by the economic outlook and stock build. As soon as a consensus emerged that we were in a deep recession, not an economic depression, oil prices in the short term were driven upwards by long-term prices which never dipped below $60, even during the darkest hours of the crisis.

Long Term Target Price Driving Short Term Prices



3. The Emergence of Oil as a New Asset Class: Financialization of Oil

The oil market upheavals of 2007 and 2009 started a heated debate between analysts to understand if the price

volatility was created by tight fundamentals or by the financial bubble and subsequent burst. In my mind, and from my experience of working with and visiting dozens of asset managers of all kinds, there is little doubt that both the price spike and price crash of 2008 can only be convincingly explained by the sheer size of money movements from financial players seen in the last two years. The cheap money available before the credit crunch and after the credit crunch was a key element in the involvement of the financial players in oil markets. I will explain the linkages in this section. The lack of regulatory supervision and enforcement allowed the growth of oil markets to all comers, and the legal loopholes created by the deregulation of financial markets in the late 1990s were fully exploited by the banking industry. This is what I call the "big bang" in oil markets, when oil becomes a macro tool and one of the asset classes at the disposition of portfolio managers.

The signs clearly illustrate that oil as a financial instrument shifted rapidly from being a profitable investment between 2003 to 2006 for a number of players, mostly hedge funds looking for superior returns and volatility, to become an asset class of its own with the development, initially of commodity futures indexes and eventually but more importantly, derivative instruments that tracked these indexes. The creation of linkages with traditional asset classes such as equities, bonds, currency or interest rates enabled oil to become a hedging instrument not only against the physical changes in oil markets, but increasingly and perhaps, predominantly now, for hedging between asset classes. This shift is really revolutionary. It has inserted oil

into the mix of primary investments and hedging tools now available, exposing the small oil market to the full tsunami of funds entering and exiting global markets every day. This is the second phase of the financialization that was set in motion after 2003.

How did oil become a global hedging instrument after 2007?

Price movements in 2008 and the first half of 2009 have been very troubling for informed observers of oil markets. Looking at oil fundamentals alone will not provide an adequate answer of what happened: why did oil prices double in the first six months of 2008, and then crash from $150 per barrel to $35 per barrel in the following six months? It is only when oil is looked at in the context of other asset classes that the evolution of oil prices makes sense. It is necessary to understand the linkages and the transmission mechanisms created by the portfolio effects of institutional investors.

The root cause of the oil bubble that emerged in 2008 was the credit crunch that emerged in the summer of 2007 in the US. It is this event that indirectly cascaded into an oil bubble. At an even more basic level, however, it has been the disequilibrium in the US economy and the concomitant trade, savings, and fiscal deficits that have driven oil prices. This is what I call the "macro fundamentals" of oil, in contrast to the "oil fundamentals," which is our traditional supply and demand analysis.

The key to understanding the linkage between oil and

macro fundamentals is how commodities started being used by portfolio managers to hedge against inflation risks and currency risks in their portfolios. PIMCO, the fixed income asset manager, had theorized this relationship and opened the way for a broad shift in thinking of a number of passive investors such as pension funds and endowments. This, in turn, enticed a whole segment of the financial industry to look at commodities as an ideal hedge for their portfolios, and the use of commodity index funds as the vehicle for this.

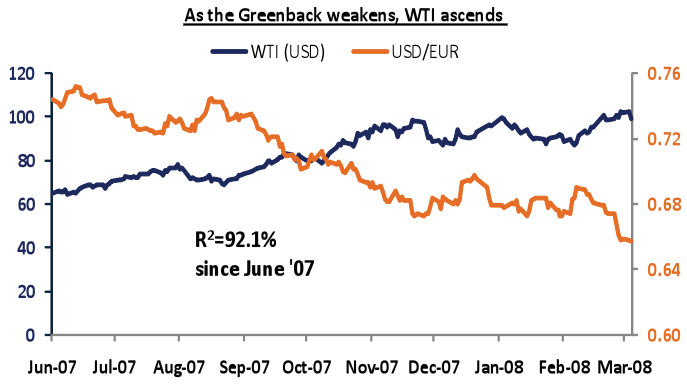
So let's go back to 2007, when we see a breakdown in the correlation between money flows in futures and oil prices, but where we start to see for the first time strong correlation between oil, currency and inflation expectations. How does this new linkage work?

1. As the US Federal Reserve started to loosen monetary policy in September 2007 with a series of cuts in the short-term interest rates to ease the mounting sub-prime mortgage crisis, dollar-denominated assets became less attractive to investors, prompting them to move to higher yielding assets, weakening the dollar.

2. As the dollar declined, oil emerged as a natural hedge to the dollar, and for the first time we started to see a very strong negative correlation between oil and dollar. Since the summer of 2007, the movement of oil prices and US dollar became strongly linked, with the weakness of the dollar driving the strength in oil prices. Between June 2007 and March 2008,

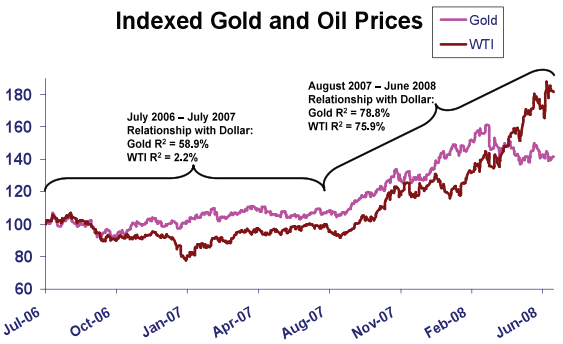
the coefficient of correlation rose to 90 percent (see chart below), although before 2007, WTI price and the US dollar had not been correlated at all – from 1999-2007, the coefficient of determination between the USD/EUR exchange rate and WTI price was only 44.1 percent.

3. Investors fleeing the lower-yielding dollar moved funds into oil futures, which were being viewed as a relatively higher-yielding financial instrument, buoyed by a surge of global capital flow. Additionally, oil futures bought and sold in dollars became more attractive to foreign investors as the dollar weakened further against such investors' home currencies. These financial market dynamics resulted in a dramatic alignment between dollar and oil price movements.



Moreover, increasing oil prices caused inflation expectations to rise which further reinforced oil as a hedge against inflation. So as early as the summer of 2007, oil

started to assume the role that gold had traditionally played. If you look at the correlation between them, gold and oil moved in the same proportion against the dollar at the time (see graph below).



With credit markets in the throes of the subprime mortgage meltdown in the first half of 2008 and the Bear Stearns collapse, the Federal Reserve attempted to breathe new life into markets by expanding its traditional lending facilities available to financial institutions. Aggregate money supply saw a sharp increase since monetary easing began in the fall of 2007. The unintended consequence of increasing the money supply lead to a further injection of liquidity in markets already flush with capital, ranging from petrodollars to Asian surpluses. This liquidity led to a large shift to “hard commodities” or “real assets”, as the institutional investors have liked to call them. This is why all the liquid commodities share a similar pattern.

How did oil become a new asset class after 2007?

Investments in commodities, although an old concept, became very popular with institutional investors sometime around 2005 to 2006. The rationale of the large institutional investors' renewed interest in commodities has been clearly linked with tighter global fundamentals, but since then, we have seen an exponential growth in the instruments that gives institutional investors exposure to oil as a commodity. Moreover, this exposure to alternative investments, and commodities in particular, found an easy financial vehicle through which to play out, namely, the commodity index funds created by the large brokerage firms. After 2004, we saw a large number of paper and marketing brochures from the large brokers extolling the virtues of increasing exposure to commodity as an asset class no matter what short-term fundamentals indicated. The different arguments to buy and hold commodities as a percentage of a portfolio can be summarized by the following four rationale:

1. oil, minerals and other commodities tend to move in the opposite direction from stocks and bonds, so they reduce volatility in an uncorrelated portfolio;
2. commodities have a positive correlation with inflation and, to changes in the rate of inflation, providing a natural hedge against inflation;
3. commodities provide long-term returns and volatility at least comparable to, if not better than, equities, and

4. commodities provide protection from some economic and political surprises that is not offered by stocks and bonds.

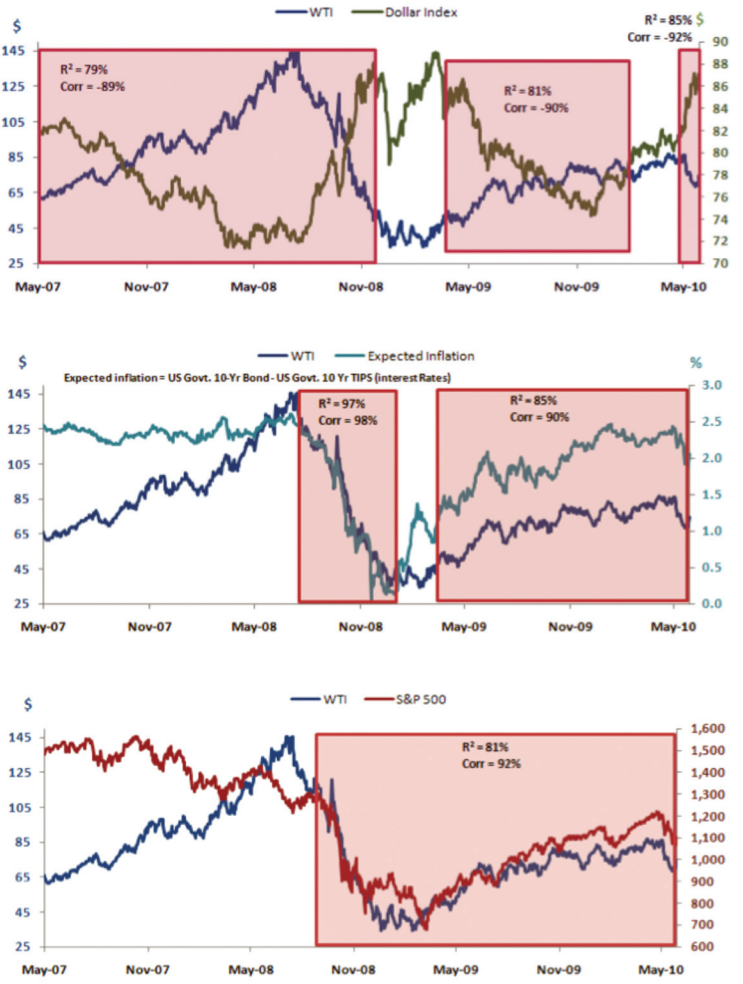
The transformation of oil from a commodity, albeit a very liquid one, to the full-fledged status of an asset class has been a silent revolution; one that has transformed price formation and price levels in a profound way. Previously, oil was largely traded on its intrinsic value, and price movements were largely independent of the vagaries of the broader financial world. Not anymore. Now, the inclusion of decision making by portfolio managers between different financial instruments, including oil, has directly linked oil to other asset classes like never before.

So now, institutional investors hold oil not only because of specific views on medium- and long-term fundamentals of supply and demand, but increasingly in relation to a set of global investment opportunities and risks that have little connection to oil. Moreover, the decision to increase or decrease oil allocation can be independent of their view on oil per se, but rather depend on the relative value of the different asset classes they hold.

Because of these linkages, we have seen period of very strong correlation between traditionally uncorrelated assets. We have entered a world where portfolio allocation decisions include commodities as an asset class, and thus sharp moves in oil prices sometimes have more to do with changes in asset allocation than pure oil fundamentals. This is why we have started seeing very strong correlations among different asset classes in the last two years, with the

oil-dollar relationship being the strongest and most obvious one. We also start to see a new seasonality emerging as portfolios are rebalanced quarterly and yearly, independent of factors deriving from oil markets. These two effects are amplified by the small size of oil markets relative to other asset classes such as debt and equities.

For example, if a consensus starts to emerge in the financial world that US interest rates are set to fall, as it was the case late 2007, or interest rates will stay low, a large number of portfolio managers are likely to change their allocation of funds and dedicate a larger proportion to commodities in general, and oil in particular to hedge the falling value of the dollar. This core relationship has allowed for very strong correlations at times between oil and the dollar index, inflation expectations and even the S&P index. All these correlations indicate portfolio effects across asset classes (see below).



Thus, if you can legally and practically invest in a commodity directly, the reasons to invest in oil as a commodity are now plenty. The linkages with inflation and the dollar are the most dramatic ones, mostly because it creates a very large demand for oil contracts. The key point is that once the door was opened, investors took full advantage of it.

Index funds and derivatives are the means to invest in

oil

The main vehicle allowing institutional investors to take a position in commodities has been index funds and all the derivatives they have spawned in the last few years. Futures and options on the main exchanges are now dwarfed by the size of the index funds and the swap market for oil and products. Most of these instruments are now used by the financial players rather than by pure hedgers such as end consumers or producers. The constraints that existed up to 2000 with the limited size of the futures market, and its lack of liquidity and the enforcements of position limits by regulators had naturally limited the scope of expansion of the financialization of oil. All that changed with the full effects of the financial deregulation of 1990s and the explosion of derivatives that shortly followed. It is the deregulation that allowed oil to become an asset class for large institutional investors, mostly through the swap window opened by the infamous "Enron loophole". The Enron loophole exempts most over-the-counter energy trades and trading on electronic energy commodity markets from government regulation.

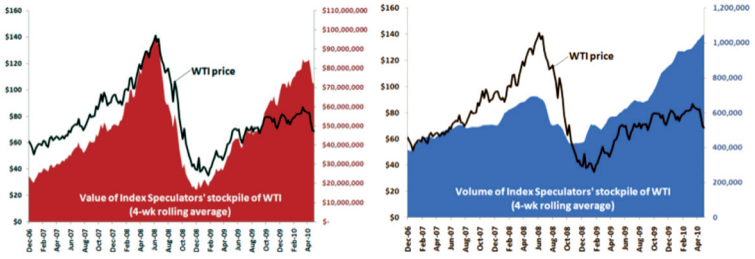
The loophole was a product of the Commodity Futures Modernization Act (CFMA) of 2000. It allowed for the creation, for U.S. exchanges, of a new kind of derivative security, the single-stock future, which had been prohibited since 1982. The Enron loophole provision in the CFMA also produced a change in the supervision of oil that had been in place since 1922 thereby enabling swap dealers to engage in their trading practices enabling unlimited positions and

limited transparency to be established by speculators, outside the purview of US regulatory bodies such as the CFTC.

The swap dealers fully took advantage of these provisions, and the commodity index funds were created, allowing them to craft a single stock future out of a basket of commodities. Oil took the lion's share of these new financial instruments, and often represents, with oil products, 70 percent or more of the weighting of the indexes. These derivatives are in effect financial vehicles that allow investors to buy and hold commodities without having ever to become involved in the physical trading world. Now, buying and selling oil is no different or more expensive than buying a stock or a bond, and is completely financialized, with no direct linkage to the physical commodity.

Institutional investors' interest in commodities coincides with the exponential growth in index funds and other swap instruments. Now, commodity index funds are the instruments of choice for the financial community. These index funds have become the primary tool for hedging, investing or speculating in commodities. They probably represent the single largest components on oil futures and their sizes have been estimated to be close to $280 billion in 2008. It is estimated that more than $10 billion of passive investments had gone into commodities in the first ten days of 2010. Three of the largest commodity index funds (S&P GSCI, Dow Jones UBS, and DBC) are estimated to collectively hold a stockpile of over one billion barrels of crude oil in May 2010, far great in volume than the earlier

peak around May-June 2008 which precipitated the crude oil bubble, and roughly equivalent in terms of dollar value.



Using data from the CFTC's Commodity Index Trader Supplement to the Commitments of Traders report, the individual weights of the constituent commodities in the index funds, and daily closing prices of the commodities, we can estimate the number of contracts held by the index funds for crude oil, gasoline and heating oil. We see that S&P-GSCI is the largest, with a total of over $140 billion under management; DJ-UBS is next, with a total of over $100 billion under management, and DBC much smaller at around $4.5 billion under management.

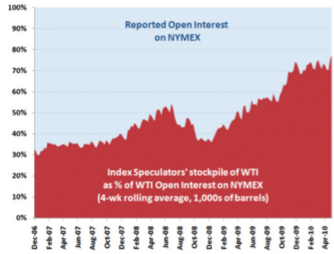
Unlike the more active investors and speculators such as hedge funds and banks' proprietary trading desks, who move in and out of positions fairly rapidly (days or weeks if not even faster) on both the long and short sides, institutional investors (mostly pension funds) are unidirectional because they cannot short instruments, and tend to maintain and roll these positions for very long time (months or years), often using these index funds or swaps replicating them. For this reason, they have been dubbed the "Massive Passive", and have emerged as a powerful force in the shaping of oil prices.

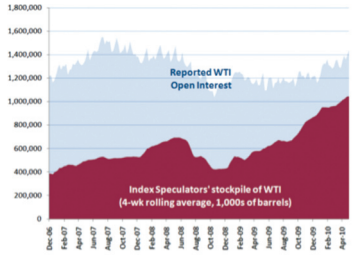
Now, the “Massive Passive” is sitting on a huge pile of oil swaps, and their sheer size cannot but create a very large and passive demand that dries liquidity, and in the words of Bart Chilton, one of the CFTC>s five commissioners, has “contorted oil markets in a way that has rendered the historical hedging for business purposes moot».

How big is the “Massive Passive”?

The size of the oil market that is not reflected in the exchanges with the futures and options instruments visible and regulated represent a hidden part of a vast iceberg. The publicly available CFTC reports on open interest on NYMEX are only a small fraction of the financial activities going on in oil-linked financial instruments. Together with the physical market, they represent only a portion of all oil-linked financial transactions, and probably a very small one at that. The sheer scale of the oil-linked index and derivatives market matters here, particularly the fact that this size is not limited anymore by the long reach of the regulators.

In the graphs shown above, we have come to a good approximation of the size of the institutional investors in three traded commodity index funds. These three funds alone are now at 80 percent or so of the size of NYMEX, which is by far the largest and most liquid market for futures contracts.





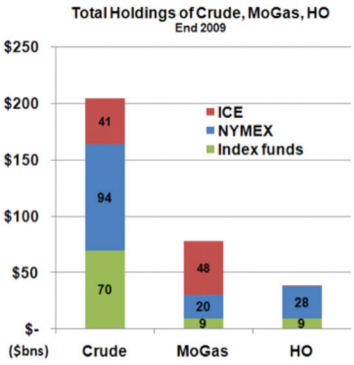
However, the index funds shown above are also dwarfed by the derivatives that are linked to oil, often via swap contracts. Further, most of the large institutional investors have been moving away from the commodity index funds and have been replicating them or tailoring them for a certain type of risk via swaps and derivatives. Therefore, open interest in the three main commodity index funds are probably only a fraction of the true size of the market for oil derivatives, and this is before we count the rising volumes of oil-linked ETFs.

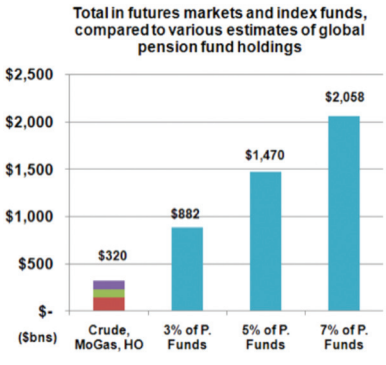
There is no available public data outside the swap dealers on the real size of the oil-linked derivatives market. However, it has become clear while speaking to a large number of investors that as the size of the index grew, it also has become a lot more sophisticated, and the large institutional investors have tailored contracts to match their risk appetite, their investment horizon and preferences. The clues on the true size of this market have been appearing recently as the latest derivatives regulations have been hotly debated in the US. Simply consider what Goldman Sachs writes in its marketing material on the GSCI: "The open interest of the GSCI contract significantly understates the true liquidity of the GSCI" when derivatives, swaps, structured notes and index replication are taken into account.

Finally, to truly understand the magnitude of the impact of the institutional investors on oil, one needs to remember that the commodity markets and oil markets are a small fraction of the larger assets under management by the world's pension funds. Therefore, a small rebalancing of portfolios across asset classes has a disproportionately large impact on oil prices, while affecting currency or equity markets by a very small proportion. This discrepancy in sizes is one of the key issues that oil markets are facing constantly – a wall of money can hit it at any time if there is a good reason to change asset allocation. Often, this asset allocation has nothing to do with oil fundamentals, although sometimes it does. Most often, it is a consequence of another macro fundamental move, a change in the consensus view on the dollar or the euro, or on expected inflation in the medium term.

Moreover, we have seen recently a trend to increase allocations towards commodities, from the 3-5 percent that seemed to be the consensus before the financial crisis, to a 5-7 percent range now. The recent crisis has forced a review of asset allocation, and asset allocators have been recommending a bigger exposure to commodities and alternative investments as a shift to increase the proportion of «real assets» in their portfolios. This could be a fad, but for the moment it remains the consensus, while portfolios with smaller commodities exposure have underperformed their benchmarks. We estimate the total of oil and products held in futures markets and index funds is equivalent to $320 billion at the end of 2009. We also believe that the overall oil-linked derivative position of the institutional investors

could be three times this size if only three percent of their assets under management are in commodities. Given the small size of this market relative to the $30 trillion of global pension fund holdings, there is significant upward pressure on prices beyond the level supported by oil fundamentals. This is largely what we have seen so far in 2010, where macro fundamentals drove prices up while oil fundamentals clearly indicated an oversupplied physical market, with high and rising inventories and steep contango.





It is clear that the lack of position limits that index funds have enjoyed until recently have provided a backdoor for the financial community to invest more money in oil futures than regulators originally intended. These passive investments are proving to be the most controversial, since they are long only, tending to add demand for paper oil and sit passively. This contradicts the argument that financial players should be allowed free rein in commodity markets because they increase liquidity. The regulatory reforms that are being shaped in the US and Europe are now specifically targeting derivatives, and could end up bringing a lot more transparency to their use. However, the phenomenon that

we have described in this section – the innovation behind the new oil-linked financial instruments, and their massive use by institutional investors – will be difficult to reverse completely. The fact is, asset managers want exposure to commodities, and will try to replicate this as much as possible within any new regulatory framework.

4. The regulatory environment is trying to catch up

The 2008 historic run-up in oil prices has spurred a call for action and regulatory supervision and reforms from producing and consuming countries alike. The intense scrutiny applied in the US by the CFTC since 2009 is the broadest and most meaningful response to the financialization of oil markets. The G20, the US and the EU, and several of their members have launched initiatives to study and suggest reforms. The opinion piece published by Gordon Brown and Nicholas Sarkozy on July 8th 2009 in the Wall Street Journal, titled "Oil Prices Need Government Supervision" called for increased cooperation and supervision of oil markets by regulatory authorities to reduce volatility.

These calls for action culminated in months of debate in the US Senate, where finally a bill emerged on May 20th reshaping the US financial industry with a range unseen since the aftermath of the great depression. The final bill still need to be reconciled between the House and Senate version before being signed into law, but the provisions on derivatives are well known by now and are unlikely to be radically altered. Derivatives reform took a central

role in the debate over the Finance Bill, and commodity derivatives will face a new set of rules once the Bill is signed into law. The highly technical and legal fight center around two issues: Transparency of the derivatives market and enforcement of position limits for commodities derivatives. The head of the CFTC, Gary Gensler has been vocal for the need of this double requirement, and the Senate bill largely has followed his recommendations.

1) Bringing transparency to OTC derivatives markets

The Senate legislation would push most of the $600 trillion derivatives business, including commodity derivatives, from their OTC form onto regulated exchanges or similar electronic systems, a measure that would allow far greater transparency for regulators to track the trades. It also would mean higher collaterals on most of the trades, even if it is likely to reduce the cost of the trades themselves.

This is exactly what the CFTC was hoping this reform would achieve: to limit the size of the markets that are invisible to regulators, and to limit the use of OTC derivatives in favor of more standardized products traded on exchanges. Gensler has been asking that the CFTC be granted power to regulate OTC contracts and to police commodity speculation outside of regulated exchanges. He wants a three-part approach that would require regulating derivatives dealers, bringing transparency to the OTC market, and moving standard derivatives to regulated clearinghouses.

In many ways, the Senate text is even more restrictive than Gensler's proposals, largely due to a last-minute change made by Senator Lincoln, precisely to limit the power of the swap dealers in commodity markets. The reform has adopted the philosophy and tools recommended by the CFTC to force as many commodity instruments on to transparent venues such as regulated exchanges. The Lincoln amendments force almost all derivatives on to exchanges while the proposals from Gensler and Treasury Secretary Geithner would force 60-70 percent of the market into exchanges. It is not clear if the Lincoln restrictions will survive the last-minute wrangling and technical considerations, but by all accounts, the business of creating and selling derivatives by swap dealers will change dramatically. The three or four banks that have so far controlled the unregulated commodity derivatives business – JP Morgan Chase, Bank of America, Morgan Stanley and Goldman Sachs – have fought long and hard against these amendments, but, shockingly, have lost the debate and, most probably, that business. The swap dealers fiercely asserted their right to generate instruments mimicking commodity prices while remaining unregulated and beyond regulatory scrutiny. However, the political tide had turned.

2) Imposing and enforcing position limits

Once derivatives move onto exchanges, they become visible to regulators. For the CFTC, this was a key requirement for it to be able enforce position limits on commodities. This is a power it currently has, but can only exercise if it knows the positions of the financial players

across financial instruments. The Enron loophole and the take-off of oil-linked derivatives had largely sidestepped the CFTC's ability to regulate. The new financial reform bill largely restores it.

CFTC chairman Gary Gensler has been a vociferous advocate of the improved oversight of commodity futures markets since taking the helm of the commission in January, 2009. Gensler has argued that the best way to moderate oil prices is to closely monitor the way futures and derivatives are traded, in direct contradiction to his predecessor who saw no proof of linkage between the financialization of oil and higher prices.

By law, the CFTC sets directly limits on the agricultural futures contracts while the exchanges themselves set position limits on energy commodities. Now, real questions have been asked about how effective this self-regulation has been. Exchanges in fact impose hard limits on energy products only in the last three days of trading before a contract>s expiration, voiding real scrutiny the rest of the time. They just impose accountability levels, which trigger additional oversight if exceeded during the rest of the time. Strict enforcement of limits by these exchanges is still a matter of debate, and in a preliminary look at the situation, the CFTC discovered that 70 parties exceeded accountability levels on the four major energy contracts during the last year. So in the last few months, the CFTC has reasserted its authority by firstly, forcing the exchanges to make sure that position limits are enforced during the full life of the contract. Then, the CFTC has mandated the exchanges that position limits cannot be exceeded during the trading

day, because some entities were just making sure that their positions were below the limits at the close, while their peak positions were well above. These two measures showed the willingness of the CFTC to aggressively regulate futures where it could, and gives a hint of what it will try to do once it can regulate the full spectrum of financial instruments.

Beyond the issue of effective endorsement, another debate concerns the exact status of the swap dealers. Until now, although they have been the largest group of speculators, swap dealers (made up of brokers and large banks) were exempt from position limits because they have been classified as commercials, even though they often have no dealings in the physicals. The swap dealers trade mostly on behalf of commodity index traders. Regulations were enacted for limiting positions in the Commodity Futures Modernization Act of 2000 but the Enron loophole exempted OTC energy trades and trading on electronic energy commodity markets from government regulation. The loophole was partially closed in June 2008 as part of the veto-proof 2008 Farm Bill. But there were real questions surrounding the authority of the CFTC on imposing enforceable limits on swap dealers. The Senate bill clears up this ambiguity: now, businesses that use derivatives to hedge risks from producing or consuming commodities – deemed end users – would be exempt from the clearing requirement as long as the swap met "generally accepted" accounting principles for hedging, and the firm was not "predominantly" engaged in financial activities. Swap dealers' exemptions will largely disappear, and with them, the ability to use their status to create financial instruments invisible to the regulators.

3) Harmonization for consistent international rules

The US has taken the lead with its financial regulatory reform bill, which is now shaping a broader debate within the G20 on financial regulation. Clearly, the US legislators and regulators have raised the concerns of loophole emerging internationally, as less regulated jurisdictions would allow OTC derivatives and create opportunities for regulatory arbitrage.

The US has both extended the discussion with Europe at the same time as putting teeth into the Senate bill to pressure the European proposals to fall in line. One measure in the bill allows the CFTC to monitor data and set position limits for US-based traders even on foreign boards of trade. As for the question of how the US could credibly enforce this, the CFTC could certainly make it extremely onerous for US-based traders to trade on foreign exchanges.

Meanwhile, Gensler has continued to push foreign regulators to adopt similar rules. The European Union has been willing to follow, with a raft of proposals at the supranational and national levels that are broadly in line with the principles reflected in the emerging US bill. Broadly, there is agreement on the need to regulate OTC derivatives and to move derivatives trading activity to regulated exchanges, mediated by a third-party clearinghouse. There has been a proposal for an EU-wide commodities watchdog much like the CFTC. The main area of dispute has been over position limits, with France and Germany pushing to adopt them, and the UK's Financial Services Authority (FSA) looking to soften this rule, in order to maintain the competitiveness of London as a financial center. These

issues will be coordinated within the G-20 meetings, as well as at the European Commission, with a proposal on financial regulation expected in July.

It is not yet clear if greater regulation on derivatives will happen in a fairly coordinated fashion internationally, in line with US financial regulatory reform, although a consensus on commodities seems to have emerged: greater regulation and limits to OTC instruments, and a need to monitor the positions of the financial actors.

Conclusion

Going forward, if oil continues to be an asset class for institutional investors, prices will be increasingly linked to volatility in currencies, interest rate expectations, and more generally to the health of the financial players and to a financial logic that include risks beyond oil fundamentals. These risks will impact volatility and price levels, but more importantly, it creates systemic risks of spikes and troughs like the ones seen in 2008.

In the world of economic and financial instability we are facing, this greater volatility entails greater economic risks. Regulators have zeroed in on these risks, and the US legislators are on the verge of passing tightening of the rules guiding OTC derivatives markets and providing the CFTC a mandate for stricter enforcement of position limits across instruments. Will that be enough to avoid a repeat of the great commodity rollercoaster of 2008? Policy makers seem to have identified the problem, but it is yet too early to say if they have found the solutions.