“Intelligent Commodity Investing: Opportunities and Challenges”
Presentation to the University of Chicago GSB Alumni Finance and Business Book Roundtables

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Intelligent Commodity Investing: Opportunities and Challenges

I. The Long View

II. Demand for Energy Investments

III. De-Risking and Deleveraging

IV. Outlook

This icon is based on the statue in the Chicago Board of Trade plaza.
I. The Long View

Commodity Prices are Cyclical

Commodity prices are cyclical and move in unison
Commodities by category, data 1795 to 2007 (YTD), 10-yr. M.A.

Shown as the 10-year moving average of y/y % price change.

II. Demand for Energy Investments

The Macro Case

• The macro case for energy-oriented commodity investments has relied on the following three factors:

(1) adverse supply shocks resulting from the aging energy infrastructure in the U.S. and Europe;

(2) expanding demand, particularly from China; and

(3) as a dollar hedge.
II. Demand for Energy Investments

The Macro Case

M3 Money supply y/y growth vs. Oil price per barrel y/y growth
(10-yr. moving avg. of y/y percent change), since the Fed’s creation in 1913. Note the "super-spikes” in oil after prolonged strong M3 growth.

Source: Data NBER, U.S. Federal Reserve, U.S. Census, API, Stifel Nicolaus M3 re-creation after Feb-06.

II. Demand for Energy Investments

*Performance of Energy Futures Investments*

- But passively investing in energy futures contracts is not for the faint-hearted.

- The Goldman Sachs energy (futures-only) sub-index lost -30.6% in 2006.

![Graph showing the performance of an investment in the GSCI Energy (Futures-Only) Sub-Index from December 2005 to December 2006.](chart.png)
II. Demand for Energy Investments

*Energy Derivatives Relative-Value Trading*

- Therefore, energy and commodity investors had been drawn to relative-value commodity hedge funds, prior to 2007.

- As discussed in Till (2007) and Eagleeye (2007), there are potentially profitable opportunities around build/draw cycles in commodity inventories.

- These opportunities tend to be monetized through calendar spreads and processor-margin spreads.
II. Demand for Energy Investments

Energy Derivatives Relative-Value Trading

Average Seasonal Change in Natural Gas Inventories 1994 - 2006

Average Seasonal Change in Gasoline Inventories 1998 - 2006
II. Demand for Energy Investments

Energy Derivatives Relative-Value Trading

- For active commodity strategies, expertise in forward curves and storage economics is crucial.
- But even with this expertise, there have been a number of challenges in profiting from energy relative-value trading due to frequent structural breaks in historical relationships.
- This was particularly the case in September of 2006 with the Amaranth debacle, which was explained in Till (2006).
II. Demand for Energy Investments

*Structural Breaks*

Relationship of Crude Calendar Spreads to Outright Positions

WTI Front-to-Back Spread vs. Front-Month Crude
Monthly Data
12/86 to 12/03

- Spread (in $ per barrel)
- Front-Month Price (in $ per barrel)

- Actual
- Fitted

![Graph showing relationship between WTI Front-to-Back Spread and Front-Month Crude Prices from 12/86 to 12/03.](image-url)
II. Demand for Energy Investments

Structural Breaks

Relationship of Crude Calendar Spreads to Outright Positions: Structural Change

WTI Front-to-Back Spread vs. Front-Month Crude
Monthly Data
1/04 to 4/07

Front-Month Price (in $ per barrel)
Spread (in $ per barrel)

Actual
Fitted
II. Demand for Energy Investments

Structural Breaks

Relationship of Crude Calendar Spreads to Outright Positions: Structural Shift Yet Again in July 2007

WTI Front-to-Back Spread vs. Front-Month Crude
Monthly Data
12/86 to 11/07

Spread (in $ per barrel)

Month-End

Dec-86 Dec-88 Dec-90 Dec-92 Dec-94 Dec-96 Dec-98 Dec-00 Dec-02 Dec-04 Dec-06

$(2.00) $(1.50) $(1.00) $(0.50) $- $0.50 $1.00 $1.50 $2.00
III. De-Risking and Deleveraging

Deleveraging of Risky Investments

• A very recent concern has been how correlated the commodity markets have become with other risk assets, at least over short time horizons.

• Commodities were clearly not immune from sharp (but temporary) episodes of widespread deleveraging of risky investments during the past two years, …

• … as occurred during May and June of 2006; end-of-February 2007; mid-August 2007; and in March 2008.
### May /June 2006 De-Risking

<table>
<thead>
<tr>
<th>“Risk Indicator”</th>
<th>12.0%</th>
</tr>
</thead>
<tbody>
<tr>
<td>VIX (Equity Implied Vol)*</td>
<td></td>
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</table>

<table>
<thead>
<tr>
<th>“Risk Assets”</th>
<th>Percent Change</th>
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<tbody>
<tr>
<td>Bovespa (IBX50)</td>
<td>-23.5%</td>
</tr>
<tr>
<td>Nasdaq</td>
<td>-10.4%</td>
</tr>
<tr>
<td>S&amp;P 500</td>
<td>-7.3%</td>
</tr>
<tr>
<td>Nikkei</td>
<td>-10.4%</td>
</tr>
<tr>
<td>Silver</td>
<td>-32.4%</td>
</tr>
<tr>
<td>Copper</td>
<td>-18.2%</td>
</tr>
<tr>
<td>Gasoline (RFG)</td>
<td>-3.6%</td>
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</table>

<table>
<thead>
<tr>
<th>“Safe Havens”</th>
<th>Percent Change</th>
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<tbody>
<tr>
<td>Long Bond</td>
<td>1.8%</td>
</tr>
<tr>
<td>Dollar vs. Yen (Long Dollars)</td>
<td>4.5%</td>
</tr>
</tbody>
</table>

* The VIX increased from 11.78% on 5/10/06 to 23.81% on 6/13/06.
III. De-Risking and Deleveraging

End-February-2007 De-Risking

### III. De-Risking and Deleveraging

**8/16/07 Global Unwind**

<table>
<thead>
<tr>
<th>Commodity</th>
<th>Price</th>
<th>Change</th>
<th>% Change</th>
</tr>
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<tbody>
<tr>
<td>LMAHDS03 Aluminum</td>
<td>2542.00</td>
<td>-9.00</td>
<td>-0.353</td>
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<tr>
<td>NGX7 Natural Gas</td>
<td>7.79</td>
<td>-0.046</td>
<td>-0.587</td>
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<tr>
<td>WZ7 Wheat</td>
<td>688 3/4</td>
<td>-8 1/4</td>
<td>-1.18</td>
</tr>
<tr>
<td>LCV7 Live Cattle</td>
<td>94.60</td>
<td>-1.325</td>
<td>-1.38</td>
</tr>
<tr>
<td>LHV7 Lean Hogs</td>
<td>67.55</td>
<td>-1.025</td>
<td>-1.49</td>
</tr>
<tr>
<td>LMZSDS03 Zinc</td>
<td>3230.00</td>
<td>-65.00</td>
<td>-1.97</td>
</tr>
<tr>
<td>XBX7 RBOB Gasoline</td>
<td>187.43</td>
<td>-3.95</td>
<td>-2.06</td>
</tr>
<tr>
<td>GCZ7 Gold</td>
<td>665.20</td>
<td>-14.50</td>
<td>-2.13</td>
</tr>
<tr>
<td>CTZ7 Cotton</td>
<td>58.85</td>
<td>-1.33</td>
<td>-2.21</td>
</tr>
<tr>
<td>CLX7 Crude Oil</td>
<td>71.10</td>
<td>-1.73</td>
<td>-2.38</td>
</tr>
<tr>
<td>HOX7 Heating Oil</td>
<td>201.55</td>
<td>-4.99</td>
<td>-2.42</td>
</tr>
<tr>
<td>CZ7 Corn</td>
<td>336 1/2</td>
<td>-8 3/4</td>
<td>-2.53</td>
</tr>
<tr>
<td>LMNIDS03 Nickel</td>
<td>26500.00</td>
<td>-800.0</td>
<td>-2.93</td>
</tr>
<tr>
<td>SBV7 Sugar</td>
<td>9.16</td>
<td>-0.29</td>
<td>-3.07</td>
</tr>
<tr>
<td>KCZ7 Coffee</td>
<td>119.30</td>
<td>-3.90</td>
<td>-3.17</td>
</tr>
<tr>
<td>BOZ7 Soybean Oil</td>
<td>35.27</td>
<td>-1.25</td>
<td>-3.42</td>
</tr>
<tr>
<td>SIZ7 Silver</td>
<td>12290</td>
<td>-445</td>
<td>-3.49</td>
</tr>
<tr>
<td>SX7 Soybeans</td>
<td>821</td>
<td>-33 1/2</td>
<td>-3.92</td>
</tr>
<tr>
<td>HGZ7 Copper</td>
<td>314.80</td>
<td>-17.40</td>
<td>-5.24</td>
</tr>
</tbody>
</table>

* Absolute level of the VIX (and not change in level as in Slide 15.)

Source: The Bloomberg.
III. De-Risking and Deleveraging

March 2008: The Great Unwind

Source of Data: The Bloomberg.
IV. Outlook

(Light Sweet) Crude Oil Prices

In the short term, oil prices are searching for the level that:

1. Induces an appropriate production response; or

2. Induces a weakening of strict environmental regulations; or

3. Reduces global consumption through an economic contraction.


Sources: Murti et al. (2005) and Verleger (2007).
IV. Outlook

(Light Sweet) Crude Oil Prices

• Given that none of these responses have occurred yet during a near quadrupling of oil prices (in dollars) over the past six years, …

... it is an open question of how high oil prices must go before “mean-reverting.”
IV. Outlook

(Light Sweet) Crude Oil Prices

• This has implications for the proper choice of scalable oil-oriented commodity investing …
IV. Outlook

Beta

1. Choice of index:
   – given that the driver of returns may at times be spot returns (and not roll returns).

IV. Outlook

Alpha

2. Choice of hedge fund:

– Are energy-futures-spread strategies sufficiently scaleable?

– Do energy hedge funds have a structural edge?

Note: The size of the bubbles represents the relative magnitude of each contract’s open interest.

IV. Outlook

*Long-Term-Strategy Choices*

- What are the structural economic changes that would result from much higher oil (and natural gas) prices?
- What are oil-exporting countries investing in?
- What will be the impact on the U.S. dollar? [See next slide.]
IV. Outlook

Long-Term-Strategy Choices

Source of Graph: Based on Hill (2008).
IV. Outlook

Strategy Choice: Least Trade-Offs

- One’s choice of strategy is simplest when an investment has the following characteristics:
  - positive carry;
  - transparency; and
  - scalability.

Source of Data: The Bloomberg.
References


References (Continued)


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Intelligent Commodity Investing

"Essential reading for commodity investors, or would-be investors, everywhere."  
Sir Howard Davies, Director, London School of 
Economics and Political Science, and Former Chairman 
of the Financial Services Authority (UK)

"Gives a full range of concepts that are critical for 
anyone investing in these markets."  
David Ganz, Head of Risk Management and 
Quantitative Research, Glenwood Capital Investments, 
LLC, a member of the Man Group

"It is the best single resource that anyone involved in 
the commodity markets could have on their shelf."  
David Walsh, Managing Director, Allstare Investments

"This book is a service to our industry."  
Robert J. Greer, Senior VP, Real Return Product Manager, 
PMCCG

With the booming interest in commodity investment there is a growing demand for up-to-date information. This acclaimed book provides timely and intelligent insights from a broad range of institutional investors, consultants, hedge funds, commodity index providers, risk managers as well as research from academia. This is the only multi-contributor book on commodity investment offering a breadth of opinions for sophisticated investors.

It looks at commodity investment from the following perspectives:

- The Investor
- The Active Manager
- The Commodity Index Provider
- The Risk Manager
- The Researcher

The size of the global commodities derivatives market is now estimated to be around US$750 billion. This growth is evident by the increased investment in commodity indexes and the growth of commodity hedge funds. Further evidence of growth is also seen in the increasing size of natural-resources mutual funds. China and other fast-growing countries are snapping up raw materials at a pace that, at times, is faster than mines and oil wells can produce them.

In response to the rapid growth in the market, this timely publication will bring you up to speed on the trends and challenges of commodity investment, providing you with a practical investment framework.