



Carpenter Analytical Services

Market Models & Metrics

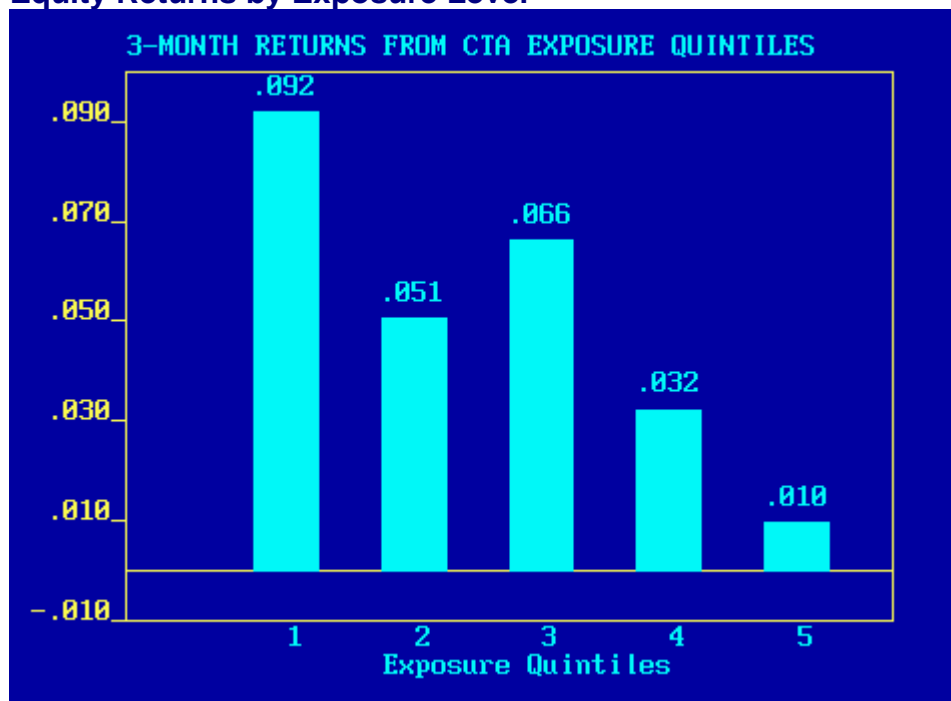
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Over-Exposure Indicators September 2006

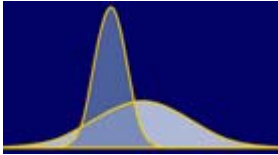
The XPO Exposures Model. The XPO model tracks asset exposures in portfolios, in a kind of “reverse engineering” of their returns streams. Successive re-estimation generates continuous exposure *paths*. The ebb and flow of exposure paths shows where portfolios are moving, and identifies overconfident extremes.

Hedge Funds as Market Indicator. Applying the XPO model to *Managed Futures* hedge funds (CTAs), we track four key asset exposures as they evolve: equities, fixed income, currency, and commodities. *These four assets give contrarian indications when CTA exposures reach extremes.* The bar chart below shows average equity returns three months following each of five exposure levels. Lowest equity exposures (Quintile #1) led to 9.2% gains; highest exposures (Quintile #5) led to only 1.0%.

Equity Returns by Exposure Level



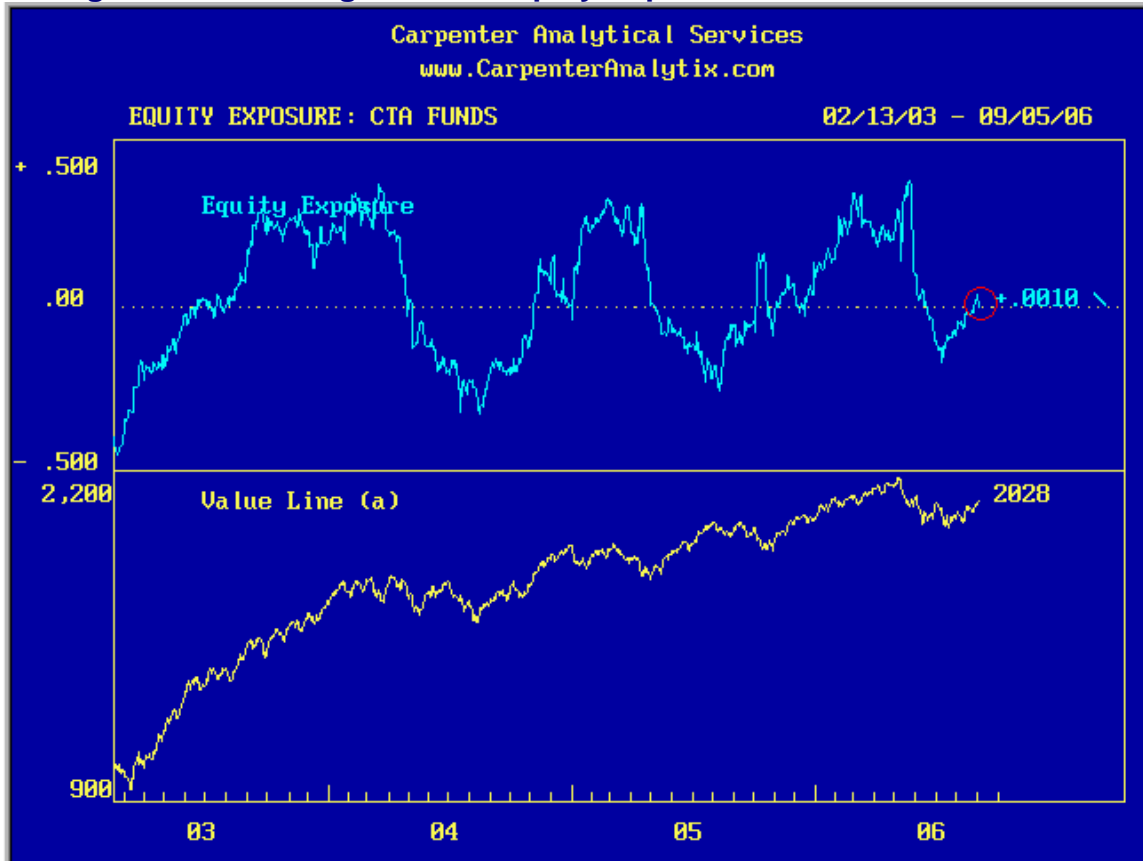
The equity exposure path underlying these quintiles is plotted on the following page. Pages 3-4-5 show *other* key CTA exposure paths (bond, dollar, commodity).



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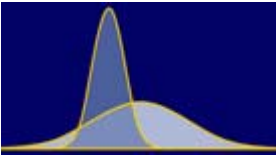
CTA Equity Exposure

Managed Futures Hedge Funds: Equity Exposure Path



The *Managed Futures* funds are more aggressive than many other hedge fund categories. Asset exposures are often more extreme; tactical reversals are more frequent; short positions are more prevalent.

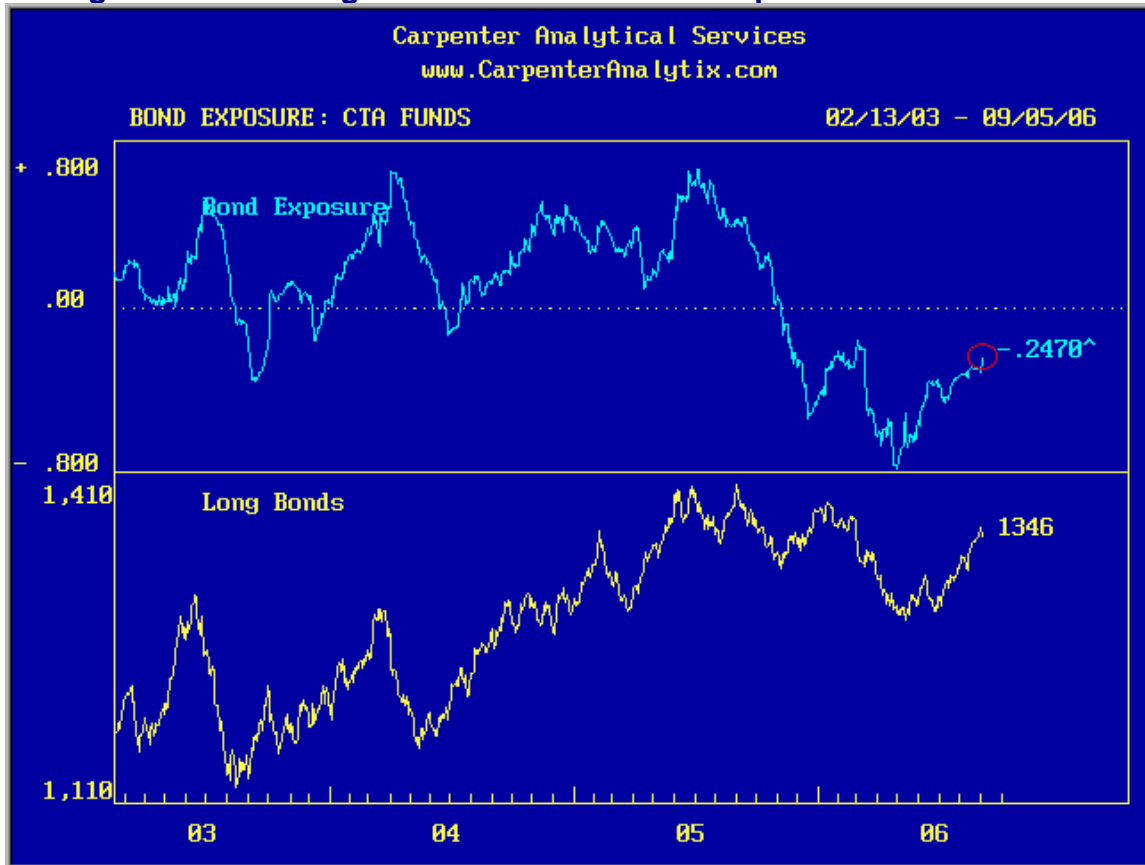
- Observed exposures from -.30 to +.30 have bounded a normal range.
- Equity exposures above .30 have all arisen as the market advanced, and all are associated with market downturns.
- *Short* exposures of about -.30 have occurred *both* in market advance and decline. In midst of advance (2005), the selling appears as normal value-seeking retreat. But short selling into decline (end of 2002, mid-2004, 2006) sets up contrarian dynamics...leading to market advance.



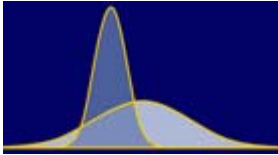
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CTA Fixed Income Exposure

Managed Futures Hedge Funds: Fixed Income Exposure Path



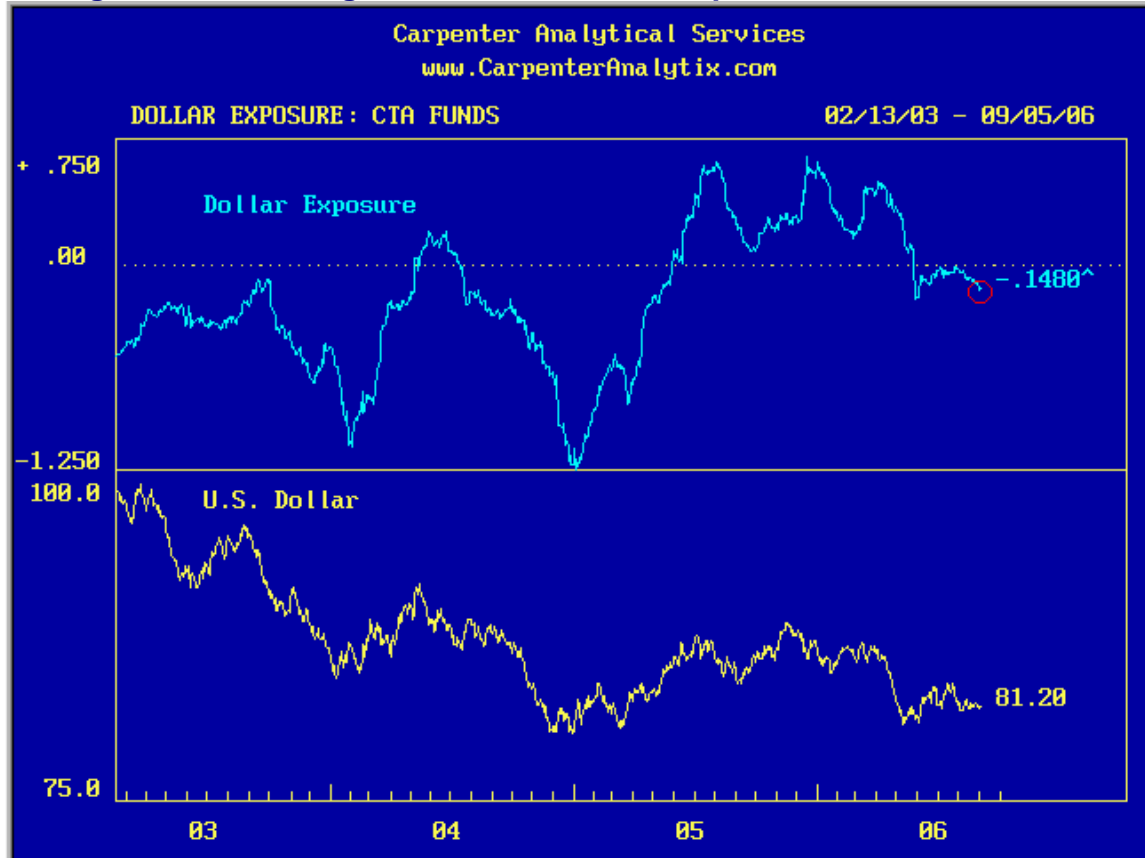
- Fixed income exposure was almost all non-negative until the end of 2005.
- Exposure varies from +.45 (long) to -.45 (short) about 80% of the time,
- High and rising exposure in uptrend implies danger (June '03, March '04, July '05).
- Persistent short exposure first developed as bond prices were rallying toward highs (year-end '05). This counter-trend selling is not contrarian.
- The deep trend-following short in the spring 2006 market decline is highly contrarian, followed by four-month rally to date.



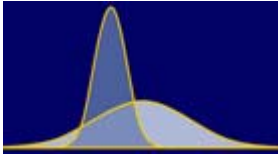
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CTA Dollar Exposure

Managed Futures Hedge Funds: U.S. Dollar Exposure Path



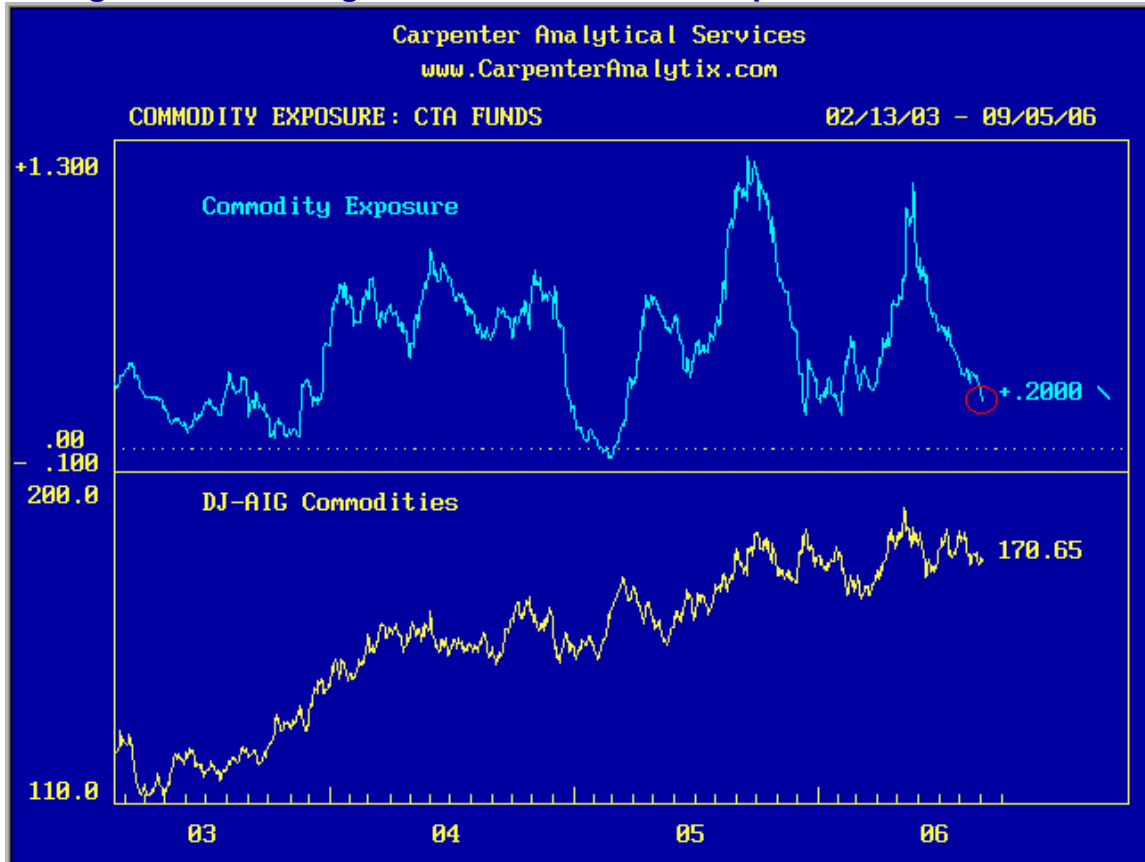
- Dollar exposure was negative (short) almost continuously through the 2003-04 dollar decline.
- Short positions were deepest *at bottoms* at start and end of 2004.
- Dollar exposures can be actual (direct currency positions) or virtual (offshore securities holdings), but inference at extremes is consistent.
- While the dollar's *value* in September '06 is about as at end of '04, dollar *exposure* is quite different (neutral) today.



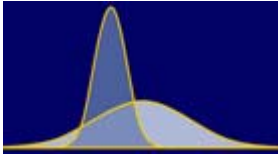
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CTA Commodities Exposure

Managed Futures Hedge Funds: Commodities Exposure Path



- Aggregate commodity exposure is greater than the other three assets (median = +.44), and has been (almost) continuously positive throughout.
- Trends were ambiguous at the mid-2004 exposure peak. (Was high exposure more associated with early year run-up, or with mid-year correction?)
- Price and exposure trends were *unambiguous* at 2005 highs as the exposure path “bought into” the rally (trend-following, with contrarian implication). The run-up into spring highs earlier in 2006 is similar!
- Assessing “low” commodity exposure is less certain than high exposure, as we do not yet know whether analysis may eventually include eras of net negative (short) exposure in this asset class.



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Market Application

The *XPO* model is a unique tool for tracking fund exposures. Applied to the *Managed Futures* (CTA) funds, exposure paths emerge as novel and productive contrarian indicators. When *XPO* shows these trend-following hedge funds piling into extreme positions, directional change is often at hand.

The page-one bar chart showed how extreme equity exposures have preceded stock market reversals, with a 1st to 5th quintile returns differential of +8.2% over three months, as repeated in first column below. Outcomes for the other assets are more complex, but the same basic quintiles framework still illustrates the contrarian effect.

Returns Ensuing From *XPO* Quintiles^(a)

Exp. Quintile	Stock	Bond ^(b)	Dollar	Commodity
Q1 (Low Exposure)	+9.2%	- 0.2%	+2.1%	+4.8%
Q2	+5.6%	+1.9%	- 3.0%	+4.1%
Q3	+6.6%	+0.8%	- 3.0%	+4.6%
Q4	+3.2%	+0.1%	- 1.7%	+2.0%
Q5 (High Exposure)	+1.0%	- 1.5%	- 1.1%	+0.1%
Q1–Q5 Diff.	+8.2%	+1.3%	+1.0%	+4.7%

(a) Quintiles analysis spans 867 days from 2/28/03 through 8/08/06.

(b) Bond outcomes are measured one month from exposure set; all others are three-month outcomes.

Hedge fund activity is notoriously opaque, yet a material factor in the markets. The *XPO* model gives objective insight into key hedge fund activity as it unfolds.

XPO exposures analysis is a singular tool for unique market intelligence:

- Otherwise covert portfolio activity is exposed.
- Continuous updates are available, almost in real time.
- High-frequency data input gives robust statistical basis.
- CTA tactical consistency makes it an ideal target set.

For *XPO* services, contact Robin Carpenter: RobinC@CarpenterAnalytix.com