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Bringing Research Insights to Institutional Investment Professionals

Intelligent Commodity Investing and Trading

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Intelligent Commodity Investing and Trading

I. Consequences for Commodities in a Globally Low Interest Rate Environment

II. Public Policy Considerations and Empirical Evidence Regarding Commodity Price Spikes and Volatility

III. Portfolio Construction in a Commodity Futures Portfolio

IV. Risk Management in a Commodity Futures Portfolio

V. Lessons from the MF Global Collapse
I. Commodities in a Low Interest Rate Environment

A. Globally Accommodative Interest Rate Environment

B. Empirical Relationship Between Rates and Commodity Prices

C. Consequent Increased Demand for Commodity Investments

D. Another Consequence: An Increase in Cross-Market Linkages
I. Commodities in a Low Interest Rate Environment

A. Globally Accommodative Interest Rate Environment [1 of 3]

Policy Interest Rates
In Percent*

*For the United States, target federal funds rate; as of mid-December, midpoint of the target rate corridor (0-0.25%); for the euro area, minimum bid rate up to October 2008 and fixed rate of the main refinancing tenders thereafter; for Japan, target for the uncollateralized overnight call rate; as of October 2009, midpoint of the target range (0-0.1%); for the United Kingdom, Bank rate.

Author Sources: Bloomberg, national data

Graph based on G20 Study Group on Commodities (2011), Graph 3.8.
I. Commodities in a Low Interest Rate Environment

A. Globally Accommodative Interest Rate Environment [2 of 3]

- “Globally accommodative monetary conditions have become unprecedented.

- The relative size of global money stock (M1) measured against the real GDP has surpassed its historical trend.”*

* “The Global M1 is a weighted average of M1 in each country with its corresponding GDP (PPP-basis) used as a weight. The data source is from the World Economic Outlook of the International Monetary Fund.”

Source: Inamura et al. (2011).
I. Commodities in a Low Interest Rate Environment

A. Globally Accommodative Interest Rate Environment [3 of 3]

Author’s Notes: Interest rate gaps are estimated with relevant data published by the International Financial Statistics and the World Economic Outlook of the International Monetary Fund.

The data is monthly from January 2010 through January 2011.

* The “interest rate gap” is the difference between the real short-term interest rate and the potential growth rate of an economy. The concept is explained further in Appendix I.A.

Graph based on Inamura et al. (2011), Chart 7.
I. Commodities in a Low Interest Rate Environment

B. Empirical Relationship Between Rates and Commodity Prices [1 of 2]

• “Global commodity prices [have been] ... negatively correlated with the global interest rate gap.”

• Chart interpretation: For say a data point that shows the S&P GSCI at 1.5, this means that since January 2000, the S&P GSCI had effectively increased by 50% in real terms, as of the month represented by the data point.

Source: Inamura et al. (2011).
I. Commodities in a Low Interest Rate Environment

B. Empirical Relationship Between Rates and Commodity Prices

[2 of 2]

• What is the channel through which monetary policy impacts commodity prices, focusing on the case of oil?

• While Anzuini et al. (2010) confirm that the “positive impact on oil prices of a monetary policy loosening can be ... 

• [partially] ascribed to incentives to stock accumulation, disincentives to immediate production, [and] ... to financial flows[,] ... 

• the bulk of the impact of monetary policy on commodity prices seems to transit through the indirect channel of expected growth and inflation.” [Italics added.]
I. Commodities in a Low Interest Rate Environment

C. Increased Demand for Investments in Commodities

[1 of 1]

• Starting in 2003, investors attempted “to earn higher returns in spite of the globally low interest rate environment [while] simultaneously diversifying their risk [by] … investing or expanding their investments in commodities.”

I. Commodities in a Low Interest Rate Environment

D. Increase in Cross-Market Linkages [1 of 4]

• “We find quantitative evidence that an increase in cross-market linkage between commodity and stock markets was caused by the markets’ co-movements ...

• ... due to large fluctuations in the global economy during the financial crisis ...

• ... as well as by the ‘financialization of commodities’, that is, financial investors are increasingly treating commodities as an investment asset class.”

Source: Kawamoto et al. (2011).
D. Increase in Cross-Market Linkages [2 of 4]

• “With regard to the cross-market linkage between commodity and stock markets, …

• … the correlation coefficient of the return between the markets has risen rapidly since the second half of 2008.”

Authors’ Note: The figure shows the one-year rolling correlation coefficients between the return of the global equity index (MSCI AC World Index) and that of the commodity index (S&P GSCI).

Note: The vertical line demarks the second half of 2008.

[Bloomberg tickers: MSCI AC World USD: MSEUACWF Index; and S&P GSCI Excess Return: SPGCCIP Index.]

Graph based on Kawamoto et al. (2011), Chart 2.

Source: Kawamoto et al. (2011).
I. Commodities in a Low Interest Rate Environment

D. Increase in Cross-Market Linkages [3 of 4]

• In late 2011, Bloomberg News reported the launch of two Exchange-Traded Notes (ETNs): a Risk On ETN and a Risk Off ETN [which was likely inspired by the view that all investments had become aspects of one big Beta.]

• The Risk On ETN was designed “to rise during economic growth,” and the “Risk Off ETN would gain when the outlook is negative.”

Source: Carpenter (2011).
I. Commodities in a Low Interest Rate Environment

D. Increase in Cross-Market Linkages [4 of 4]

• These ETNs include weightings in:

1. the Dow Jones-UBS Crude Oil Subindex,
2. the 10-year U.S. Treasury note,
3. the Dow Jones-UBS Corn Subindex,
4. the Dow Jones-UBS Copper Subindex,
5. the Dow Jones-UBS Silver Subindex,
6. the SPDR S&P 500 ETF Trust, and
7. the euro.

Source: Carpenter (2011).
II. Public Policy Governing Commodity Trading

A. Has Commodity Trading Caused Higher Prices?

B. Has Commodity Trading Caused Higher Volatility?

C. Public Policy Response
II. Public Policy Governing Commodity Trading

A. Has Commodity Trading Caused Higher Prices? [1 of 6]

• Holbrook Working’s T-Index is calculated by measuring the amount by which speculation exceeds commercial hedging needs, divided by commercial open interest.

• A value of somewhat greater than 1 is acceptable for the T Index since technically an excess of speculation is economically necessary for a well-functioning market.

Sources: Working (1960) and Peck (1980).
II. Public Policy Governing Commodity Trading

A. Has Commodity Trading Caused Higher Prices? [2 of 6]

• The T-index “increased in 2008 at the same time that the price of oil increased dramatically, but it also reached similar levels in 2003 and 2005 when oil prices were lower.

• Moreover, despite record net long non-commercial positions at the end of 2010, ...

• ... the T-index suggests that speculative pressures were subdued, given the greater hedging demand by commercial firms.”

• See next slide.

Source: Alquist and Gervais (2011).
II. Public Policy Governing Commodity Trading

A. Has Commodity Trading Caused Higher Prices? [3 of 6]

Data Sources: CFTC and authors’ estimates

*Graph based on Alquist and Gervais (2011), Figure 4.*
II. Public Policy Governing Commodity Trading

A. Has Commodity Trading Caused Higher Prices? [4 of 6]

• Using data from January 2, 1996 to November 2, 2009, European Central Bank researchers examined West Texas Intermediate (WTI) crude oil prices and non-commercial net long positions on WTI futures contracts.

• “... if any causality exists, it [is not that] ... speculative positions ... cause price increases, ...

• ... but rather price increases can suggest speculators to enter the market and hence cause an increase in speculative positions.”

Source: Anzuini et al. (2010).
II. Public Policy Governing Commodity Trading

A. Has Commodity Trading Caused Higher Prices? [5 of 6]

• This chart is “consistent with a pure demand story, rather than a speculation one.”

WTI (Oil) Prices Resemble Commodities Without Futures Markets

Index, January 2008 = 100

Sources: U.S. Energy Information Administration; Wall Street Journal; Bloomberg.

Graph based on Plante and Yücel (2011), Chart 5.

Source: Plante and Yücel (2011).
II. Public Policy Governing Commodity Trading

A. Has Commodity Trading Caused Higher Prices? [6 of 6]

• “The tripling of oil prices from early 2007 to mid-2008 is consistent with several market fundamentals, including increased demand from emerging markets, low elasticities of demand[,] and reduced OPEC excess capacity.”

• “The behavior of inventories was also consistent with the reality of a tight market ...”

• “... we ... conclude that fundamentals, and not speculation, were behind the dramatic rise and fall in oil prices.”

Source: Plante and Yücel (2011).
II. Public Policy Governing Commodity Trading

B. Has Commodity Trading Caused Higher Volatility? [1 of 14]

• In June 2011, France hosted a meeting of the G20 agricultural ministers, which focused attention on the damaging effect of soaring food prices on the world’s most vulnerable, particularly in Africa.

• This topic was a departure from the past priorities of the G20, which had previously focused on responding to the global financial crisis.

II. Public Policy Governing Commodity Trading

B. Has Commodity Trading Caused Higher Volatility? [2 of 14]

• One could argue that France’s hard-won lessons from eighteenth-century history ...

• ... provide the country’s authorities with a keen (and appropriate) sensitivity to the potential consequences of food riots in the developing world.

II. Public Policy Governing Commodity Trading

B. Has Commodity Trading Caused Higher Volatility? [3 of 14]

- “Most historians in the United States are familiar only with one great [price] wave, the price-revolution of the sixteenth century.

- Its successor, the inflation of the eighteenth century*, has been much discussed by French scholars in relation to the *French* revolution in 1789, but it is little known in America or Britain where its effects were less dramatic.” [Italics added.]

* See Appendix II.A. for a graphical representation of historical grain-price revolutions, including the one in the eighteenth century.

II. Public Policy Governing Commodity Trading

B. Has Commodity Trading Caused Higher Volatility? [4 of 14]

• Correspondingly, in the U.S., there is a rich historical experience with controversies over agricultural futures trading ...

• ... that date to the founding of the Chicago Board of Trade in the nineteenth century.

• From 1884 through 1953 alone, there were at least 330 bills introduced in the U.S. Congress that sought to “limit, obstruct, or prohibit futures trading,” according to Jacks (2007).

II. Public Policy Governing Commodity Trading

B. Has Commodity Trading Caused Higher Volatility? [5 of 14]

• More recently, “U.S. and international commodity markets experienced a period of rapid increases from 1972-1975, setting new all-time highs across a broad range of markets,” noted Sanders et al. (2008).

• These price increases were “blamed on speculative behavior associated with the ‘tremendous expansion of trading in futures in a wide range of commodities,’” according to Cooper and Lawrence (1975).

II. Public Policy Governing Commodity Trading

B. Has Commodity Trading Caused Higher Volatility? [6 of 14]

- Food price volatility has risen to levels last seen in the 1970s.

![Real Food Price Volatility 1875 to 2009 (Annualized Standard Deviation Percent)](source: Till (2011b), Figure 1).

Author’s Data Sources: Global Financial Data; IMF; and author's calculations.

“Equally-weighted index of 6 commodities, including corn, palm oil, rice, soybeans, and wheat. These U.S. dollar denominated price series are deflated by the U.S. consumer price index.”
II. Public Policy Governing Commodity Trading

B. Has Commodity Trading Caused Higher Volatility? [7 of 14]

• In June 2011, the G20 agricultural ministers agreed to an action plan that would be carried forward at the G20 Cannes Summit in November of the same year.

• The communiqué essentially embraced commodity derivatives trading ...

• ... because of the potentially valuable service that derivatives hedging can provide in managing price risk.

II. Public Policy Governing Commodity Trading

B. Has Commodity Trading Caused Higher Volatility? [8 of 14]

- Whether agricultural futures trading increases price volatility (or not) is an empirical question.

- Happily, there is a way to reconcile political views on speculative futures trading with technical views on the usefulness of commodity futures hedging.

- The solution is to use empirical analyses.

II. Public Policy Governing Commodity Trading

B. Has Commodity Trading Caused Higher Volatility? [9 of 14]

- There is some empirical evidence to support the theory that speculative involvement may actually reduce price volatility.

- Brunetti et al. (2011) examined five markets, including corn, over the period 2005 to 2009 and found that:

  - “... speculative trading activity largely reacts to market conditions and reduces volatility levels, consistent with the hypothesis that speculators provide valuable liquidity to the market.”

II. Public Policy Governing Commodity Trading

B. Has Commodity Trading Caused Higher Volatility? [10 of 14]

- In addition, Professor David Jacks of Simon Fraser University in Canada examined what happened to commodity-price volatility, across countries and commodities, before and after specific commodity-contract trading had been prohibited in the past.

- Jacks (2007) also examined commodity-price volatility before and after the establishment of futures markets, across time and across countries.

- Jacks’ study included data from 1854 through 1990.

II. Public Policy Governing Commodity Trading

B. Has Commodity Trading Caused Higher Volatility? [11 of 14]

- He generally, but not always, found that commodity-price volatility was greater when there were not futures markets than when they existed, over 1-year, 3-year, and 5-year timeframes.

II. Public Policy Governing Commodity Trading

B. Has Commodity Trading Caused Higher Volatility? [12 of 14]

• More recently, Irwin and Sanders (2011) note that “[commodity] index positions [have] led to lower volatility in a statistical sense,” when examining 12 agriculture markets and 2 energy futures markets from June 2006 to December 2009.

• “... there is mild evidence of a negative relationship between index fund positions and the volatility of commodity futures prices ...”

II. Public Policy Governing Commodity Trading

B. Has Commodity Trading Caused Higher Volatility? [13 of 14]

• Roache (2010) writes that there have been four episodes of “increases in long-run food-price volatility” since 1885.

• “The first two occur during periods when global trade was impeded (the First World War and the inter-war years immediately following and the Second World War) ...”

• The next rise in volatility followed the breakdown of the Bretton Woods exchange rate regime in the early 1970s ...”

II. Public Policy Governing Commodity Trading

B. Has Commodity Trading Caused Higher Volatility? [14 of 14]

• We are currently in the midst of the fourth episode of a notable increase in volatility.

• Roache (2010) finds that the following two variables “explain a relatively large part of the rise in [low-frequency] volatility since the mid-1990s”:

  (1) the variation in U.S. inflation; and

  (2) the U.S. dollar exchange rate.

II. Public Policy Governing Commodity Trading

C. Public Policy Response

1. Normal State-of-the-World

2. Geopolitical Considerations
II. Public Policy Governing Commodity Trading


- “The expansion of market participants in commodity markets increases market liquidity (including in longer term contracts), ...”

- ... thereby accommodating the hedging needs of producers and consumers.”*

- “On the other hand ... (the) increased correlation of commodity derivatives markets and other financial markets suggests a higher risk of spillovers.” [Italics added.]

- See next slide for an example of the latter point.

* See Appendix II.B. for further discussion of this point.

II. Public Policy Governing Commodity Trading


Example of Simultaneous Deleveraging Across Financial and Commodity Markets

<table>
<thead>
<tr>
<th>Commodity</th>
<th>Price</th>
<th>Change</th>
<th>% Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>LMAHDS03</td>
<td>2543.00y</td>
<td>-9.00</td>
<td>-0.35</td>
</tr>
<tr>
<td>NGX7</td>
<td>7.791</td>
<td>-0.046</td>
<td>-0.59</td>
</tr>
<tr>
<td>W Z7</td>
<td>688 3/4</td>
<td>-8 1/4</td>
<td>-1.18</td>
</tr>
<tr>
<td>LCV7</td>
<td>94.600</td>
<td>-1.325</td>
<td>-1.38</td>
</tr>
<tr>
<td>LHV7</td>
<td>67.550</td>
<td>-1.025</td>
<td>-1.49</td>
</tr>
<tr>
<td>LMZSDS03</td>
<td>3230.00y</td>
<td>-65.00</td>
<td>-1.97</td>
</tr>
<tr>
<td>XBX7</td>
<td>187.43</td>
<td>-3.95</td>
<td>-2.06</td>
</tr>
<tr>
<td>GCZ7</td>
<td>665.20</td>
<td>-14.50</td>
<td>-2.13</td>
</tr>
<tr>
<td>CTZ7</td>
<td>58.85</td>
<td>-1.33</td>
<td>-2.21</td>
</tr>
<tr>
<td>CLX7</td>
<td>71.10</td>
<td>-1.73</td>
<td>-2.38</td>
</tr>
<tr>
<td>HOX7</td>
<td>201.55</td>
<td>-4.99</td>
<td>-2.42</td>
</tr>
<tr>
<td>C Z7</td>
<td>336 1/2</td>
<td>-8 3/4</td>
<td>-2.53</td>
</tr>
<tr>
<td>LMNIDS03</td>
<td>26500.0y</td>
<td>-800.0</td>
<td>-2.93</td>
</tr>
<tr>
<td>SBV7</td>
<td>9.16</td>
<td>-0.29</td>
<td>-3.07</td>
</tr>
<tr>
<td>KCZ7</td>
<td>119.30</td>
<td>-3.90</td>
<td>-3.17</td>
</tr>
<tr>
<td>BOZ7</td>
<td>35.27</td>
<td>-1.25</td>
<td>-3.42</td>
</tr>
<tr>
<td>SI7</td>
<td>12.290</td>
<td>-0.445</td>
<td>-3.49</td>
</tr>
<tr>
<td>S X7</td>
<td>821</td>
<td>-33 1/2</td>
<td>-3.92</td>
</tr>
<tr>
<td>HGZ7</td>
<td>314.80</td>
<td>-17.40</td>
<td>-5.24</td>
</tr>
</tbody>
</table>

Source of Data: Bloomberg
Source of Table: Till (2008), Table 15.6.

Global Unwind 16-Aug-07
VIX (Equity Implied Vol)* 31%
Daily Percent Change
Risk Assets
Bovespa (IBX50) -2.11%
Nasdaq -1.01%
Nikkei -1.99%
Silver -8.44%
Copper -7.26%
Gasoline -1.52%
NZD vs. Yen -5.32%

"Safe Haven" Percent Change
Long Bond 0.94%

Crack Spreads (Refinery Margins) Daily Change
Gasoline Crack $1.05
Heat Crack $0.48

* Absolute level of the VIX.
II. Public Policy Governing Commodity Trading

C.2. Public Policy Response: Current Geopolitical Considerations:

[1 of 3]

Graph based on McNally (2012), Figure 4.

Historical and Potential Oil Disruptions

<table>
<thead>
<tr>
<th>Event</th>
<th>Million Barrels Per Day (mb/d)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Suez Crisis (1956-57)</td>
<td>2.0</td>
</tr>
<tr>
<td>Six-Day War (1967)</td>
<td>2.0</td>
</tr>
<tr>
<td>Arab Oil Embargo (1973-74)</td>
<td>4.3</td>
</tr>
<tr>
<td>Iran Revolution (1978-79)</td>
<td>5.6</td>
</tr>
<tr>
<td>Gulf War I (1990-91)</td>
<td>4.1</td>
</tr>
<tr>
<td>Iraq Export Haltus (2001)</td>
<td>4.3</td>
</tr>
<tr>
<td>Venezuelan Strike (2002-03)</td>
<td>2.1</td>
</tr>
<tr>
<td>Gulf War II (2003)</td>
<td>2.5</td>
</tr>
<tr>
<td>Katrina/Rita (2005)</td>
<td>2.3</td>
</tr>
<tr>
<td>Nigeria/Delta Violence (2004)</td>
<td>0.8</td>
</tr>
<tr>
<td>Libya (2011)</td>
<td>1.5</td>
</tr>
<tr>
<td>Potential Iran/Hormuz (2012)</td>
<td>1.7</td>
</tr>
</tbody>
</table>

Author’s Data Sources: IEA, EIA, and author’s calculations.

Ratnesar (2012): “… even a brief closure of the strait [of Hormuz] … might cause oil prices to spike by more than $60 a barrel. ‘It would be the biggest geopolitical disruption in the history of the global oil market’ …”
II. Public Policy Governing Commodity Trading


- U.S. response to a past geopolitical crisis*:

- “January 6, 1980—In an emergency action, the CFTC orders the suspension of futures trading for two days for wheat, corn, oats, soybean meal, and soybean oil on four exchanges after President Carter announces an embargo on the sale of certain agricultural goods to the Soviet Union that includes substantial amounts of grain.” [Italics added.]


Source: http://www.cftc.gov/About/HistoryoftheCFTC/history_1980s
II. Public Policy Governing Commodity Trading

[3 of 3]

• Such an action, while “well-intentioned [was] ... a direct restraint on [a] futures market[’s] free operations and [was] ... intended to override the ability of buyers and sellers in the market to negotiate prices freely.

• Therefore, to the extent that the markets fall short of the economic theory of pure competition, contributing factors ... must also include acts of government and regulatory intervention.” [Italics added.]

Source: Johnson and Hazen (2004).
In reviewing this presentation thus far on intelligent commodity investing and trading, we can say:

I. The macro environment is supportive (for now); and

II. Public policy is reasonably supportive (but is a work-in-progress).

But then how does one proceed with creating an *intelligent commodity program*?

Basically, both portfolio construction *and* risk management are crucial.
III. Portfolio Construction

*Portfolio Construction is Crucial*

A. A Portfolio Effect: The Diversification Return

B. Portfolio of Diversified Strategies

C. Portfolio Construction is a Product Design Issue
III. Portfolio Construction

A. Diversification Return [1 of 4]

• “Returns to portfolios of futures markets depend critically on the weighting schemes and the embedded trading strategy” governing if and when the portfolio is rebalanced.

• Sanders and Irwin show how two assets can have holding period returns of zero, and yet the portfolio of the two assets can have a return that is positive.

Source: Sanders and Irwin (2011).
III. Portfolio Construction

A. *Diversification Return [2 of 4]*

<table>
<thead>
<tr>
<th>Time</th>
<th>Price Asset 1</th>
<th>Price Asset 2</th>
<th>Return Asset 1</th>
<th>Return Asset 2</th>
<th>Equal Weighted Return</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>10</td>
<td>10</td>
<td></td>
<td></td>
<td>150%</td>
</tr>
<tr>
<td>2</td>
<td>20</td>
<td>30</td>
<td>100%</td>
<td>200%</td>
<td>42%</td>
</tr>
<tr>
<td>3</td>
<td>30</td>
<td>40</td>
<td>50%</td>
<td>33%</td>
<td>29%</td>
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<td>33%</td>
<td>25%</td>
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<td>0%</td>
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<tr>
<td>10</td>
<td>10</td>
<td>10</td>
<td>-50%</td>
<td>-50%</td>
<td>-50%</td>
</tr>
</tbody>
</table>

Arithmetic Average: 9% 24% 17%
Geometric Average: 0% 0% 4%

"Diversification Return" = 4%

*Table based on Sanders and Irwin (2011), Table 3.*
III. Portfolio Construction

A. *Diversification Return [3 of 4]*

- In the previous slide, “(t)he two assets have identical initial and terminal values. So, an initially equally-weighted portfolio that is not rebalanced ... would have a return of zero ... [while] the equally-weighted and rebalanced portfolio has a return of 4%.”

- This is a readily understandable example of a “diversification return.”

- This concept was originally described in Erb and Harvey (2006).

Source: Sanders and Irwin (2011).
III. Portfolio Construction

A. Diversification Return [4 of 4]

- This type of return will be higher if one includes a large number of markets that are very volatile and are lowly correlated to each other.

- “Commodity futures returns happen to display ... [these] characteristics ...”

Source: Sanders and Irwin (2011).
III. Portfolio Construction

B. Portfolio of Diversified Strategies [1 of 2]

• “One of the best things about being a commodity manager is the natural internal diversification.”

• “While even unrelated equities have a beta to the overall market, many commodities, such as sugar and aluminum, traditionally have no correlation at all.”

III. Portfolio Construction

B. Portfolio of Diversified Strategies [2 of 2]

Portfolio of Unrelated Commodity Strategies

Source of Graph: Till (2007), Slide 19.
III. Portfolio Construction

[Portfolio Effects Important for Index Construction]

• In garnering positive returns, we noted how it is possible *due to portfolio effects alone*, that a portfolio of futures contracts *could* have a positive return, even if each individual futures contract within the portfolio has a holding-period return of zero.

• This statistical feature is especially relevant for commodity index construction.

• A rebalancing effect was also explained in Greer (2000).
III. Portfolio Construction

C. Portfolio Construction is a Product Design Issue [1 of 1]

• But positive returns are not the only feature of a commodity investment that is desired by an investor in active commodity trading strategies.

• Historically, investors have also expected a long-option-like payoff profile from their futures investments.*

* Appendix III.A. provides examples of strategies that have option-like payoff profiles.

IV. Risk Management*

Like Portfolio Construction, Risk Management is Crucial [1 of 6]

• Many experienced traders have noted how ephemeral trading strategies are, ...

• ... or at least, how all strategies have life-cycles.

• Instead, it is a trader’s risk management methodology that may be what is most enduring.

* The portfolio risk management process includes an effort to monitor and manage risk, but should not be confused with, and does not imply, low risk.

IV. Risk Management

*Risk Management is Crucial [2 of 6]*

- The chart on the next slide illustrates how consistent a strategy of trading natural gas bear calendar spreads was in the spring of 2004 through the spring of 2006.

- A “bear calendar spread” consists of taking a short position in a nearer-month futures contract while simultaneously taking a long position in a later-delivery contract of the same futures market.

*Source: Till (2008).*
IV. Risk Management

Risk Management is Crucial [3 of 6]

![Graph showing Natural Gas Bear-Calendar Spread P/L, 1-Month Horizon, January 2004 through August 2006]

Source of Graph: Till (2008), Figure 15-1.
IV. Risk Management

*Risk Management is Crucial [4 of 6]*

- By early summer 2006, the profitability of this strategy had declined by about half of the performance of the previous two years.

- If the commodity futures trader had responded by doubling up his or her position size (to try to maintain an absolute-return target), ...

- ...then in July and August of 2006, that trader would have sustained losses about twice the size of the trader’s year-to-date profits.

*Source: Till (2008).*
IV. Risk Management

Risk Management is Crucial [5 of 6]

• The significance of such a loss is that when a trader’s risk-and-return results differ dramatically from client and/or prime-broker expectations, ...

• ... this can set off a “critical liquidation cycle”* where client redemptions and/or additional demands for collateral from creditors cause a trader to liquidate positions in a distressed manner, ...

• ... which can then cause further losses that imperil a fund’s survival, as both the fund’s investors and creditors lose faith in the manager. See graphic on next slide.

* The “critical liquidation cycle” is also relevant for companies that engage in large-scale proprietary trading, as we will see in the MF Global case study. A key aspect of the MF Global case was not only that the firm’s customers, investors, and creditors lost faith in the firm, but so did regulators.

IV. Risk Management

Risk Management is Crucial [6 of 6]

*The “critical liquidation cycle” is discussed further in Appendix IV.A.*
IV. Risk Management

A. Risk Management Policies are a Product Design Issue

B. Idiosyncratic Risks

C. Macro Risks

D. Example Risk Report

E. Correlation Footprints

F. Counterparty and Broker Risk
IV. Risk Management

A. Like Portfolio Construction: 
Risk Management Policies are a Product Design Issue [1 of 1]

• A notable feature of commodity markets is that leverage is easy to attain.

• A futures program requires very little margin.

• The result is that a futures trader can easily adjust the program’s leverage level to magnify gains (and losses.)

• With the ability to leverage, a trader must ensure that his or her investors can tolerate the potential within-period losses of the trading program (so as to avoid the “critical liquidation cycle.”)

IV. Risk Management

B. Idiosyncratic Risks [1 of 1]

- Idiosyncratic risks include those unique to a specific commodity market.

- Examples include simulating the impact of the discovery of Mad Cow disease in the U.S. on live cattle futures positions...

- ... as well as examining the impact of the New York harbor freezing over on the price of near-month heating oil futures positions.

IV. Risk Management

C. Macro Risks [1 of 3]

• Macro risks include discovering those risks in the portfolio that can create inadvertent correlations amongst seemingly uncorrelated positions.

• Examples include:

  a. simulating the impact of a 9/11/01 event on a portfolio that is long economically sensitive commodities;

  .

  .

  .

IV. Risk Management

C. Macro Risks [2 of 3]

b. modeling the impact of a sharp episode of a widespread deleveraging of risky investments; and ...

IV. Risk Management

C. Macro Risks [3 of 3]

c. examining the impact of surprisingly cold weather at the end of the winter on a portfolio of energy positions.

![Graph showing Natural Gas March-April 2003 Spread: (Incorporates End-February 2003 Cold Shock)]

Source of Graph: Till (2006b), Figure C-3, Panel B.

IV. Risk Management

D. Example Risk Report:
Measuring How Each Strategy Impacts Portfolio Risk* [1 of 2]

• The next slide shows an example risk report for a commodity portfolio.

• This report shows the Value-at-Risk per strategy as well as each strategy’s worst-case loss during normal times and during “eventful” periods.

• Eventful periods are defined as those times when the financial markets have performed very poorly.

• The report also shows the incremental risk of adding each strategy to the portfolio.

* Appendix IV.B. provides further concrete examples of both strategy-level and portfolio-level risk monitoring.
IV. Risk Management

D. Example Risk Report:
Measuring How Each Strategy Impacts Portfolio Risk [2 of 2]

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Value-At-Risk</th>
<th>Worst-Case Loss During Normal Times</th>
<th>Worst-Case Loss During Eventful Period</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deferred Reverse Soybean Crush Spread</td>
<td>2.78%</td>
<td>-1.09%</td>
<td>-1.42%</td>
</tr>
<tr>
<td>Long Deferred Natural Gas Outright</td>
<td>0.66%</td>
<td>-0.18%</td>
<td>-0.39%</td>
</tr>
<tr>
<td>Short Deferred Wheat Spread</td>
<td>0.56%</td>
<td>-0.80%</td>
<td>-0.19%</td>
</tr>
<tr>
<td>Long Deferred Gasoline Outright</td>
<td>2.16%</td>
<td>-0.94%</td>
<td>-0.95%</td>
</tr>
<tr>
<td>Long Deferred Gasoline vs. Heating Oil Spread</td>
<td>2.15%</td>
<td>-1.04%</td>
<td>-2.22%</td>
</tr>
<tr>
<td>Long Deferred Hog Spread</td>
<td>0.90%</td>
<td>-1.21%</td>
<td>-0.65%</td>
</tr>
<tr>
<td>Portfolio</td>
<td>3.01%</td>
<td>-2.05%</td>
<td>-2.90%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Incremental Contribution to Portfolio Value-At-Risk*</th>
<th>Incremental Contribution to Worst-Case Portfolio Event Risk*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deferred Reverse Soybean Crush Spread</td>
<td>0.08%</td>
<td>-0.24%</td>
</tr>
<tr>
<td>Long Deferred Natural Gas Outright</td>
<td>0.17%</td>
<td>0.19%</td>
</tr>
<tr>
<td>Short Deferred Wheat Spread</td>
<td>0.04%</td>
<td>0.02%</td>
</tr>
<tr>
<td>Long Deferred Gasoline Outright</td>
<td>0.33%</td>
<td>0.81%</td>
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<tr>
<td>Long Deferred Gasoline vs. Heating Oil Spread</td>
<td>0.93%</td>
<td>2.04%</td>
</tr>
<tr>
<td>Long Deferred Hog Spread</td>
<td>0.07%</td>
<td>-0.19%</td>
</tr>
</tbody>
</table>

* A positive contribution means that the strategy adds to risk

Source of Table: Akey, Till and Kins (2006), Table 24-6.
IV. Risk Management

E. Correlation Footprints [1 of 1]

- During the May/June 2006 deleveraging of risky investments, commodities appeared to become the same trade along with other risk assets.

- After the marketplace revealed these correlation footprints, it became wise to temper the amount of leverage applied to long commodity trades, ...

- ... or include other assets in the portfolio that would be expected to do well during a possible deleveraging.

IV. Risk Management

F. Counterparty and Broker Risk [1 of 1]

• Then starting in 2008, it became apparent that the key risk to monitor was how solvent one’s counterparties were.

• This concern became especially relevant for customers of MF Global.
V. The MF Global Collapse*

A. Background on the Firm

B. Overall Narrative

C. Lessons from Collapse (Thus Far)

* The outline of facts in this presentation is based on publicly available information as of 3/18/12. As such, this case study is necessarily incomplete until all relevant legal and regulatory proceedings are carried out and publicly documented.
V. The MF Global Collapse

A. Background on the Firm* [1 of 1]

Diagram based on figure in MF Global (2007), page 33.

* Additional background on the firm is provided in Appendix V.A.
V. The MF Global Collapse

B. Overall Narrative* [1 of 23]

- Prior to the firm’s spin-out from its parent company in 2007, MF Global had been a “dull normal” business.

- During the spin-out of MF Global, the parent company burdened MF Global with (arguably) an enormous short-term debt load, relative to the firm’s profitability.

- The spin-out occurred just before the onset of the Global Financial Crisis, making it uncertain throughout 2008 how the firm would be able to refinance its short-term debt.

* The basis of this narrative is exhaustively covered in Appendix V.B.
V. The MF Global Collapse

B. Overall Narrative [2 of 23]

- The firm’s business model became in jeopardy during the compression of yields available in fixed-income investments.

- The firm had strongly relied on income from the investment of customer collateral for its profitability.

- An FCM is allowed to credit back to customers only a fraction of the income that the FCM earns on customer collateral.
V. The MF Global Collapse

B. Overall Narrative [3 of 23]

• In 2010, the firm hired a CEO, who had a previously successful career in large-scale proprietary trading.

• In Congressional testimony in December 2011, this CEO admitted that he “had little expertise or experience in ... [the] operational aspects of” MF Global.

Source: Corzine (2011).
V. The MF Global Collapse

B. Overall Narrative [4 of 23]

• Although an FCM is technically not allowed to use customer collateral for “its own purposes,” there had been sufficient wiggle room in various CFTC regulations to (arguably) render that proscription almost meaningless.

• An FCM was allowed to borrow from customer funds using “internal repurchase agreements.”*

• In addition, MF Global customer account documents allowed the firm to “rehypothecate” customer funds whereby the broker re-uses collateral posted by clients to back the broker’s own trades and borrowings.

* Bunge and Ackerman (2011): After MF Global’s collapse, in December 2011 “the CFTC banned ... in-house repurchase agreements ...”
V. The MF Global Collapse

B. Overall Narrative [5 of 23]

• Therefore, MF Global would have been technically permitted to use customer funds (as the original source of capital) to collateralize its proprietary trade on five European bond markets.

• An added wrinkle to the story is that when an FCM has a U.K. subsidiary, that FCM can obtain financing for proprietary trading more readily than in the U.S. since in the U.K., there is no statutory limit to the amount of leverage that one can obtain against borrowed collateral through rehypothecation.

• MF Global’s European bond trade was executed through its UK subsidiary.
V. The MF Global Collapse

B. Overall Narrative [6 of 23]

• The firm’s European bond bet *per se* did not cause MF Global’s collapse.

• The bet had been well disclosed in publicly available MF Global documents, and the performance of short-maturity European bonds up until the firm’s collapse had *not* been disastrous.

• At the end of October 2011, in rapid succession, the firm experienced a credit downgrade and announced worst-than-expected earnings, leading investors, clients, and creditors to doubt the sustainability of the firm’s business model.
V. The MF Global Collapse

B. Overall Narrative [7 of 23]

- During the last week of October 2011, the firm chaotically liquidated some of its European bond bet; attempted to meet additional margin calls that resulted from a ratings downgrade; and attempted to meet customer redemptions as clients left the firm *en masse*.

- During this time, a key complication was that MF Global’s clearing bank was quite slow in clearing and settling both the firm’s bond trades and its commercial-paper sales.

- As the week progressed, the firm’s official books and records were eventually not updated.

* Some customers, who had requested wire transfers from their accounts, were instead mailed checks, which then bounced when the customers tried to cash these checks, according to Goldstein (2011).
V. The MF Global Collapse

B. Overall Narrative [8 of 23]

• By the early morning of Monday, October 31st, regulators were losing confidence in the firm when it was unable to reconcile its books and satisfactorily explain a significant shortfall that had been discovered in the firm’s customer segregated accounts.

• At about 2 a.m., “MF Global informed the CFTC and CME that customer money had been transferred out of segregation to firm accounts,”* according to CME Group Executive Chairman Terry Duffy, reported Collins (2012.)

• A potential deal for another firm to buy MF Global Inc. then collapsed, given the shortfall in customer segregated accounts.

* An excerpted version of the CME Group’s timeline of the MF Global collapse is provided in Sub-Appendix V.B.11.
B. Overall Narrative [9 of 23]

- During the morning of October 31\textsuperscript{st}, 2011, the holding company declared bankruptcy; and the Broker-Dealer/Futures Commission Merchant (FCM) subsidiary was forced into liquidation in a Securities Investors Protection Act (SIPA) proceeding.

- At this point, the situation for MF Global futures customers became surprisingly \textit{ad hoc}.

- The unprecedented problem for MF Global’s futures customers was that the firm was put through a liquidation using legal procedures that were designed for securities firms.
V. The MF Global Collapse

B. Overall Narrative [10 of 23]

- The legal procedures, which cover the liquidation of securities firms, can be interpreted such that they conflict with the legal procedures that were designed for the bankruptcy of futures firms. MF Global was regulated by the SEC and by the CFTC.

- That said, there is a credible body of law that futures customers should have priority over all other claimants.
V. The MF Global Collapse

B. Overall Narrative [11 of 23]

• Futures customers of MF Global were caught flat-footed by the MF Global bankruptcy. With the Refco and Lehman bankruptcies, the CFTC and futures exchanges had worked to move futures accounts and customer funds to other FCMs before the FCM was put into bankruptcy.

• [That said, one wrinkle with the Lehman bankruptcy was that the custodial bank holding Lehman customer funds did hold onto these funds for 10 days, according to FIA (2008), rather than immediately transfer funds to the new solvent FCM.]
V. The MF Global Collapse

B. Overall Narrative [12 of 23]

• Like the Refco and Lehman bankruptcies, MF Global customers had assumed that their positions and funds would be moved by regulators and the exchanges to new FCM(s) before an MF Global Inc. bankruptcy was executed.

• This did not happen.

• Instead, starting on Monday, October 31st, 2011, MF Global customers’ funds and futures positions were frozen on and off for days.
V. The MF Global Collapse

B. Overall Narrative [13 of 23]

- In the chaotic aftermath of MF Global’s collapse, two Chicago futures traders quickly and proactively created a grassroots organization to represent the interests of futures customers in ongoing proceedings.

- This *ad hoc* group defended the “basic principles of segregation.”

- Within days of the bankruptcy, the Securities Investor Protection Corporation (SIPC) trustee worked with the CME and the CFTC to (belatedly) move customer positions and some of the margin associated with these accounts to other FCMs.

Source: Collins (2012).
V. The MF Global Collapse

B. Overall Narrative [14 of 23]

- Depending on whether customers had futures positions in their accounts or were all-cash accounts, various customers at first received differing amounts of money during this process.

- A total of three transfers have thus far been made by the trustee.
V. The MF Global Collapse

B. Overall Narrative [15 of 23]

• The SIPC trustee responsible for liquidating MF Global Inc. went through a “steep learning curve regarding futures operations,” according to Collins (2012).

• In November 2011, the CME Group proactively expedited the process of distributions to customers by providing a guarantee eventually totaling $550 million, backstopping the trustee (in case a court would later determine that the trustee had paid out more funds than he was entitled to do so.)

• The CME was the only exchange to provide such a guarantee.
V. The MF Global Collapse

B. Overall Narrative [16 of 23]

- Thus far and after a number of delays, U.S. futures customers have received 72% of their funds back.

- The last transfer was in January 2012.

- As of 3/15/12, the MF Global Inc. Trustee had proposed expanding payouts to 82% of customer property.

- In addition, two European banks offered to buy customer claims for 90 to 91% of face value.
V. The MF Global Collapse

B. Overall Narrative [17 of 23]

- What explains the shortfall in customer segregated funds at MF Global?

- One controversial report by Patterson and Lucchetti (2012) stated that some of MF Global’s customer funds may have simply “vaporized.”

- This is the worst explanation yet of the shortfall.
V. The MF Global Collapse

B. Overall Narrative [18 of 23]

• Were MF Global customer funds ultimately used to meet MF Global’s margin calls for its European bond trade?

• And if so, was this inadvertent?

• And if this happened, purposefully or accidentally, can these funds be legally clawed back for customers?*

* Steinberg and Lucchetti (2012): As of 3/21/12, the assistant treasurer at MF Global continued to work “for the bankruptcy trustee trying to recover money for MF Global customers ...”
V. The MF Global Collapse

B. Overall Narrative [19 of 23]

• If MF Global did draw on customer segregated funds to help meet margin calls, in the aftermath of the credit downgrade, did the firm expect that funds from its rapid-fire bond sales and commercial paper sales would replenish the customer segregated accounts by the end of each trading day?

• Was the cash from the firm’s bond sales and commercial paper sales ultimately not routed to MF Global by the firm’s clearing bank?

• If the funds were not routed to MF Global, did the bank have a firm legal basis for not doing so?
V. The MF Global Collapse

B. Overall Narrative [20 of 23]

- If MF Global did use customer segregated funds to meet margin calls, expecting the customer segregation deficiency to be cured by the end of the trading day, one would expect that this fact would still be a serious violation of laws governing commodity brokers.

- MF Global held both its own funds and customer funds in one bank account.

- The firm kept track of how much of the funds were proprietary versus how much belonged to customers through a spreadsheet.
V. The MF Global Collapse

B. Overall Narrative [21 of 23]

• If the use of customer funds to meet margin calls turns out to be accidental, does this lessen the severity of the breach of laws governing commodity brokers?

• If customer funds were ultimately used as collateral for the European bond trade, were (or will) these funds (be) recovered, with some haircut, in the aftermath of the distressed unwind of the leveraged European bond trades?

• The authoritative answers to these questions will have to wait until all of MF Global’s money flows from its final week in operation are made public.
V. The MF Global Collapse

B. Overall Narrative [22 of 23]

• After a substantial delay, the trustee for MF Global Inc. did recognize the primacy of customer segregated funds in a liquidation.

• But the judge overseeing MF Global’s bankruptcy rejected a claim that segregated-account funds should have a first priority in the estate of MF Global Holdings Ltd., the parent company.

• The trustee of the holding company also does not view segregated accounts as having a first priority on the holding company’s estate.

Sources: Collins (2012) and Fitzgerald (2012).
V. The MF Global Collapse

B. Overall Narrative [23 of 23]

• U.S. futures industry participants continue to be “baffled” by the regulatory decision to put futures customers through a legal process designed for securities customers.

• This is also the subject of an inquiry by a U.S. Congressman, as noted in Grimm (2012).
V. The MF Global Collapse

C. Lessons [1 of 4]

The lessons from the MF Global collapse are as follows:

[1] Futures customers can lose some or all of their collateral during the collapse of an FCM;

[2] All futures customers should do their own due diligence on the credit worthiness of their FCM;

[3] Futures customers should also do due diligence on the FCM’s bank(s) since the behavior of the bank during a time of financial distress can be key during a crisis;
V. The MF Global Collapse

C. Lessons [2 of 4]

[4] Futures customers should familiarize themselves and be comfortable with how their funds are being invested by their FCM*;

[5] A governmental or self-regulatory body should receive direct reports from custodial banks that hold futures customer margin;

* For example, one Chicago-based FCM announced in December 2011 that starting at that time, clients would be able to see how their customer segregated funds were invested on the FCM’s website, according to RCG – Customer Care (2011).
V. The MF Global Collapse

C. Lessons [3 of 4]

[6] Futures customers should support efforts to reform U.S. bankruptcy laws so that the primacy of customer segregated funds is unambiguous during an FCM bankruptcy;*

[7] Alternatively, futures customers should lobby for insurance coverage, as is available for securities investors under SIPA;

* Weitzman (2012): “There will definitely be statutory changes in regards to customer protections,’ said Jill Sommers, a commissioner at the Commodity Futures Trading Commission ....”
V. The MF Global Collapse

C. Lessons [4 of 4]

[8] Unlike how the MF Global collapse was handled by regulators, the correct process for handling the collapse of an FCM should be as follows, directly quoting Collins (2012):

[i] Move the accounts;
[ii] Move the money on hand;
[iii] Demand the money from the responsible parties; and
[iv] Then handle the failure of the firm; and

[9] As occurred in 2008, during times of widespread financial stress, assumed legal protections can potentially be tested, and become themselves quite stressed.
Successfully navigating commodity market challenges relies on:

1. knowledge of political history,
2. market risk-management principles,
3. quantitative techniques,
4. fundamental analysis,
5. counterparty risks, and
6. the legal framework underlying commodity futures trading.

In summary, these are the keys to intelligent commodity investing and trading, which now includes the last point.

Source: Till (2011a).
Appendix I.A.
Commodities in a Low Interest Rate Environment

Global Interest Rate Gap [1 of 2]

• The global interest rate gap “is the weighted average of the interest rate gap in each country with its corresponding GDP used as the weight.

• The interest rate gap itself denotes the difference between the real interest rate, defined as the nominal short-term interest rate minus headline CPI inflation, and the potential growth rate of an economy.

• ... if the interest rate gap is negative, it means that the financial condition is lax, as the real interest rate is lower than the potential growth rate.”

Source: Inamura et al. (2011).
Appendix I.A.
Commodities in a Low Interest Rate Environment

Global Interest Rate Gap [2 of 2]

- “Global monetary conditions remain highly accommodative, irrespective of whether measured as [the] global interest rate gap or [as the] global growth of the money stock M1.”

Appendix I.B.
Commodities in a Low Interest Rate Environment

*Definition of the Credit Suisse Fear Barometer [1 of 1]*

- “The Credit Suisse Fear Barometer prices a zero-premium collar [on the S&P 500] to monitor investor fear.”

- “The number represented by the index prices a zero-premium collar to answer the question: ‘If one were willing to forgo all upside returns in excess of 10%, what is the deductible one must assume before an S&P portfolio can be fully insured?’”

Source: Tom (2010).
Appendix II.A.
Public Policy Governing Commodity Trading

The Price of Grain in Western Europe [1 of 2]

Graph based on Fischer (1996), Figure 0.02.
Appendix II.A.
Public Policy Governing Commodity Trading

The Price of Grain in Western Europe [2 of 2]

- According to Fischer, the figure on the previous slide “represents decennial movements in the price of grain ... from 1201 to 1960. It includes wheat in England, France, and Italy; and rye ... in Germany. Prices are decennial means, converted to silver equivalents (grams of pure silver per 100 kilograms of grain).

Appendix II.B.
Public Policy Governing Commodity Trading

Public Policy Response: Normal State-of-the-World [1 of 1]

The Deputy Governor of the Bank of Canada noted:

• The actions of speculators “permit the maintenance of active, liquid markets for hedging and assist the price-discovery process, making the system more efficient and stable.”

• “Similar, if not larger, [price] spikes were witnessed during the Great Depression and the tumultuous 1970s and 1980s.”

Appendix III.A. Portfolio Construction

*Portfolio Construction is a Product Design Issue*

1. Short-Option-Like Trades
2. Long-Option-Like Trades
Appendix III.A.
Portfolio Construction

1. Portfolio Construction is a Product Design Issue: Short Option Like Trades [1 of 3]

- If investors want consistent returns with the rare chance of very large losses, ...

- ... they can already do so by investing in arbitrage strategies, which have short-option-like payoff profiles.

Appendix III.A.
Portfolio Construction

1. Portfolio Construction is a Product Design Issue: Short-Option-Like Trades [2 of 3]

- Some opportunities in the commodity futures markets have short-option-like payoff profiles. One example is weather-fear premia strategies.

- In these trades, which can be found in the grain, tropical, and natural gas futures markets, a future price is systematically priced too high relative to where it eventually matures.

Appendix III.A.
Portfolio Construction

1. Portfolio Construction is a Product Design Issue: Short-Option-Like Trades [3 of 3]

- Over long periods of time, it has been profitable to be short these commodity markets during the time of maximum weather uncertainty.

- But during rare instances, these strategies can have very large losses, which create classic short-option-like profiles.

Appendix III.A.
Portfolio Construction

[Portfolio Construction is a Product Design Issue]

• If one includes short-option-like strategies in an absolute-return futures program, ...

• ... then the sizing of these trades needs to be reduced compared to the sizing of trades with long-option-like profiles in order to preserve the program’s overall long optionality.

Appendix III.A.
Portfolio Construction

2. *Portfolio Construction is a Product Design Issue: Long-Option-Like Trades* [1 of 3]

- Some commodities are difficult-to-store.

- These markets have a tendency to experience periodic mini-price spikes since their inventories tend to be relatively low compared to typical demand.

- If there is any miscalculation in demand or supply, one cannot draw from negative storage so the only lever that can balance supply and demand is price, which can move violently upwards.

Appendix III.A.
Portfolio Construction

2. *Portfolio Construction is a Product Design Issue: Long-Option-Like Trades [2 of 3]*

*Graph based on Heap and Price (2006), Figure 13.*
Appendix III.A.
Portfolio Construction

2. *Portfolio Construction is a Product Design Issue: Long-Option-Like Trades [3 of 3]*

- As a result, long positions in difficult-to-store commodities tend to have long-option-like payoff profiles.

- These are markets whose sizing needs to be sufficiently large to provide the overall portfolio with its long optionality.

Appendix IV.A.
Risk Management

Critical Liquidation Cycle [1 of 2]

- De Souza (2003) has formally modeled the probability of a fund being at risk to concentrated liquidation pressure.
- Given a fund’s expected return, volatility, and latest high watermark, there is some threshold negative performance level at which a cycle of redemptions starts to occur, which leads to more redemptions, which then puts the fund’s survival at risk.
- The market extracts a premium from a fund in distress.

Appendix IV.A.
Risk Management

Critical Liquidation Cycle [2 of 2]

- One can calculate the probability of a fund entering into a “critical liquidation cycle” based on how far away the current Net Asset Value is from the threshold negative performance or “barrier” level, normalized by the fund’s return and volatility.

- De Souza uses the mathematics of barrier option pricing to come up with this probability.

Appendix IV.B. Risk Management

Strategy-Level and Portfolio-Level Risks

1. Strategy-Level Risks
   a. Beta Risk
   b. Extreme Weather Risk
   c. Structural Break Monitoring

2. Portfolio-Level Risks
   a. Rolling Value-at-Risk
   b. Inadvertent Concentration Risk
Appendix IV.B.  
Risk Management

1.a. Strategy-Level Risks: Beta Risk [1 of 2]

• The next slide provides an example of evaluating a portfolio’s sensitivity to a commodity market, specifically in this case, the gasoline market.

• A commodity manager may have limits on the amount of exposure to the outright direction of an individual commodity market, ...

• ... especially if that manager specializes in relative-value trades.


Energy-Focused Portfolio’s P/L vs. Changes in Gasoline Futures Contract’s Value for an Unleveraged $1-Million Portfolio (2/1/05 to 3/10/05)

Source of Graph: Akey, Till and Kins (2006), Figure 24-2.
Appendix IV.B.
Risk Management


- The next slide shows an example of monitoring the potential for extremely cold weather to cause a near stock-out in storage for natural gas.

- When U.S. natural gas storage inventories have been drawn down to uncomfortably low levels at the end of winter, the natural gas price has historically responded by exploding.

Appendix IV.B. 
Risk Management


Source of Graph: Akey, Till and Kins (2006), Figure 24-4.
Appendix IV.B.
Risk Management

1.c. Strategy-Level Risks: Structural Break Monitoring [1 of 3]

- One reasonably reliable strategy had been to expect that deferred-month crude oil futures would outperform deferred-month heating oil futures from the beginning of the year through the summer.

![Change in September Crude vs. September Heating Oil Spread](source)

Source: Till (2006a), Figure 3.
Appendix IV.B. Risk Management

1.c. Strategy-Level Risks: Structural Break Monitoring [2 of 3]

- A commodity program will not experience the full brunt of a structural break [from the past] if one exits a trading strategy after experiencing losses that are greater than those in one’s historical data set.

Appendix IV.B.
Risk Management

1.c. Strategy-Level Risks: Structural Break Monitoring [3 of 3]

- In this example, note that the losses in the crude-versus-heat spread far exceeded the previous worst-case losses, which were illustrated in the previous slide.

Source of Graph: Till (2006a), Figure 5.
Appendix IV.B.
Risk Management

2.a. Portfolio-Level Risks: Rolling Value-at-Risk [1 of 2]

- The next slide shows an ongoing analysis of the Value-at-Risk (VaR) of a portfolio during a time of intense uncertainty in the energy markets.

- In examining VaR, a commodity manager attempts to ensure that a portfolio’s positions have not been sized so large that he or she (and the program’s clients) cannot sustain the random fluctuations in profits and losses that might ensue.

Appendix IV.B. 
Risk Management

2.a. Portfolio-Level Risks: Rolling Value-at-Risk [2 of 2]

- As this exhibit shows, VaR is, at times, not a static number in the very dynamic commodity (and specifically the energy) futures markets.

Source of Graph: Akey, Till and Kins (2006), Figure 24-1.
Appendix IV.B.
Risk Management

2.b. Portfolio-Level Risks: Inadvertent Concentration Risk [1 of 2]

• The next slide provides an example of inadvertent concentration risk.

• If a manager had invested in corn and electricity futures contracts during July 1999, that manager would have indeed doubled up on risk.

Appendix IV.B. 
Risk Management

2.b. Portfolio-Level Risks: Inadvertent Concentration Risk [2 of 2]

Source of Graph: Akey, Till and Kins (2006), Figure 24-3.
Appendix V.A.
MF Global Collapse

Background on the Firm [1 of 4]

Prior to its bankruptcy on October 31st, 2011, MF Global Holdings Ltd. provided:

• “execution and clearing services for exchange-traded and OTC derivatives products,

• non-derivative foreign exchange products, and

• securities in the cash market.”

Source: The Bloomberg.
Appendix V.A.
MF Global Collapse

Background on the Firm [2 of 4]

The firm noted that its “worldwide client base of more than 130,000 active accounts ... [included:]

- financial institutions,
- industrial groups,
- hedge funds,
- [...] unleveraged] asset managers, ...
- professional traders, and
- private/retail clients.

[The firm] ... operate[d] in 12 countries on more than 70 exchanges ...”

Source: MF Global (2008a).
Appendix V.A.
MF Global Collapse

Background on the Firm [3 of 4]

• Some of the company’s subsidiaries were “registered Futures Commission Merchants, broker-dealers or local equivalents, and

• accordingly ... [were] subject to the capital rules of the CFTC, the SEC, [the] principal exchanges of which they are a member, and other local regulatory bodies.”

Appendix V.A.
MF Global Collapse

Background on the Firm [4 of 4]

• “Although a niche player on Wall Street, MF Global was a force on the Chicago Mercantile Exchange.

• It had 3 million futures and options positions with a notional value of more than $100 billion.

• Its customers made up 28 per cent of the trading volume on the CME.”

Appendix V.B.
MF Global Collapse

MF Global Case Study

2. Warning Signs (2010-2011)
3. Exact Nature of Futures Customer Protections
4. Chaotic Final Week of MF Global
5. Ad Hoc Aftermath
Appendix V.B.
MF Global Collapse

   a. Aftermath of Spin-Out
   b. Profitability of Firm
   c. Net Excess Regulatory Capital
   d. Rogue Wheat Trade
   e. MF Global Stock Price Compared to Refco’s
   f. Macro Context: Debt Market Difficulties
Appendix V.B.
MF Global Collapse

1.a. Aftermath of Spin-Out [1 of 5]

• The Man Group spun-out MF Global Holdings Ltd. as an independent company in July 2007.

• MF Global Holdings’ stock price declined 8% on its first day of trading on July 19, 2007.
Appendix V.B.
MF Global Collapse

1.a. Aftermath of Spin-Out [2 of 5]

- “The launch of Man Group’s [Initial Public Offering] ... for MF Global has been disappointing ...”

- “Investors don’t like the structure of the deal, which sends all the IPO proceeds to the Man Group ...”

- “‘It’s an 80% bailout, not including the concurrent $1.4 billion debt offering that went back to the parent. And that comes after a soft two quarters for their business.’” [Italics added.]

Appendix V.B. MF Global Collapse

1.a. Aftermath of Spin-Out [3 of 5]

i. Short-Term Debt

ii. Status of Chief Financial Officer
1. a. i. Aftermath of Spin-Out: Short-Term Debt* [4 of 5]

Excerpted from MF Global Ltd. Form 10-Q as of December 31, 2007:

<table>
<thead>
<tr>
<th></th>
<th>December 31, 2007</th>
<th>March 31, 2007</th>
</tr>
</thead>
<tbody>
<tr>
<td>364-Day Bridge Facility</td>
<td>$ 1,400,000</td>
<td>$ -</td>
</tr>
<tr>
<td>Other short-term borrowings</td>
<td>$ 400,000</td>
<td></td>
</tr>
<tr>
<td>Bank overdrafts</td>
<td>$ 73,672</td>
<td>$ 25,453</td>
</tr>
<tr>
<td>Current portion of long-term borrowings</td>
<td>$ 56,552</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>$ 1,873,672</td>
<td>$ 82,005</td>
</tr>
</tbody>
</table>

* This amount of debt could be considered to be quite large, given the expected future profitability of the firm. Details on MF Global’s short-term borrowings are provided in Sub-Appendix V.B.1.
NEW YORK--(BUSINESS WIRE)--January 04, 2008

• “MF Global Ltd. (NYSE: MF) ... announced [the resignation of its] chief financial officer and a director of the company to pursue other opportunities. The Board of Directors named ... [an] interim chief financial officer. ... 

• [The former CFO had] joined the company in September 2006 from the New York Stock Exchange to bring the company public and assist in its transition to U.S. reporting standards.”

Appendix V.B.
MF Global Collapse

1.b. Profitability of Firm [1 of 1]

Excerpted from MF Global Ltd. Form 10-Q as of December 31, 2007:

<table>
<thead>
<tr>
<th>MF GLOBAL LTD.</th>
<th>CONSOLIDATED AND COMBINED STATEMENTS OF COMPREHENSIVE INCOME (Unaudited)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(Dollars in thousands, except share data)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Three months ended December 31, 2007</th>
<th>Nine months ended December 31, 2007</th>
</tr>
</thead>
<tbody>
<tr>
<td>Net Income</td>
<td>$ 31,218</td>
<td>$ 13,523</td>
</tr>
<tr>
<td></td>
<td>$ 55,432</td>
<td>$ 111,937</td>
</tr>
<tr>
<td>Other comprehensive income adjustments:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Changes in market value of available for sale securities (net of $14,537 tax)</td>
<td>-</td>
<td>24,558</td>
</tr>
<tr>
<td>Unrealized losses on cash flow hedges (net of $9,279 and $12,197 tax, respectively)</td>
<td>(13,354)</td>
<td>(17,551)</td>
</tr>
<tr>
<td>Foreign currency translation adjustment</td>
<td>(68)</td>
<td>3,045</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Comprehensive income</td>
<td>$ 17,796</td>
<td>$ 799</td>
</tr>
<tr>
<td></td>
<td>$ 58,477</td>
<td>$ 140,190</td>
</tr>
</tbody>
</table>
Appendix V.B.
MF Global Collapse

1.c. Net Excess Regulatory Capital [1 of 2]

- One of MF Global Holdings’ US operating subsidiaries was MF Global Inc., which was a CFTC-registered Futures Commission Merchant (FCM).

- MF Global Inc., in turn, was formerly known as Man Financial Inc. before the spin-out by the Man Group.

- The Commodity Futures Trading Commission (CFTC) provides monthly reports on the financial condition of all FCMs.

- See next slide for excerpted CFTC data on MF Global.
### Appendix V.B.

#### MF Global Collapse

1.c. Net Excess Regulatory Capital [2 of 2]

<table>
<thead>
<tr>
<th>Date</th>
<th>Adjusted Net Capital</th>
<th>Adjusted Net Capital Requirement</th>
<th>Excess Required Segregated Funds*</th>
<th>Excess Net Capital / Customer Funds</th>
</tr>
</thead>
<tbody>
<tr>
<td>05/31/2007</td>
<td>581,103,464</td>
<td>$402,913,253</td>
<td>$178,190,211</td>
<td>$8,384,461,426</td>
</tr>
<tr>
<td>06/30/2007</td>
<td>605,217,511</td>
<td>$364,381,766</td>
<td>$240,835,745</td>
<td>$8,235,595,803</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10/31/2007</td>
<td>535,142,778</td>
<td>$427,261,012</td>
<td>$107,881,766</td>
<td>$9,929,407,496</td>
</tr>
<tr>
<td>11/30/2007</td>
<td>645,473,966</td>
<td>$414,600,708</td>
<td>$230,873,258</td>
<td>$9,889,773,129</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| 02/29/2008 | 640,913,963          | $509,842,535                      | $131,071,428                      | $13,007,347,859                     | 1.0%                                |<-- 6th Lowest Ratio Amongst 151 FCMs
| 03/31/2008 | 771,268,907          | $417,502,089                      | $353,766,818                      | $9,664,866,771                      | 3.7%                                |<-- 26% Drop in Customer Segregated Funds
|            |                      |                                   |                                   |                                     |                                     |
| 05/31/2008 | 782,299,749          | $443,840,666                      | $338,459,083                      | $9,664,731,983                      | 3.5%                                |<-- On 6/13/08, company announces** plan to refinance $1.4 billion bridge loan. This includes using "excess funds."
| 06/30/2008 | 608,963,888          | $456,329,713                      | 152,634,175                       | $10,566,911,049                     | 1.4%                                |
|            |                      |                                   |                                   |                                     |                                     |
| 08/31/2011 | 495,665,616          | $328,485,943                      | $167,179,673                      | $7,270,301,248                      | 2.3%                                |

Data Source: The CFTC monthly reports on “Financial Data for FCMs,”*** which is accessible at: [http://www.cftc.gov/MarketReports/FinancialDataforFCMs/index.htm](http://www.cftc.gov/MarketReports/FinancialDataforFCMs/index.htm).

* These figures only include funds “required” to cover margins. As of February 2012, the CFTC now also releases the total assets in customer accounts, according to Prezioso (2012).

** Source: MF Global (2008b).

*** Sub-Appendix V.B.2. provides an explanation of the “Financial Data for FCMs” report.
1.d. Rogue Wheat Trade [1 of 3]

- On February 28th, 2008, MF Global Inc. revealed a $141.5-million loss from a wheat-futures trading position taken by one of its registered representatives for the representative’s proprietary (own) account.

- The clearing firm did not have automatic limits in the sizing of futures trades executed electronically, when the operator was a registered representative of the firm.

- “The risk systems were not active at the times, because they ‘slowed’ transactions.”

Appendix V.B.
MF Global Collapse

1.d. Rogue Wheat Trade [2 of 3]

• One day later, “Credit rating agency Moody’s Investors Services ... downgraded the long-term issuer rating of MF Global Ltd ...”

Intraday Stock Price Changes for MF Global from 2/27/08 to 2/29/08:
A Cumulative Drop of -40%

Source: The Bloomberg.

1.d. Rogue Wheat Trade [3 of 3]

- “The failure of MF Global to have sufficient systems in place to block such trades ‘represents a serious breakdown of risk controls,’ Moody’s said ...”, in announcing a ratings downgrade for the firm.

- “The ratings cut also was partially the result of MF Global being unable to refinance $1.4 billion in bridge loans with permanent long-term capital.” [Italics added.]
Appendix V.B.
MF Global Collapse

1.e. MF Global Stock Price Compared to Refco’s [1 of 1]

Illustration of Refco’s stock price when accounting fraud was revealed at this publicly traded brokerage, which declared bankruptcy soon thereafter.

Source of Data: The Bloomberg.

MF Global’s cumulative stock price decline eventually mirrored the quick drop in Refco’s stock price, but over a longer timeframe. Sub-Appendix V.B.3. provides a discussion of the MF Global stock-price changes that occurred on 3/17/08, 4/3/08, and 6/18/08.

Source of Data: The Bloomberg.
Appendix V.B.
MF Global Collapse

[MF Global Stock Price Until Bankruptcy]

MF Global’s stock price essentially never recovered from the levels of the summer of 2008.

Source of Data: The Bloomberg.
1.f. Macro Context: Debt Market Difficulties [1 of 2]

- Caballero et al. (2008) described how in mid-2007, "funding dried up for entire segments of the U.S. and international banking sector ... leading to major convulsions of credit and money markets ..." [Italics added.]

- Credit Suisse’s ex-CEO, Oswald Gruebel stated in late April 2008 that the international financial system had come close to the brink in mid-March-2008.

- According to Thompson (2008), Gruebel noted that fortunately, the Federal Reserve Board and the European Central Bank realized this, and on a de facto basis took over the inter-bank market. “We’ve narrowly escaped a system collapse. This has never happened before.”
Appendix V.B.
MF Global Collapse


- At that point, there were historic government bail-outs of distressed financial institutions, globally, leading market participants to wonder which entities would be saved, and which wouldn’t.

- As a result, it became a good idea to understand the legal protections for futures customers during a financial firm’s bankruptcy (or liquidation).
Appendix V.B.
MF Global Collapse

2. **Warning Signs (2010-2011)**

   a. Major Shift in Business Strategy

   b. Large-Scale Proprietary Trading

   c. Replacement of Risk Manager
2.a. Major Shift in Business Strategy [1 of 3]

- MF Global brought in a new Chairman and Chief Executive Officer in March 2010.

- In MF Global’s 2011 Annual Report, the CEO noted:
  
  - The new strategy is to transform “MF Global from a futures and options broker to a commodities and capital markets-driven investment bank ...”

Source: MF Global (2011a).
Appendix V.B.
MF Global Collapse


• “‘Taking a broker and making it into an investment bank is an utter impossibility,’ says the head of one rival firm.

• ‘They ... [did] not have the deep culture that Goldman has of handling risk.

• You cannot leap with a single bound into proprietary trading and hope to survive intact.’”


- On February 2, 2012, the head of Rapid Ratings International testified at a Congressional hearing, stating that the head of MF Global had “inherited an unhealthy company and made it worse by some high-stakes gambles.”

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Net (loss)/ income attributable to MF Global Holdings Ltd.</td>
<td>$(81.20)</td>
<td>$(137.00)</td>
<td>$(49.10)</td>
<td>$(69.50)</td>
<td>$188.00</td>
</tr>
</tbody>
</table>


- The “high-stakes gambles” will be covered in the next slides.

*Source: O’Toole (2012).*
2.b. Large-Scale Proprietary Trading

- The Rapid Ratings chief also “noted in his testimony that MF Global’s business model had been deteriorating for several years prior to its failure, ...

  ... and that the new risks in European strategy only made its situation more precarious.”

- MF Global’s “biggest source of revenue was interest earned on money held for ... [MF Global’s customers, who traded] futures and options. That was shrinking as rates fell.”

Appendix V.B.  
MF Global Collapse

2.b. Large-Scale Proprietary Trading

i. 10-K Disclosure in SEC filing, dated 5/20/11, for the fiscal year ended 3/31/11

ii. KPMG Special Administrator Report

iii. Enhanced Yields from Short-Maturity European Bonds

iii. Source of Capital for the Collateralization of the European Bond Bet
2.b.i. Large-Scale Proprietary Trading: 10-K Disclosure [1 of 4]

- MF Global’s Form 10-K documented the risks of their leveraged European debt strategy as follows*:

- “Many of our principal transactions depend on external funding and financing and we also depend on third parties to monetize our gains from principal trading.”

* The fact that MF Global’s proprietary trades were well-documented in the company’s 10-K was pointed out by Tavakoli (2011).
Appendix V.B.
MF Global Collapse

2.b.i. Large-Scale Proprietary Trading: 10-K Disclosure [2 of 4]

• “Our ability to earn the returns that we expect in connection with our principal transactions, including our proprietary activities, depends on our ability to fund and finance these transactions through internal and external sources.

• ... both funding and liquidity restrictions can result in significant losses for the firm.”

Source: MF Global (2011b).
Appendix V.B.  
MF Global Collapse

2.b.i. Large-Scale Proprietary Trading: 10-K Disclosure [3 of 4]

• “... as of March 31, 2011, we maintained an inventory of European sovereign indebtedness, which we financed using repo-to-maturity transactions;

• to the extent that the value of these investments decreased due to a ratings change with respect to the issuer’s long term indebtedness, ...

• ... we would likely be required to furnish additional margin to our counterparty.”

• [“MF Global said it was seeking to profit from the difference between the yield it received on the European bonds and the interest rates it paid under the repurchase agreements,” according to Kary (2011).]

Source: MF Global (2011b).
Appendix V.B.
MF Global Collapse

2.b.i. Large-Scale Proprietary Trading: 10-K Disclosure [4 of 4]

• “The ... sovereign obligations referenced ... [here] are issued by a group of western European countries, consisting of Italy, Spain, Belgium, Portugal and Ireland, which have a weighted average maturity of April 2012 and a final maturity of December 2012. ...”

• The entire portfolio matures by December 2012, which is prior to the expiration of the European Financial Stability Facility.”

• This portfolio totaled $6.3 billion in notional value.

Source: MF Global (2011b).
Appendix V.B.
MF Global Collapse

[Large-Scale Proprietary Trading]

- “That tally is more than double the Euro-zone exposures of Morgan Stanley and Goldman Sachs combined.”

- Further, MF Global had “piled up 2007-like leverage of nearly $33 for every dollar of equity” it held.

Source: Decambre (2011).
2.b.ii. Large-Scale Proprietary Trading: KPMG Special Administrator Report [1 of 3]

- The European sovereign debt trades were carried out through MF Global’s UK subsidiary, as described in the next slide.

- “The MF Global Holdings Group, through MFG Inc, a US regulated affiliate, had significant exposure to European sovereign debt under trades known as ‘repo to maturity’ or ‘RTM’ trades.”

2.b.ii. Large-Scale Proprietary Trading:
KPMG Special Administrator Report [2 of 3]

• “While MFG Inc was the principal on these trades, [MF Global UK Limited] ... intermediated in these trades with the European repo counterparties and ... 

• ... was liable to meet any margin calls made by the counterparties in respect of those trades.

• In the normal course, ... [MF Global UK Limited] would expect to be put in funds [i.e., reimbursed] by MFG Inc. for such margin.”

Appendix V.B.
MF Global Collapse

2.b.ii. Large-Scale Proprietary Trading:
KPMG Special Administrator Report [3 of 3]

• [MF Global UK Limited] “provided [the] repo financing” to MFG Inc in order for MFG to fund its outright bond positions through repo to maturity (RTM) trades …”

• [According to Ritholtz (2011), “In Britain, there is no limit to the amount of leverage against borrowed collateral through rehypothecation.”]

• As of 10/31/11, “the total outstanding RTM notional was approximately $6.3 billion and collateral of approximately $720 million was held by repo counterparties.”

2.b.iii. Large-Scale Proprietary Trading: Enhanced Yields [1 of 3]

- “Revenue from the [leveraged] European sovereign trades was about $47 million during the fiscal fourth quarter ended March 31 [2011], ...

- ... and $38 million ... in the following quarter, ... [according to] an October [2011] investment presentation.”

2.b.iii. Large-Scale Proprietary Trading: Enhanced Yields [2 of 3]

• On the financed $6.3 billion portfolio, the quarterly earnings imply that MF Global had been earning a 2.7% spread between the income from its European sovereign debt portfolio and the rate at which MF Global was effectively charged for borrowing sufficient sums to be able to purchase this portfolio.

• The next slides show the enhanced yields available on short-dated European sovereign bonds, as of 3/31/11.
### Appendix V.B.
### MF Global Collapse

#### 2.b.iii. Large-Scale Proprietary Trading: Enhanced Yields [3 of 3]

<table>
<thead>
<tr>
<th>Issuer</th>
<th>Coupon</th>
<th>Maturity</th>
<th>First Settlement Date</th>
<th>Yield of 3/31/11</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spanish Government</td>
<td>2.75%</td>
<td>4/30/2012</td>
<td>1/13/2009</td>
<td>2.36%</td>
</tr>
<tr>
<td>Italian Government</td>
<td>4.00%</td>
<td>4/15/2012</td>
<td>4/15/2007</td>
<td>2.02%</td>
</tr>
<tr>
<td>Portuguese Government**</td>
<td>5.00%</td>
<td>6/15/2012</td>
<td>2/13/2002</td>
<td>6.36%</td>
</tr>
</tbody>
</table>

* Data Source: The Bloomberg.  
** Equally-Weighted Blended Yield: 3.74%

---

Yield of Generic 6-Month US Treasury Bills (as of 3/31/11): 0.17%

---

* This table of European bonds is not an exact representation of MF Global's 2011 portfolio. Instead, the table is meant to illustrate the enhanced yields available from short-maturity European debt that had been available as compared to US Treasury Bills, as of 3/31/11.

** For example, MF Global (2011b) states that their "Portugal and Ireland [bonds] carry a weighted average maturity of February 2012." Instead, the table shows the yields for Portuguese and Irish bonds that have slightly longer maturities than the bonds likely held by MF Global.
According to KPMG (2011), MF Global was required to put up $720 million in collateral (or 11.4% of the value of the portfolio) in order to be able to enter into this financed transaction.

Because CFTC rules had allowed “internal repurchase” transactions by FCMs and because MF Global’s customer agreements had explicitly allowed rehypothecation of customer collateral, at least some of the $720 million held by MF Global’s counterparties as collateral for the European debt trade ...

... _may_ have ultimately originated from U.S. and/or U.K. customer funds.
Appendix V.B.
MF Global Collapse

2.c. Replacement of Risk Manager [1 of 2]

• “MF Global Holdings Ltd.’s executive in charge of controlling risks raised serious concerns several times ... [in 2010] to directors at the securities firm about the growing bet on European bonds by” the head of the firm.

• The Chief Risk Officer “contended MF Global didn’t have enough spare cash to withstand the risk of its position in bonds of Italy, Spain, Portugal, Ireland and Belgium.

Source: Lucchetti and Steinberg (2011).
Appendix V.B.
MF Global Collapse

2.c. Replacement of Risk Manager [2 of 2]

• The risk manager also presented ... [negative] hypothetical scenarios of what could happen if MF Global’s credit rating was downgraded because of the exposure.”

• “In January [2011], ... [the risk officer] was notified by MF Global that he would be replaced by a new chief risk officer.

• He left in March [2011] after helping with the transition to his successor.”

Source: Lucchetti and Steinberg (2011).
Appendix V.B.  
MF Global Collapse

3. *Exact Nature of Customer Protections in the Futures Markets*

a. Financial Safeguards are for the Clearing System

b. Customer Protections

c. “Bankruptcy Pitfalls for Dually-Licensed Brokerage Firms”

d. Wide Latitude for Investment of Customer Funds (were permitted before MF Global’s collapse)
3.a. Financial Safeguards are for the Clearing System [1 of 3]

- For every transaction received by or matched through its facilities, CME Clearing is substituted as the counterparty, guaranteeing performance on the opposite side.

3.a. Financial Safeguards are for the Clearing System [2 of 3]

- “The risk management and financial surveillance techniques are designed to:
  
  - Allow swift and appropriate action to be taken to rectify any financial problems and protect the clearing system; and

  - Prevent the accumulation of losses.”

[Italics added.]
Appendix V.B.  
MF Global Collapse

3.a. Financial Safeguards are for the Clearing System* [3 of 3]

• “In futures trading, margin payments from clients are pooled into one gross omnibus account at an FCM and can be used to help offset a default by one or more clients at the clearing house.”

* Additional information on this topic is in Sub-Appendix V.B.4.

Appendix V.B.
MF Global Collapse

3.b. Customer Protections

i. In the U.S., according to the CFTC

ii. In Other Jurisdictions, which could be advisable models
3.b.i. Customer Protections, according to the CFTC [1 of 3]

• “... the laws and regulations governing the insolvency of FCMs and clearing firms are designed to minimize losses to customers by providing certain protections to customer accounts.”

• “These protections include[.]
  – requiring the segregation of customer funds from those belonging to the FCM or clearing firm,
  – giving priority to the claims of customers, and
  – expansively defining the category of property that may be considered ‘customer property’ subject to a customer’s claim.”

3.b.i. Customer Protections, according to the CFTC [2 of 3]

- “Please note that such protections do not include account insurance of the type provided by the Securities Investor Protection Corporation for securities accounts.”

- “Despite the various legal protections afforded to customer accounts, ...

- ... there may be circumstances when the insolvency of an FCM or clearing firm could cause an FCM customer to lose some or all of the funds or other assets the FCM has received from or holds on behalf of that customer.”

3.b.i. *Customer Protections, according to the CFTC* [3 of 3]

- “Generally, in such circumstances, cash in customer accounts is promptly transferred, along with the customers’ open positions, to a solvent FCM even before a trustee is appointed to administer the bankruptcy.”**

- “After such a transfer takes place, the customer is free to transfer his funds and open positions to the FCM of his choice.”

* Additional explanations from the CFTC on customer protections in the futures markets are in Sub-Appendix V.B.5.

** This is what had happened with the 2005 Refco bankruptcy and the 2008 Lehman bankruptcy.

Source: *CFTC Letter (1999).*
Appendix V.B.
MF Global Collapse

3.b.ii. Customer Protections in Other Jurisdictions  [1 of 4]

Canada

- The customers of Canadian brokerages, including futures traders, are covered by the Canadian Investor Protection Fund.*

* The terms of this protection are explained in Sub-Appendix V.B.6.
Appendix V.B.
MF Global Collapse


China

- “The China Futures Margin Monitoring Center is a third-party watchdog that receives daily reports of how much segregated customer money should be held at a futures broker and ...”

- “... compares that to the amount banks and exchanges say the broker should be setting aside ...”

- “… if the U.S. had a similar system it would have given ‘an early warning’ about the customer-fund loss at MF Global.”

Source: Leising (2012).
3.b.ii. Customer Protections in Other Jurisdictions  [3 of 4]

Caveats

• For this topic to be comprehensively covered, one would need to include the relevant protections in other jurisdictions as well.

• Instead, the intention of the previous two slides was to point out two models, which would be an improvement over the current set-up in the U.S.

• Acworth (2009) documents some of the weaknesses in protections for futures customers in the U.K. and in Continental Europe (relative to the U.S.’ protections) that had become apparent in the aftermath of the Lehman collapse.
Appendix V.B. 
MF Global Collapse


Caveats

• Further, in the UK, “… the jury is still out whether the … ‘special administration regime’ … implemented after the Lehman debacle will facilitate a return of … [customer-segregated] assets within an acceptable timeframe.”

• “While American clients have recouped nearly three-quarters of their cash, the British have at best got back back about a quarter.”

Appendix V.B.
MF Global Collapse

3.c. “Bankruptcy Pitfalls for Dually-Licensed Brokerage Firms”*
[1 of 3]

- A dually-licensed firm is one that is “registered as both a futures commissions merchant (FCM) and a securities broker-dealer.”

- “… separate and potentially divergent procedures** exist under the Bankruptcy Code and the Securities Investor Protection Act (‘SIPA’) for liquidating securities and futures businesses.”

* This article was pointed out by Melin (2012b).

** The issues that could arise from these “separate and potentially divergent procedures” are covered in Sub-Appendix V.B.7. This listing of issues from 19 years ago now seems prescient in light of the ad hoc aftermath of the MF Global Inc. liquidation.

Source: Corcoran (1993).
Appendix V.B.
MF Global Collapse


• “Neither Subchapter III of the [Bankruptcy] Code (the broker-dealer subchapter),

• nor Subchapter IV (the commodity broker subchapter),

• nor SIPA itself,

• make clear how the different procedures, including the transfer [of customer accounts] procedures ... are to be harmonized when a bankrupt firm is both a commodity broker and a broker-dealer.”*

* MF Global Inc. was both a commodity broker and a broker-dealer.

Source: Corcoran (1993).
Appendix V.B.
MF Global Collapse

3.c. “Bankruptcy Pitfalls for Dually-Licensed Brokerage Firms” [3 of 3]

• The CFTC “identified the confusion which could result from ... [the] differences [in legal procedures for commodity brokers and securities dealers.] ... 

• [In 1981,] the ... CFTC’s assessment was that the particular problems of a firm engaged in both securities and futures brokerage activities were best handled on a case-by-case basis.” [Italics added.]

• Essentially, in order to avoid “dislocations caused by [a] bankruptcy” (or a liquidation), it is obviously desirable to move “customer accounts prior to bankruptcy.”

Source: Corcoran (1993).
Appendix V.B.
MF Global Collapse

3.d. Wide Latitude for Investment of Customer Funds

i. Internal Repurchase Operations

ii. Rehypothecation
3.d. Wide Latitude for Investment of Customer Funds [1 of 3]

i. Internal Repurchase Operations

- US regulations “allow futures brokers to conduct internal ‘repurchase’ operations, swapping out customer cash for collateral.”

- “In such transactions, the firm swaps customer funds for securities such as corporate bonds or foreign debt held at another part of the firm. The firm can book the excess interest as profit or pass it on to clients.”

Sources: Scannell and Braithwaite (2011) and Patterson and McGrane (2011).
Appendix V.B.
MF Global Collapse

3.d.  Wide Latitude for Investment of Customer Funds [2 of 3]

i. Internal Repurchase Operations

• “MF Global [may have] relied on internal repo transactions to finance its transactions in European sovereign debt ...”

• [That said, after MF Global’s demise, on 12/5/11, the CFTC altered the existing rules on “how brokers are allowed to invest customer funds. ... Under the new rule, brokers are prohibited from using customer funds for in-house transactions. It also restricts firms from using client cash to invest in foreign sovereign debt and money-market mutual funds,” according to Fitch (2011).]

Appendix V.B.
MF Global Collapse

3.d. Wide Latitude for Investment of Customer Funds [3 of 3]

ii. Rehypothecation

• MF Global’s customer agreement* for futures clients allowed the firm to "pledge, repledge, transfer, hypothecate, rehypothecate, loan, or invest any of the [customer’s] [c]ollateral ..."

• “Rehypothecation occurs when a bank or broker re-uses collateral posted by clients ... to back the broker’s own trades and borrowings.”

* The MF Global customer agreement is excerpted in Sub-Appendix V.B.8.

Appendix V.B.
MF Global Collapse

[Wide Latitude for Investment of Customer Funds: An Exception]

• “Canada’s regulations do not allow client-segregated monies to be borrowed for speculative purposes.”

Appendix V.B.
MF Global Collapse

4. Chaotic Final Week of MF Global

a. Ratings Downgrade on 10/24/11

b. Report of Quarterly Earnings on 10/25/11

c. Performance of Short-Maturity European Bonds Meaningfully Declined Only AFTER MF Global’s Credit Rating was Downgraded

d. Margin Calls, Customer Redemptions, Slow Settlement of MF Global’s Trades, and an Erroneous Wire Transfer
Appendix V.B.
MF Global Collapse

4. Chaotic Final Week of MF Global

e. Difficulty in Tying Out MF Global Books and Status of Customer Segregated Funds

f. Attempted Deal to Sell Futures Business Collapses

g. Decision by Regulators

h. Bankruptcy and Liquidation
Appendix V.B.
MF Global Collapse

4.a. Ratings Downgrade on 10/24/11* [1 of 1]

- “The rating action reflects Moody’s view that the current low interest environment and volatile capital markets conditions make it unlikely that MF Global, in the near term, ...

- ... will be able to achieve the financial targets that Moody's had previously specified were required for it to maintain a Baa2 rating.”

* The rationale for Moody’s decision is discussed in Sub-Appendix V.B.9.

Source: Moody’s (2011).

- “MF Global Holdings Ltd.[, which] ... had its credit rating cut yesterday to the lowest investment grade, reported its largest-ever quarterly loss, sending shares down the most since March 2008.

- The net deficit was $191.6 million, or $1.16 a share, for the three months ended in September [2011] ...

- Excluding costs from restructuring, deferring tax asset valuations and retiring debt, the loss was 9 cents a share, missing the 5-cent average profit estimate of 11 analysts surveyed by Bloomberg.” [Italics added.]

Appendix V.B.
MF Global Collapse


- “‘MF’s results are severely below expectations,’ ... an analyst with Macquarie Group Ltd. in New York, wrote in a note to clients.”

- “MF Global plunged 47.6 percent to $1.86 in New York trading.”

Appendix V.B.
MF Global Collapse

4.c. **Performance of Short-Maturity European Bonds Meaningfully Declined Only AFTER MF Global’s Credit Rating was Downgraded** [1 of 2]

**Note:** The vertical lines are at 9/30/11 and 10/24/11.

*Source of Data: The Bloomberg.*
Appendix V.B.
MF Global Collapse

4.c. Performance of Short-Maturity European Bonds* [2 of 2]

- The scale of the price changes in short-maturity European debt *neither* explain MF Global’s quarterly loss as of 9/30/11 and reported on 10/25/11, ...

- *nor* do the bond price changes explain the later reported shortfall in customer segregated funds.

- MF Global’s bond portfolio was liquidated by LCH.Clearnet by 11/15/11, according to Lucchetti (2011).

* The previous slide includes the performance of short-maturity Spanish, Italian, and Belgian bonds. Sub-Appendix V.B.10. includes the performance of short-maturity Portuguese and Irish bonds.
4.d. Margin Calls, Customer Redemptions, Slow Settlement of MF Global’s Trades, and an Erroneous Wire Transfer [1 of 2]

• During the last week of October, MF Global faced “demands from customers and other firms for cash ... [and] needed to sell billions of dollars in securities to raise the money.

• As the week progressed, MF Global executives came to believe that ... one of MF Global’s primary bankers and a middleman moving that cash, was dragging its feet in forwarding the funds.”

• “The delays contributed to a serious cash shortage at MF Global ...” during the firm’s final week.
Appendix V.B. 
MF Global Collapse

4.d. Margin Calls, Customer Redemptions, Slow Settlement of MF Global’s Trades, and an Erroneous Wire Transfer [2 of 2]

- During the firm’s final week, “MF Global also decided to sell $1.3 billion of IOUs known as commercial paper. ... [T]his sale was critical ... because MF Global had used customer funds to invest in the short-term debt and now ... needed to liquidate the IOUs and move cash into the customer accounts to meet their [redemption] demands. The investments in IOUs were allowed by industry regulations ...

- [The clearing bank] was slow to process the trade. ... It remains unclear exactly what cash from the sale was ultimately routed to MF Global.” [Bolded italics added.]

Sources: Mollenkamp et al. (2012) and also discussed by Koutoulas (2012).
Appendix V.B.
MF Global Collapse


- “MF Global executives told the Commodity Futures Trading Commission and the Securities and Exchange Commission that the customer account also held the firm’s cash and was used like a chequeing account to meet margin requests or fund operations.

- Companies are permitted to use their excess cash for firm purposes but they are prohibited from dipping into customer funds.”

Source: Scannell (2011).
Appendix V.B.
MF Global Collapse


- “MF Global failed to record numerous transactions and transfers in the firm’s general ledger during its final frantic days, requiring investigators to rely on bank statements and third-party records to connect the dots ...

- It is not clear if the allegedly sloppy book-keeping took place in the last days or recent months.”

Source: Scannell (2011).
Appendix V.B.
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• “To keep track of both customer and firm money, MF Global relied partly on a computer spreadsheet that had to be updated manually.

• The rush of activity in MF Global’s final days caused many more erroneous trades than the firm would normally have in a similar period ...”

Source: Steinberg et al. (2012a).
Appendix V.B.
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• MF Global employees in Chicago “didn’t realize there was a shortfall in customer accounts until it was too late ...

• [T]he Chicago employees expected that some trades happening in those final days would bring cash back to the firm’s customer accounts. But not all the funds returned as anticipated.” [Bolded italics added.]

• [It turned out that “MF Global had been dipping into client funds for weeks before its failure – rather than just in its final days ...”]

Sources: Steinberg et al. (2012a) and Scannell and Braithwaite (2011).
Appendix V.B.
MF Global Collapse

4.f. Attempted Deal to Sell Futures Business Collapses [1 of 1]

• “Until the early morning hours of Monday [October 31st, 2011], it looked as though MF Global ... might survive.”

• But there was a snag. “Some $630 million of the funds MF Global held for its trading clients could not be located.”

• “The discovery was a huge shock. ... It scuppered an intricate deal structured with MF Global’s financial advisors ... that would have rescued the firm’s operations, while allowing the holding company to fail ... all before the markets opened on Monday.”

Appendix V.B.
MF Global Collapse

4.g. Decision by Regulators [1 of 3]

• On October 31, the SEC and CFTC “announced ‘that a SIPC [Securities Investor Protection Corporation]-led bankruptcy proceeding would be the safest and most prudent course of action to protect customer assets.’”

• “This [decision] baffled futures industry participants who felt it would delay customers being made whole.

• SIPA calls for the bankruptcy of dually registered futures commission merchants ... and broker/dealers ... to come under SIPC.” [Italics added.]

Source: Collins (2012).
4.g. Decision by Regulators [2 of 3]

• “But futures regulators *in the past* had gone to court to fight for jurisdiction when an asset freeze would be adverse to futures industry customers.”* [Bolded italics added.]

• The choice of a SIPA liquidation, unfortunately, highlighted that the customer protections for futures customers are actually *ambiguous* for a dually-registered broker-dealer/FCM.

• See next slide.

* Sub-Appendix V.B.12. discusses the new priorities for the CFTC.

Source: Collins (2012).
4.g. Decision by Regulators [3 of 3]

• “Citing specific language in ... SIPA ..., [a former CFTC official] highlighted that ..."

• ‘[a] trustee in a SIPA liquidation shall be subject to the same duties as a trustee in a commodity broker bankruptcy under Subchapter IV of Chapter 7 of the [Bankruptcy] Code.’

• [The former regulator] did, however, note a concern in a SIPA liquidation for [the] potential for differing interpretations relative to the superiority rights given to segregated commodity account holders.”

Source: Melin (2012a).
Appendix V.B.
MF Global Collapse

4.h. Bankruptcy and Liquidation on 10/31/11 [1 of 2]

- “MF Global Holdings Ltd ... filed for bankruptcy protection as it seeks to reorganize after making bets on European sovereign debt.

- Its broker-dealer unit, MF Global Inc., faces liquidation.

- The firm listed debt of $39.7 billion and assets of $41 billion in Chapter 11 papers filed ... in U.S. Bankruptcy Court in Manhattan.”

Source: Kary et al. (2011).
Appendix V.B.
MF Global Collapse

4.h. Bankruptcy and Liquidation on 10/31/11 [2 of 2]

• “The company’s regulated U.S. broker-dealer unit, MF Global Inc., which didn’t file for bankruptcy, was sued yesterday in U.S. District Court in Manhattan by the Securities Investor Protection Corp.

• The SIPC seeks to liquidate the unit so as to protect customer assets.”

• “A list of unsecured creditors filed by MF Global includes ... [an American bank], as trustee for holders of $1.2 billion in debt, and ... [a European bank], as trustee for holders of more than $1 billion in notes due in 2016 and 2018.”

Source: Kary et al. (2011).
Appendix V.B.
MF Global Collapse

5. Ad Hoc Aftermath

a. Commodity Customer Coalition

b. Delayed Recognition of the Primacy of Customer Segregated by the MF Global, Inc. Trustee

c. Size of Shortfall in Customer Funds

d. Where are the Missing Customer Funds?

e. Challenges to the Bankruptcy Status

f. Tax Filing Challenges for MF Global Customers
Appendix V.B.
MF Global Collapse

5.a. Commodity Customer Coalition [1 of 1]

- Until two Chicago futures traders proactively created the grassroots organization, the Commodity Customer Coalition [italicize], MF Global “customers say they were being ignored, even as their assets dwindled or were returned in a sloppy fashion.”

- “In the space of just a few weeks, the group ... amassed more than 8,000 members ...” Before this coalition was formed, “there was absolutely nobody looking out for” customers.

- The coalition “earned the respect of MF Global’s bankruptcy judge ... who ... directed the bankruptcy trustee ... to heed the concerns of [the] ... customers.”

Source: Goodman (2011).
Appendix V.B.
MF Global Collapse

5.b. Delayed Recognition of the Primacy of Customer Segregated Assets [1 of 1]

• “... [t]ook the [MF Global Inc.] trustee more than five weeks to confirm the rules on customer funds in a bankruptcy ..."

• ‘SIPA, the Bankruptcy Code Commodity Broker Liquidation Provisions and the CFTC Part 190 Regulations require that the claims of commodity customers and securities customers must be satisfied in full before the claims of general creditors of the MF Global estate may be satisfied ...”’

Source: Collins (2012).
5.c. Size of Shortfall in Customer Funds [1 of 5]

- “The trustee for MF Global’s [US] liquidation estimates the shortfall in customer funds related to U.S. trading to be roughly $900 million, ..

- ... with an additional $700 million in funds tied to trading on non-U.S. exchanges,” as of the end of February 2012.

Source: Saphir (2012).
5.c. Size of Shortfall in Customer Funds [2 of 5]

- In the UK, “KPMG [MF Global UK’s administrator] has recovered about $912 million, or 90 percent, of money held in protected customer accounts at banks, exchanges and clearinghouses …” as of early February 2012.

- That said, as of 2/2/12, U.K. administrators only planned “to make ... a payment to British clients ... of 26 cents on the dollar.”

- The administrators “said the figure was the most it could return ... because of ‘continued uncertainty’ as to who can claim a share of the ... client money pool.”

Source: Chellel (2012).
Appendix V.B.
MF Global Collapse

5.c. Size of Shortfall in Customer Funds [3 of 5]

• “Administrators in New York and London are involved in a dispute over about $742 million of customer funds used as margin collateral for American clients trading in Europe.

• The U.S. trustee of MF Global Inc. wants the money to come from the client money pool, which would hamper the return of funds to U.K. clients.”

• The U.K. administrator said “if it weren’t for the MF Global Inc. claim[,] it would have been able to return 42 cents, rather than 26 cents, on the dollar to U.K. customers.”

Source: Chellel (2012).
5.c. *Size of Shortfall in Customer Funds [4 of 5]*

- In contrast, as of mid-November 2011, “All of MF Global Canada’s cash and accounts ... [were] accounted for ...”

- On 11/14/11, “The former customers of bankrupt futures brokerage house MF Global Canada Co. [were informed that they would] regain access to their money and trades, after an Ontario court approved the transfer of the bulk of their accounts to RBC Dominion Securities ...”

- ... promising an end to two weeks of limbo for roughly $400-million of investor holdings.”

Appendix V.B.
MF Global Collapse

5.c. Size of Shortfall in Customer Funds [5 of 5]

• “The process ... [had been] complicated, however, by the confusion and regulatory roadblocks arising from the bankruptcy proceedings of the U.S. parent.

• At one point, Canadian clients’ accounts residing with CME Clearing – the clearing house of big U.S. futures-market operator CME Group Inc. – were inadvertently transferred to another U.S. clearing institution, and had to be recovered.”

• “None of MF Global’s Canadian clients lost any money thanks to tighter regulations there.”
Appendix V.B.
MF Global Collapse

5.d. Where are the Missing Customer Funds? [1 of 1]

Some Possibilities:

- The trustee will eventually find them once they go through MF Global books
- Management misappropriated the funds
- The funds were used to meet collateral calls from MF Global counterparties
- The funds were invested in risky securities and suffered significant losses

Appendix V.B.
MF Global Collapse

5.e. Challenges to the Bankruptcy Status [1 of 4]

• The holding company is being administered by one trustee, and the brokerage operation is being administered by another trustee.

• “It’s likely that ... the trustee in charge of recovering customer funds, and ... the trustee in charge of recovering money for parent creditors, will dispute the ownership of certain assets ...”

5.e. Challenges to the Bankruptcy Status [2 of 4]

• “A more complex battle could arise from the fact that both customers and bondholders claim priority for payouts MF Global’s general estate.”

• The two trustees may emerge “as adversaries.”
5.e. Challenges to the Bankruptcy Status [3 of 4]

• In viewing the potential for a complex legal battle between the trustee of the holding company and the trustee of the operating company, ...

• the Commodity Customer Coalition is undertaking “an effort to convert the commodity broker’s bankruptcy status to one that allows a more streamlined liquidation process, saying it would preserve more potential payback for customers.”

5.e. Challenges to the Bankruptcy Status [4 of 4]

• The coalition believes the case should be handled under Chapter 7 of the Bankruptcy Code, rather at present as a Chapter 11 bankruptcy.

• Chapter 11* allows a company to keep operating while it tries to “reorganize and negotiate with its creditors” while Chapter 7 is “designed specifically for the liquidation of assets.”

* See Sub-Appendix V.B.13. regarding an added wrinkle with a Chapter 11 bankruptcy.

Appendix V.B.
MF Global Collapse

5.f. Tax Filing Challenges for MF Global Customers [1 of 1]

- “Thousands of former clients of the failed brokerage ... have not yet received tax forms that detail their profits and losses, ..."

- “... preventing them from preparing accurate returns for the [U.S.] Internal Revenue Service ahead of a rapidly approaching deadline.”*

* Sub-Appendix V.B.14. includes information on how U.S. Senators are intervening, regarding this problem.

Source: Polansek (2012).
Sub-Appendix V.B.1.
MF Global Collapse

Short-Term Debt [1 of 2]

Excerpted from MF Global Ltd. Form 10-Q as of December 31, 2007:

“In 2007, one of the Company’s U.S. finance subsidiaries, MF Global Finance USA Inc., entered into a 364-day unsecured revolving credit facility in an aggregate principal amount of up to $1,400,000, (the “bridge facility”) ...”

“In addition to the bridge facility discussed above, the Company has entered into a $1,500,000 five-year unsecured committed revolving credit facility (the “liquidity facility”) with a syndicate of banks ...”

“The Company has also entered into a 364-day revolving credit facilities with various banks on a committed unsecured basis for a total of $275,000, under similar terms as the $1,500,000 liquidity facility. As of December 31, 2007, $100,000 was outstanding under these facilities.”
“On January 31, 2008, the Company and its subsidiary, MF Global Finance USA Inc., entered into an amendment (the “Amendment”) to its bridge facility. ... The Amendment extends the original maturity date of June 13, 2008 for $1,050,000 of the $1,400,000 of the outstanding borrowing by six months to December 12, 2008 ... The Company expects to replace borrowing under its bridge facility with the issuance of new debt.”
Sub-Appendix V.B.2. MF Global Collapse

“Financial Data for FCMs” Report [1 of 1]

Excerpted from the CFTC website:

“Futures commission merchants (FCMs) and retail foreign exchange dealers (RFEDs) must file monthly financial reports with the CFTC’s Division of Swap Dealer and Intermediary Oversight (DSIO) within 17 business days after the end of the month.

Selected financial information from these reports is … [included in the Financial Data for FCMs report.] The most recent month-end information generally is added within 12 business days after FCMs and RFEDs file their reports, but occasionally may be added later.

For example: The 17th business day filing ‘due date’ for February 28, 2011 financial reports was March 23, 2011. The 12 business day target for posting these data was April 8, 2011.

Once posted, the CFTC does not revise this information to reflect any amended financial information subsequently received.”

Source: http://www.cftc.gov/MarketReports/FinancialDataforFCMs/index.htm
Sub-Appendix V.B.3.
MF Global Collapse

MF Global Stock Price Compared to Refco’s [1 of 4]

• On 3/17/08, “MF Global Ltd., the largest broker of exchange-traded futures and options, fell [a further] 65 percent in New York trading on speculation clients were withdrawing cash.” [Italics added.]

• This was also one day after Bear Stearns was taken over in the midst of its financial distress.

• The next slide shows how investors embraced a preservation-of-capital stance in the wake of Bear Stearns’ near collapse.

Sub-Appendix V.B.3.
MF Global Collapse

MF Global Stock Price Compared to Refco’s [2 of 4]

Market Reaction to Bear Stearns’ Near Collapse

Till (2008): “During the week of 17 March 2008, market participants appeared to embrace a 'preservation-of-capital' stance in the aftermath of the near collapse of Bear Stearns.”

Source of Figure: Till (2008), Figure 15.14.
Sub-Appendix V.B.3.
MF Global Collapse

 MF Global Stock Price Compared to Refco’s [3 of 4]

• On 4/3/08, a newswire, distributed through Bloomberg, reported that MF Global shares moved “higher on renewed takeover speculation.”

• On 6/13/08, the company announced its plan for refinancing its $1.4 billion bridge loan, which included:
  1. a new credit facility,
  2. a drawdown on an existing liquidity facility,
  3. a sale of equity-linked securities, and
  4. the use of “excess funds currently held by the company.”

Sub-Appendix V.B.3. MF Global Collapse

MF Global Stock Price Compared to Refco’s [4 of 4]

- On 6/18/08, “MF Global ... dropped 41% ... after saying lower interest income and higher expenses will reduce net revenue ...” [Italics added.]

- On 6/20/08, a Deutsche Bank AG analyst wrote:
  - “We feel that management has not conveyed MF's interest rate exposure optimally, and ...
  - ... that investors may be concerned that the management has not conveyed other risks optimally as well.”

Source: Patterson (2008).
Financial Safeguards are for the Clearing System [1 of 2]

- “Although CME Clearing segregates customer performance bond deposits from the clearing member’s proprietary performance bond deposits, …

- ... the customer performance bond deposits for each clearing member are held in the aggregate, without identifying specific ownership of the deposits.” [Italics added.]
Sub-Appendix V.B.4.
MF Global Collapse

Financial Safeguards are for the Clearing System [2 of 2]

• “If a default occurred in the clearing member’s customer account, CME Clearing has the right to apply toward the default all customer performance bond deposits and positions in the defaulting clearing member’s customer account at CME Clearing.”

• “Accordingly, positions and performance bonds deposited by customers not causing the default are potentially at risk if there is a default in the customer account of their clearing member.” [Italics added.]

Customer Protections, according to the CFTC [1 of 2]

- “The term ‘segregated’ refers to separating the funds of all the customers (treated as a class) from the FCM’s own funds (sometimes referred to as ‘proprietary’ funds) which the FCM uses in its own operations.”

- “If an FCM became insolvent, the FCM would be prohibited from using ‘customer property’ to pay obligations it owes to persons other than its commodity customers.”

Sub-Appendix V.B.5.
MF Global Collapse

Customer Protections, according to the CFTC [2 of 2]

• “If an FCM became insolvent, and there also happened to be a shortfall in the amount of funds segregated for customers (for example, because of a customer default), customers would not be protected from the FCM’s insolvency.”

• “Distributions of customer property would be made on a pro rata basis to each customer.”

Sub-Appendix V.B.6.
MF Global Collapse

Customer Protections in Canada [1 of 1]

1. Q: What is the Canadian Investor Protection Fund (CIPF or the Fund) and how does the Fund protect customers of MF Global Canada Co.?

A: The Canadian Investor Protection Fund was established by the investment industry with the mandate to maintain adequate resources to return assets belonging to eligible customers in cases where the CIPF Member becomes insolvent. Each investment dealer contributes to a substantial fund that CIPF maintains.

2. Q: Are customers of MF Global Canada Co. protected by the Canadian Investor Protection Fund?

A: MF Global Canada Co. is a Member of the Canadian Investor Protection Fund and has been declared insolvent. Coverage is automatic for all eligible customers as at the date of insolvency.

3. Q: What assets does CIPF cover?

A: CIPF covers customers of Members who have suffered or may suffer financial loss solely as a result of the insolvency of a Member. Such loss must be in respect of a claim for the failure of the Member to return or account for securities, cash balances, commodities, segregated insurance funds or other property, received, acquired or held by, or in the control of, the Member for the customer, including property unlawfully converted.

... 

5. Q: Are there limits of coverage?

A: The limit is $1,000,000 CDN for any combination of cash and securities on the coverage provided for a customer’s General Account and each Separate Account ... This limit is applied to any shortfall of the customer’s assets that are not recovered from the insolvent Member.

Source: http://www.cipf.ca/public/NewsAndPublications/InformationsurMFGlobalCanada/MFGlobalCanadaQuestionsandAnswers.aspx
Sub-Appendix V.B.7.
MF Global Collapse

“Bankruptcy Pitfalls for Dually-Licensed Brokerage Firms”
[1 of 3]

• In 1983, the CFTC was concerned about “the potential for an interpretation giving only limited recognition to ... [the commodity broker subchapter of the Bankruptcy Code] under SIPA ..."

• ... [which] may well raise problems in implementing ... [the commodity-specific provisions of the Bankruptcy Code] in a joint bankruptcy.”

Source: Corcoran (1993).
Sub-Appendix V.B.7. MF Global Collapse

“Bankruptcy Pitfalls for Dually-Licensed Brokerage Firms” [2 of 3]

- Further in 1983, the CFTC identified four potentially contentious issues, which could arise during the administration of a joint commodity-broker / broker dealer estate.

- The next slide summarizes these potential issues.

Source: Corcoran (1993).
Sub-Appendix V.B.7.
MF Global Collapse

“Bankruptcy Pitfalls for Dually-Licensed Brokerage Firms” [3 of 3]


[2] Disputes Concerning Which Customers Have Priority With Respect to a Joint Commodity Broker / Broker-Dealer’s General Estate;

[3] Disputes Concerning the Inviolability of Pre-Bankruptcy Margin Payments; [and]

[4] Potential Conflicts Arising From the Fact That Only Securities Accounts are Insured.”

Source: Corcoran (1993).
Sub-Appendix V.B.8. MF Global Collapse

Wide Latitude for Investment of Customer Funds [1 of 1]

Rehypothecation

• MF Global’s customer agreement for futures clients included the following clause:

Consent to Loan or Pledge

“You hereby grant us the right, in accordance with Applicable Law, to borrow, pledge, repledge, transfer, hypothecate, rehypothecate, loan, or invest any of the [customer’s] [c]ollateral, including, without limitation, utilizing the [c]ollateral to purchase or sell securities pursuant to repurchase agreements or reverse repurchase agreements with any party, in each case without notice to you, and we shall have no obligation to retain a like amount of similar [c]ollateral in our possession and control.”

Sub-Appendix V.B.9. 
MF Global Collapse

Ratings Downgrade on 10/24/11 [1 of 2]

• The financial targets that Moody’s believed that MF Global would be unable to achieve were as follows:

  - “generating $200-$300 million in annual pre-tax earnings and

  - managing its balance sheet leverage in the 20x range, a level that would be consistent with other similarly rated broker-dealer peers.”

Source: Moody’s (2011).
Ratings Downgrade on 10/24/11 [2 of 2]

- “Moody’s also said that it has become increasingly concerned with MF Global’s risk management and management’s ability to prudently balance risk and reward as it undergoes a substantial re-engineering of the firm.

- MF Global’s increased exposure to European sovereign debt in peripheral countries and its need to inject capital into its broker-dealer subsidiary to rectify a regulatory capital shortfall highlights the firm’s increased risk appetite and raises questions about the firm’s risk governance ...”

Source: Moody’s (2011).
Sub-Appendix V.B.10. MF Global Collapse

Performance of Short-Maturity European Bonds: Portugal [1 of 2]

Portuguese Government Bonds
(6/30/11 to 1/2/12)

Note: The vertical lines are at 9/30/11 and 10/24/11.
Source of Data: The Bloomberg.
Sub-Appendix V.B.10.
MF Global Collapse

Performance of Short-Maturity European Bonds: Ireland
[2 of 2]

Note: The vertical lines are at 9/30/11 and 10/24/11.
Source of Data: The Bloomberg.
## CME Group* Timeline of MF Global Collapse

* Saphir (2012): The CME “was MF Global's first-line regulator, in charge of auditing the firm.”

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### Excerpted from CME's MF Global Chronology: Week of October 24 - 31, 2011

<table>
<thead>
<tr>
<th>Date</th>
<th>Event Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>10/27/11</td>
<td>On Thursday, 10/27/11, Chicago Mercantile Exchange (CME) auditors began attempting to tie out MF Global Inc.'s &quot;Daily Statement of Segregation Requirement and Funds in Segregation for Customers Trading on U.S. Commodity Exchanges (&quot;seg. statement&quot;) for the close of business as of 10/26.&quot;</td>
</tr>
<tr>
<td></td>
<td>Simultaneously, the CME began &quot;making contingency plans for transferring MFG customer accounts to other FCMs.&quot;</td>
</tr>
<tr>
<td></td>
<td>As of 10/27/11 and 10/28/11, the CME auditors were unable to confirm the 10/26 statement because they were not provided with &quot;all of the documents necessary&quot; to do so.</td>
</tr>
<tr>
<td></td>
<td>But as of the evening of Friday, 10/28/11, they had &quot;no reason to believe that the segregated account ... [was] out of compliance as of 10/26 close of business.&quot;</td>
</tr>
<tr>
<td></td>
<td>During the evening of Sunday, 10/30/11, &quot;MFGI's treasurer ... call[ed] a meeting with ... CFTC, CME, and MFGI employees ... and confirm[ed] that MFGI ha[d] a potentially huge deficiency in the segregated account due to what MFGI ... [believed was] an unidentified accounting mistake, such as a mis-booking.&quot;</td>
</tr>
</tbody>
</table>

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*Source: CME Group (2011).*
### Excerpted from CME's MF Global Chronology: Week of October 24 - 31, 2011

Later that evening, at 8:40 p.m., a CME auditor found that MFGI's "explanation of the $900 million shortfall proved to be unsubstantiated."

At approximately 1 am to 2 am on Monday, October 31st, the "CME learns the deficiency is real ... [MFGI officials state...] there is an actual shortfall; about $700M was moved to the broker-dealer side of the business to meet liquidity issues in a series of transactions on [the previous] Thursday, Friday, and possibly Wednesday."

"Additionally ... [the CME auditor was] told there was a loan of $175M of segregated funds to MF UK."

"CME stops its efforts to look for the accounting error. CME understands MFGI is attempting to find available funds and get Fedwire to open early so that they can start transferring money into the segregated account."

"During the night, ... [a CME auditor] participated in a phone call with senior MFG employees wherein one employee indicated that ... [the MF Global CEO] knew about loans that had been made from the customer segregated accounts."
**Sub-Appendix V.B.11.**
**MF Global Collapse**

**CME Group Timeline of MF Global Collapse [3 of 3]**

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>4:37 am</td>
<td>A CME auditor emails &quot;a list of potential assets that MFGI has identified that it could move into segregation.&quot;</td>
</tr>
<tr>
<td>7:30 a.m.</td>
<td>&quot;... MFGI attempts to make transfers of funds back into segregation.&quot;</td>
</tr>
<tr>
<td>9:00 a.m.</td>
<td>&quot;MFGH [the holding company] files for bankruptcy.&quot;</td>
</tr>
<tr>
<td>11:00 a.m.</td>
<td>&quot;A SIPA proceeding is filed for the liquidation of MFGI [the joint FCM / broker-dealer] and a SIPC Trustee is appointed.&quot;</td>
</tr>
<tr>
<td>7:46 p.m.</td>
<td>&quot;CME receives the amended MFGI seg. statement for 10/27 showing a segregation deficiency of $213,062,967.&quot;</td>
</tr>
<tr>
<td>8:06 p.m.</td>
<td>&quot;CME receives MFGI seg. statement for 10/28 showing a segregation deficiency of $891,465,650.&quot;</td>
</tr>
</tbody>
</table>

Excerpted from CME's MF Global Chronology: Week of October 24 - 31, 2011

Sub-Appendix V.B.12.
MF Global Collapse

New Priorities for the CFTC [1 of 2]

• “‘The CFTC is way understaffed,’ says Collin Peterson, senior Democrat on the House agriculture committee, which oversees the agency.

• He argues it is too busy ... [implementing] the 2009 Dodd-Frank financial reform act:

• ‘They’re scrambling to try and get all these rules written. They really don’t have the ability to do much oversight.’”

New Priorities for the CFTC [2 of 2]

Caveat Emptor

- “The U.S. Commodity Futures Trading Commission says it will shift enforcement staff to meet Dodd-Frank Act demands in 2012 ...”

Source: Brush (2012).
Sub-Appendix V.B.13. MF Global Collapse

“The Derivatives Market’s Payment Priorities as Financial Crisis Accelerator”* [1 of 1]

Derivative and Repo Counterparties’ Chapter 11 Super-Advantages

“Chapter 11 bars bankrupt debtors from immediately repaying their creditors, so that the bankrupt firm can reorganize without creditors shredding the bankrupt’s business. Not so for the bankrupt’s derivatives [and repo] counterparties, who unlike most creditors, even most other secured creditors, can seize and immediately liquidate collateral, net out gains and losses, terminate their contracts with the bankrupt, and keep both preferential eve-of-bankruptcy payments and fraudulent conveyances they obtained from the debtor in ways that favor them over other creditors. Their right to jump to the head of the bankruptcy re-payment line, in ways that even ordinary secured creditors cannot, weakens their incentives for market discipline in managing their credits to the debtor; it reduces their concern for the risk of counterparty failure and bankruptcy, since they do well in any resulting bankruptcy.”

[Bolded italics added.]

* This article was pointed out at http://www.mfgfacts.com.

Source: Roe (2011).
Sub-Appendix V.B.14.
MF Global Collapse

Tax Filing Challenges for MF Global Customers [1 of 2]

• In a letter from Senator Debbie Stabenow, Chairwoman of the U.S. Senate Committee on Agriculture, Nutrition and Forestry, and Ranking Member Sen. Pat Roberts to IRS Commissioner Douglas H. Shulman, ...

• ... they ask the agency “to issue immediate guidance to MF Global’s customers and to be flexible with those customers who may need to file their taxes with incomplete information.”

Sub-Appendix V.B.14.
MF Global Collapse

Tax Filing Challenges for MF Global Customers [2 of 2]

• The Senators’ letter states: “Investigators are still working to untangle MF Global’s records, and former customers are faced with the possibility of having to use estimated or inaccurate information that may require them to file additional amended or supplemental tax filings –

• ... an unacceptable level of additional red tape and paperwork for the customers who are already suffering hardships because their money went missing.”

References

[1 of 12]


References
[2 of 12]


References

[3 of 12]


CME Group, 2011, Letter to the Honorable Randy Neugebauer, Chairman, Subcommittee on Oversight and Investigations, US House of Representatives, Committee on Financial Services, from CME Managing Director, General Counsel and Corporate Secretary, Kathleen Cronin, RE: Request for Information Regarding Collapse of MF Global, December 13. This letter includes the CME’s chronology of its “supervisory and auditing activities of MF Global” from October 24 through October 31, 2011.


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Johnson, P. M. and T. Hazen, 2004, Derivatives Regulation, Frederick, MD: Aspen Publishers. [P.M. Johnson is a former chairman of the Commodity Futures Trading Commission.]


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MF Global, 2011b, MF Global Holdings Ltd Form 10-K For the Fiscal Year Ended March 31, 2011.


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[The article cites Robert McNally, president of the Rapidan Group.]


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[10 of 12]


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[11 of 12]


TheFlyOnTheWall.com, 2008, “MFGlobal-MF: Shares move higher on renewed takeover speculation,” April 3. [This news feed was distributed through The Bloomberg.]


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