Panel Detail: Monday, April 28, 2008
4:00 PM - 5:15 PM
Surviving and Thriving in the Midst of Market Volatility

Speakers:
Max Darnell, Chief Investment Officer, First Quadrant
Mitchell Julis, Founding Partner, Canyon Capital Advisors LLC
James McCaughan, CEO, Principal Global Investors LLC

Moderator:
Andrew Rosenfield, Managing Partner, Guggenheim Partners LLC;
Chairman, Guggenheim Investment Advisors
Invest $100 on Apr. 15, 2003
As of Apr. 18, 2008, in US$

- S&P500: 156
- U.K. FTSE 100: 197
- Nikkei 225: 198
- MSCI World: 201
- Shanghai A Share: 225
- Hang Seng: 281
- Germany DAX 30: 352
- MSCI Emerging Market: 404
- Russia RTS: 563
- India BSE100: 697

Source: Datastream.
Invest $100 on Apr. 15, 2003
As of Apr. 18, 2008, in US$

Source: Datastream.
Invest $100 on Apr. 15, 2003

As of Apr. 18, 2008, in US$

<table>
<thead>
<tr>
<th>Fund Type</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>U.S. Treasury</td>
<td>125</td>
</tr>
<tr>
<td>U.S. Mortgage</td>
<td>126</td>
</tr>
<tr>
<td>U.S. AAA Corporate</td>
<td>127</td>
</tr>
<tr>
<td>U.S. BB High Yield</td>
<td>144</td>
</tr>
<tr>
<td>U.S. B High Yield</td>
<td>152</td>
</tr>
<tr>
<td>U.S. C High Yield</td>
<td>174</td>
</tr>
<tr>
<td>Global High Yield and EM</td>
<td>190</td>
</tr>
</tbody>
</table>

Source: Datastream.
Small cap stocks are the winner

Jan. 1998 = 100

S&P600 Small Cap
S&P400 Mid Cap
S&P100 Large Cap
MSCI World $

Source: Datastream.
Decoupling or not?

Source: Datastream.
Correlation with S&P 500

250-day rolling correlation coefficient

MSCI Emerging Market $  
DAX 30

FTSE 100

NIKKEI 225

Source: Datastream.
Volatilities are on the rise

Annualized 100-day rolling historical volatility

Source: Datastream.
Volatilities are on the rise
Annualized 100-day rolling historical volatility

Source: Datastream.
Volatilities are on the rise

*Annualized 100-day rolling historical volatility*

Source: Datastream.
Dow Jones Industrial Average

1965 - 1982: 1% CAGR*

1983 - Apr. 18, 2008: 10% CAGR*

*Compound annual growth rate (dividends were not included).

Source: Datastream.
Widening spread

1-3 Month Treasury yield

AAA Corporate Bond yield

Source: Datastream and Merrill Lynch.
Widening spreads
Mortgage-backed and high-yield bond

Source: Bloomberg.

Basis point spread above 10-year treasury bond

ML BBB Mortgage-Backed Securities Index

ML High-Yield Bond Index

Source: Bloomberg.
Widening spreads
Asset-backed and corporate bond

Source: Bloomberg.
Widening spreads

Municipal bond

Basis point spread over 10-year treasury bond

ML Municipal Master Index yield spread

Source: Bloomberg.
Reduced yield correlation between Treasuries and BBB corporate bonds

Sources: DataStream and MI staff calculation.
Moving to the opposite direction

Yield correlation between Treasuries and CMBS

![Graph showing the correlation between U.S. CMBS AAA and BBB yields with 1-3 month Treasury yields over time. The graph illustrates a 200-day rolling correlation coefficient.]

Sources: DataStream and MI staff calculation.
Default rate of all U.S. corporate bonds

Percent, Issuer-weighted

Recessions

Sources: Moody's Investors Service and NBER.
Default rate of U.S. corp. speculative-grade bonds

Percent

Recessions

Sources: Moody's Investors Service and NBER.
## Global over-the-counter derivatives markets

<table>
<thead>
<tr>
<th>June 2007</th>
<th>Notional amounts</th>
<th>Gross market values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Foreign exchange</td>
<td>48,620</td>
<td>1,343</td>
</tr>
<tr>
<td>Interest rate</td>
<td>346,937</td>
<td>6,057</td>
</tr>
<tr>
<td>Equity-linked</td>
<td>9,202</td>
<td>1,116</td>
</tr>
<tr>
<td>Commodity</td>
<td>7,567</td>
<td>670</td>
</tr>
<tr>
<td>Credit default swaps</td>
<td>42,580</td>
<td>721</td>
</tr>
<tr>
<td>Unallocated</td>
<td>61,501</td>
<td>1,233</td>
</tr>
<tr>
<td><strong>Total OTC derivatives</strong></td>
<td><strong>516,407</strong></td>
<td><strong>11,140</strong></td>
</tr>
</tbody>
</table>

*Source: Bank for International Settlements.*
## Interest rate derivatives

_Notional amount US$ 347 trillion, June 2007_

<table>
<thead>
<tr>
<th>By counterparty</th>
<th>Percent of total</th>
</tr>
</thead>
<tbody>
<tr>
<td>With other reporting dealers</td>
<td>42.8</td>
</tr>
<tr>
<td>With other financial institutions</td>
<td>44.2</td>
</tr>
<tr>
<td>With nonfinancial customers</td>
<td>13.1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>By remaining maturity</th>
<th>Percent of total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Up to one year</td>
<td>38.1</td>
</tr>
<tr>
<td>One to five years</td>
<td>36.2</td>
</tr>
<tr>
<td>Over five years</td>
<td>25.7</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>By major currency</th>
<th>Percent of total</th>
</tr>
</thead>
<tbody>
<tr>
<td>U.S. dollar</td>
<td>32.9</td>
</tr>
<tr>
<td>Euro</td>
<td>36.8</td>
</tr>
<tr>
<td>Japanese yen</td>
<td>13.8</td>
</tr>
<tr>
<td>Pound sterling</td>
<td>8.0</td>
</tr>
<tr>
<td>Other</td>
<td>8.5</td>
</tr>
</tbody>
</table>

*Source: Bank for International Settlements.*
Leverage of various institutions
2007

Government sponsored enterprises: 24.7
Brokers and hedge funds: 31.6
Credit unions: 8.4
Savings institutions: 8.4
Commercial banks: 9.8

Source: David Greenlaw, Jan Hatzius, Anil K Kashyap, Hyun Song Shin, 2008
**Debt dependence**

*Leverage ratios at biggest investment banks*

Total assets to total shareholder equity

March 2001

March 2008

<table>
<thead>
<tr>
<th>Bank</th>
<th>March 2001</th>
<th>March 2008</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bear Stearns</td>
<td>30</td>
<td>35</td>
</tr>
<tr>
<td>Morgan Stanley</td>
<td>28</td>
<td>35</td>
</tr>
<tr>
<td>Merrill Lynch</td>
<td>24</td>
<td>30</td>
</tr>
<tr>
<td>Lehman Bros.*</td>
<td>22</td>
<td>32</td>
</tr>
<tr>
<td>Goldman Sachs</td>
<td>15</td>
<td>24</td>
</tr>
</tbody>
</table>

*Note: *the latest figure is as of December 2007

*Sources: Bloomberg.*
Debt dependence
Leverage ratios at bank holding companies

Total assets to total shareholder equity

March 2001
December 2007
March 2008

Sources: Bloomberg.
Steepened yield curve

Sources: Federal Reserves.
HY spreads have widened far in advance of default rates.

Source: DB Global Markets Research, Moody's
Finding Good Opportunities for Investing in the Global Markets

Jim McCaughan, CEO
Principal Global Investors
What Has Driven Markets Over The Years?

• Productivity
• Sound money
• Low taxes
• Free trade

Are they still driving markets?
U.S. Productivity
Y/Y % 2007: 4Q 2.6%

Source: ISI Group.
U.S. Productivity

As of February 26, 2008

1992 = 100, SA, year to year percent change

Source: Strategas.
U.S. M2 Y/Y%

Feb. 11, 2008: 6.9%

Source: ISI Group.
U.S. CPI

Y/Y percent change

Jan 4.4%

Source: ISI Group.
Nothing New About Periods Of Slowing Growth and Rising Inflation

Source: ISI Group.
Note: Stagflation periods are defined by accelerating inflation and slowing payroll growth.
What Next?

- **Worst may be over**
  - Banks rebuild balance sheet
  - Confidence gradually returns
  - Mild recession
  - Equity recovery
- **Maybe further credit problems**
  - Rescues?
  - Lack of credit creation hits activity
- **Poor economy – avoid commodities**
What To Do?

• Diversify
• Identify Areas where volatility will create opportunity
• Prepare to increase equities – Emerging Markets
• Opportunities in Fixed Income – Preferred Securities
• Opportunities in Real Estate – Global REITs and CMBS
Agencies, Mortgages, and Corporate Yield Spreads

- **10-Year U.S. Government Agency Yield** minus 10-Year Treasury Note Yield
  - **March 26, 2008 = 71**
  - **Mean = 56**
  - **Agencies Cheap**
  - **Agencies Expensive**

- **Lehman Brothers Mortgage-Backed Securities Yield** minus 10-Year Treasury Note Yield
  - **March 26, 2008 = 162**
  - **Mean = 109**
  - **Mortgages Cheap**
  - **Mortgages Expensive**

- **Lehman Brothers Investment Grade Corporate Credit Yield** minus 10-Year Treasury Note Yield
  - **March 26, 2008 = 240**
  - **Mean = 114**
  - **Corporates Cheap**
  - **Corporates Expensive**

- **Lehman Brothers High Yield Corporate Bond Yield** minus 10-Year Treasury Note Yield
  - **March 26, 2008 = 729**
  - **Mean = 525**
  - **Junk Cheap**
  - **Junk Expensive**

Daily Data 12/31/1997 - 3/26/2008

**Mean = 30**

U.S. Agencies

**Mean = 66**

Mortgage-Backed Securities

**Mean = 107**

U.S. Investment-Grade Corporate Credit

**Mean = 519**

U.S. High Yield

OAS = Option-Adjusted Spread
NDR Estimates prior to August 15, 2000

Source: Lehman Brothers

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Higher-Risk Mortgage Delinquency Rates

Federal Housing Administration
(An FHA borrower has low income, typically a first-time home buyer with limited funds.)

FHA Adjustable Rate

Subprime
(Borrowers with impaired credit)

Subprime Adjustable Rate

Series Break Before 2002

Source: Mortgage Bankers Association
Washington, D.C.

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Opportunity 1: Emerging Markets

Source: Lehman Live.
### Opportunity 1: Emerging Markets

**G7 & BRIC GDP Growth**

<table>
<thead>
<tr>
<th>Quarter</th>
<th>BRIC</th>
<th>G7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q1/05</td>
<td>7.5421</td>
<td>2.1098</td>
</tr>
<tr>
<td>Q2/05</td>
<td>7.5769</td>
<td>2.2099</td>
</tr>
<tr>
<td>Q3/05</td>
<td>7.5744</td>
<td>2.4486</td>
</tr>
<tr>
<td>Q4/05</td>
<td>8.2976</td>
<td>2.4393</td>
</tr>
<tr>
<td>Q1/06</td>
<td>7.9374</td>
<td>2.8595</td>
</tr>
<tr>
<td>Q2/06</td>
<td>8.4541</td>
<td>2.9043</td>
</tr>
<tr>
<td>Q3/06</td>
<td>8.6585</td>
<td>2.3628</td>
</tr>
<tr>
<td>Q4/06</td>
<td>8.8641</td>
<td>2.7071</td>
</tr>
<tr>
<td>Q1/07</td>
<td>9.0402</td>
<td>2.1792</td>
</tr>
<tr>
<td>Q2/07</td>
<td>9.7215</td>
<td>1.9943</td>
</tr>
<tr>
<td>Q3/07</td>
<td>9.1109</td>
<td>2.5835</td>
</tr>
<tr>
<td>Q4/07</td>
<td>9.62</td>
<td>2.2567</td>
</tr>
</tbody>
</table>

Source: Bloomberg
Opportunity 2: Preferred Securities

Current Yields
Treasuries, Corporate, Preferred and High Yield Indices
Monthly, January 1999 - March 2008

Note: COAD = ML US Corporate Master Index; POMO = ML Preferred Stock, Hybrid Securities Index; HDAD = ML US High Yield Master II Index; LEH Tier 1 = Lehman USD Tier 1 Capital Securities Index

Source: Bloomberg, LLP and Lehman Brothers Holdings Inc.
Opportunity 3: 
Global Property Securities

10 Year correlations among the largest five listed property markets

<table>
<thead>
<tr>
<th></th>
<th>U.S.</th>
<th>Australia</th>
<th>UK</th>
<th>Hong Kong</th>
<th>Japan</th>
</tr>
</thead>
<tbody>
<tr>
<td>U.S.</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Australia</td>
<td>0.39</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>UK</td>
<td>0.47</td>
<td>0.44</td>
<td>1.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hong Kong</td>
<td>0.31</td>
<td>0.36</td>
<td>0.29</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>Japan</td>
<td>0.16</td>
<td>0.21</td>
<td>0.23</td>
<td>0.27</td>
<td>1.00</td>
</tr>
</tbody>
</table>

Sources: Principal Global Investors; FTSE EPRA/NAREIT Country Indices annualized monthly returns in USD.

10-year correlations between property securities, equities, and bonds

<table>
<thead>
<tr>
<th></th>
<th>Asian Property Securities</th>
<th>European Property Securities</th>
<th>North American Property Securities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asian Equities</td>
<td>0.72</td>
<td>0.40</td>
<td>0.23</td>
</tr>
<tr>
<td>European Equities</td>
<td><strong>0.51</strong></td>
<td>0.54</td>
<td>0.32</td>
</tr>
<tr>
<td>North American Equities</td>
<td>0.55</td>
<td><strong>0.41</strong></td>
<td>0.37</td>
</tr>
<tr>
<td>Global Bonds</td>
<td>0.18</td>
<td>0.33</td>
<td><strong>0.07</strong></td>
</tr>
</tbody>
</table>

Sources: Principal Global Investors; FTSE EPRA/NAREIT Regional Indices, MSCI Regional Indices, JP Morgan Global Bond Index, annualized monthly returns in USD.
Opportunity 3: Global Property Securities

Risk-Return Tradeoff Curve
Global Equities, Bonds and Property Securities

Portfolio A 0% Global Property Securities, 55% Global Equities, 45% Bonds
Portfolio B 10% Global Property Securities, 50% Global Equities, 40% Bonds
Portfolio C 20% Global Property Securities, 45% Global Equities, 35% Bonds

Sources: Principal Real Estate Investors; FTSE EPRA/NAREIT Global Index, MSCI World Equity Index, JP Morgan Global Bond Index; monthly returns in USD.
Opportunity 4: Commercial Mortgage-Backed Securities

Source: Lehman Live.
Opportunity 4: Commercial Mortgage-Backed Securities

As of March 14, 2008

Domestic CMBS Issuance and Market Cap

- CMBS now 5.05% of the Lehman Aggregate Index
- Total CMBS market capitalization of over $700 billion

Source: Lehman Brothers
A journey brings us face to face with ourselves.
A stock (or a fund) has an average return of 0%.

It moves on average 1% a day in absolute value; the average up move is 1%, and the average down move is 1%.

This does not mean that all moves are 1%—some are 0.6%, others 1.45%, and so on.
\[ \sigma_{Daily} = 1.00\% \]
\[ \sigma_{\text{Annual}} = \sigma_{\text{Daily}} \sqrt{256} = 1.00\% \times 16 = 16.00\% \]
\[
\frac{\sum |x|}{\sqrt{\sum x^2}} = \sqrt{\frac{2}{\pi}}
\]
\[ \sigma = 1.25\% \]

\[ \sigma_{\text{Annual}} = \sigma_{\text{Daily}} \sqrt{256} = 1.25\% \times 16 = 20.00\% \]
Weekly Average Maximum Daily Temperature
1997 - 2007
Weekly Prediction of Maximum Daily Temperature
1997 - 2007

Temperature Fahrenheit

Los Angeles
Chicago

[Graph showing temperature trends from 1997 to 2007 for Los Angeles and Chicago]
Intended for presentation on April 28, 2008 at the Milken Institute Global Conference (@ The Beverly Hilton, Los Angeles, CA)

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Investing in a Period of Higher Volatility
Elevated Equity Volatility

Volatility of the S&P Index is near a 5-year high
Volatility in Financials Climb

Volatility of financial services companies has spiked in the current credit crisis.

* The XLF is an exchange traded fund representing the financial services component of the S&P 500.
The "Fear Gauge" Rises

*The VIX Index represents a weighted average of implied volatilities of SPX options across a range of strikes in the next two maturities.*
Investment grade spreads have been volatile due to widening spreads in financial services companies.
CDX-HY Index

High Yield spreads have widened significantly from last year’s tight levels even after the recent rally
Spreads on levered loans have also been impacted.
Reframing Fundamentals of Economics, Finance, and Investing: Mr. Market is Really Mr. Market and his Relatives

There are markets for real resources and obligations

There are also markets for financial resources and obligations

These markets are made “relatives” to each other through the process of arbitrage which operates in different ways at different times which is reflected in transaction activity, such as volume and price.
Using the Auditor's tool of the “Accounting Box” to see the Endogenous and Exogenous Systems and Dynamics Affecting Corporate Performance and Total Return Investing

A company can be framed as a securitization of real resources interacting with the markets for real and financial resources. One endogenous dynamic model driving corporate performance through time is the total return form of the value driver model based on the Gordon Growth Formula.

\[
\begin{align*}
A_0 &= L_0 + E_0 \\
A_1 &= L_1 + E_1
\end{align*}
\]
Following the Balance Sheet

In order to capture this dynamic we must focus on the opening and closing balance sheets, the firm’s stocks of resources and obligations.
Accumulation and Drainage Dynamics

- The balance sheet records the stocks of assets and liabilities of the company.
- The levels of these stocks create flows, such as cash flows, that accumulate in and drain out of the stocks through time.
Mirrored Bathtubs

- Since assets always match liabilities the balance sheet is actually two “mirror image” bathtubs
- One bathtub is for the financial and operating resources and the other is for the financial and operating obligations
1) General pattern of systems that change through time: stocks, activities, flows, stocks (the “SAFS” Pattern)

2) The Accounting Box based on the balance sheet identity captures this pattern for corporate systems

3) From the SAFS Pattern and the Accounting Box, we can analyze the relationship between a company’s SAFS Pattern and its staying power, earnings power, and overall wealth accumulation through time by creating two simple templates:

1) A net debt analysis (aka a statement of changes in net financial obligations (NFO) or net financial assets (NFA))
2) A total return template for historical and forecast analysis that tracks the overall SAFS pattern and the impact on total return

These templates can then be tied into other mental models for the dynamics of corporate performance and total return
4) We first focus on the accumulation of financial assets within the SAFS Pattern through the NET DEBT ANALYSIS which is essentially a statement of changes of net financial assets or obligations that isolates those recurring changes due to a company’s operating activities after adjustments made through the direct and indirect methods.

5) Then we focus on the overall wealth accumulation pattern – historically and in the future through the total return template.

| Historical Pattern of Accumulation | Beginning Stocks of Net Financial Assets/Obligations (NFA/NFO) and Net Operating Assets (NOA) at Time 0 vs Market Entry Price at Time 0 | ACTIVITIES (OPERATING, INVESTING & FINANCE) AND FLOWS (cash and non cash accruals) Between Time 0 and 1 | Ending Stocks at Time 1 vs Market Exit Price at Time 1 | Continuation of Pattern of Accumulation into the Future |
PATTERNS ON THE BALANCE SHEET

Archetypical Patterns/Dynamics for Balance Sheet Changes

• There are often patterns in the stocks of value in the company over time
• Through accumulation and drainage the balance sheet changes period to period in certain ways that are hard wired into the structure of the company
Cash Pay Bond - Like

• Mature companies such as General Electric often show linear growth of assets over time
• This dynamics is similar to that of a cash pay bond, in that the value of the security increases by a set amount (coupon) every period
Exponential Growth and Limits

- Starbucks exhibits exponential growth of assets during the last decade, like a zero coupon bond.
- Microsoft had the same pattern until 2001 when it began showing signs of hitting an inflection point.
Cyclicality and Decline

- Airlines, such as American above often display cyclicality in the growth of their assets over time due to the cyclical nature of their industry.
- When the assets of a company begin to decline, such as those of Tweeter questions ought to be raised about the staying power of the firm.
Adding Complexity - Feedback

• But the flows are not exogenous! The level of the stocks feedback onto the rate of the flows

• The Perpetuity Model is an example, since growth in NOA causes higher NOPAT and higher future NOA, but in practice the feedback can be much more complex

• Consider the following example of diminishing marginal returns
Adding Complexity – Feedback

- Consider this Model with a balancing feedback that lowers ROIC as the market becomes saturated.
- The results are very different from the exponential growth assumed in the perpetuity model (red).
- These feedback dynamics can become as realistic, (and complicated) as is necessary.
Adding Uncertainty

• Unfortunately the world is not a deterministic place… but we have strategies for dealing with uncertainty
• Two of these tools are decision trees and sensitivity analysis
Adding Uncertainty – Decision Trees

- Track what will happen to the Balance Sheets of a company over time given certain strategies, events and environments
- The Balance Sheets seen at the end of the tree can give you an idea of the possible payoffs from owning the security
- Be careful not to homogenize the scenarios by assigning probabilities and calculating a present value!
Adding Uncertainty – Decision Trees

Known Balance Sheet at Time 0

Events

Strategies

Possible Balance Sheets at Time T

Flows Along the Path Change B/S

Consider the payoffs across the tree to gain perspective on the benefits and risks of the company
Adding Uncertainty
– Sensitivity Analysis

• The Uncertain Parameters in your model can be varied and the nature of their effects on your results can be measured
• Consider the example of diminishing marginal returns where the base ROIC varies

The basic shape of the graph does not change, and the early values of NOA are similar, however the ending size on NOA does change.