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COMMODITIES
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ASSET ALLOCATION
PARAMETRICS LLC

Asset Allocation Strategies for Commodities Investments

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I. Introduction

- Greetings
- Some words on perspectives and data
- Credits
 - See “Fact and Fantasies about Commodity Futures” by Gary Gorton and K. Geert Rouwenhorst in the *Financial Analysts Journal*, March/April 2007.
- Caveats
 - Nothing in this presentation is intended as a solicitation to purchase or sell any security, investment, or commodity.
 - Past performance is not necessarily an indicator of future performance.
 - Portfolio planning must take into account investor risk, liability, tax, and currency conversion considerations.

II. Overcoming Objections

Investor reluctance to invest in commodities is often based on one or more objections:

1. Commodities are not real financial assets
2. Commodities are too risky
3. Investment portfolio policy leaves no room for commodities

II. Overcoming Objections

Objection 1

- “Commodities are not real financial assets. Investing in them is just betting on price movements.”

II. Overcoming Objections

Reply to Objection 1

- Commodities are not traditional financial assets that derive returns from the use of capital in a productive enterprise as do investments in stocks, bonds, or real estate.
- Some commodity investment strategies do rely on betting on price changes to generate returns.

II. Overcoming Objections

Reply to Objection 1

- BUT, commodities investment vehicles exist that are not fundamentally speculative and do provide returns that are not dependent on price appreciation or depreciation (details to come)

II. Overcoming Objections

Objection 2

- “Commodities are too risky.”

II. Overcoming Objections

Reply to Objection 2

- On a US\$ return basis commodities are riskier than both large-cap and small-cap stocks but comparable to small-cap stocks.

	Commodities	Large-cap stocks	Small-cap stocks
Standard deviation of annual returns (1970-2007)	23.9%	16.6%	22.6%

II. Overcoming Objections

Reply to Objection 2

- On a CNY return basis commodities have been less risky than stocks – but the data is less robust

	Commodities (S&P GSCI TR)	Shanghai Stock Index Total Return
Standard deviation of annual returns (1996-2007)	29.0%	49.5%

II. Overcoming Objections

Objection 3

- “Commodities don’t fit into the investment portfolio policy.”

II. Overcoming Objections

Reply to Objection 3

- The exclusion of commodities or other “high risk” asset classes from the list of acceptable investments under portfolio policy may be premised on objections 1 and 2 and/or on a lack of understanding of the principles of portfolio optimization.
- Asset classes should not be assessed on a stand-alone basis but on their ability to contribute efficiently to portfolio returns.

II. Overcoming Objections

Reply to Objection 3

- Commodities can be efficient contributors to portfolio performance, both enhancing returns while reducing risk (details to come).

III. Investing in a Total Return Commodities Index

- A total return commodities index is a vehicle that provides commodities exposure without relying on price bets.
- Index captures return on a basket of passively managed, fully collateralized commodities futures contracts.

III. Investing in a Total Return Commodities Index

Return Components

- An “insurance premium” for providing price security.
- A short-term fixed income return.

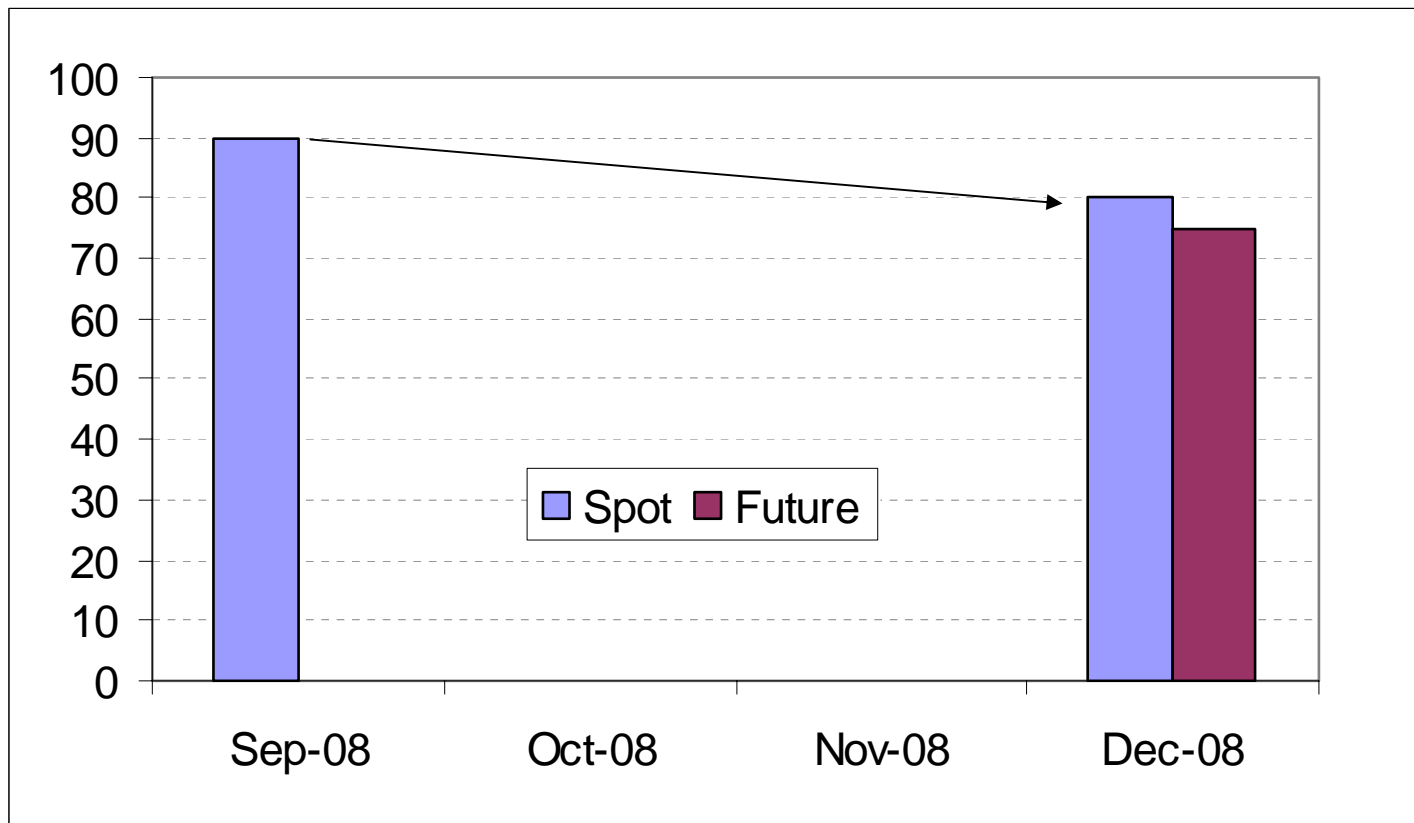
III. Investing in a Total Return Commodities Index

Price Insurance Premium

- Commodities producers seeking price certainty pay a “premium” by agreeing to receive a lower guaranteed contract price than they think is likely in the future spot market.
- Conversely, commodities users seeking price certainty pay a “premium” by agreeing to pay a higher guaranteed contract price.
- Investors providing price security receive the premium.
- Unanticipated price movements may increase or decrease the premium.

III. Investing in a Total Return Commodities Index

A Highly Simplified Example



III. Investing in a Total Return Commodities Index

Index construction

- A total return commodities index fund tracks the returns that would be achieved by a price “insurer” who takes the position of providing price security through futures contracts on a basket of commodities.
- The fund assumes that contracts are fully collateralized, in other words, the “insurer” puts up the full cash value of the commodities contracts. Excess cash is invested in Treasury bills.
- The fund assumes passive management – futures contracts are opened and closed on a scheduled rolling basis without regard to price movements.

III. Investing in a Total Return Commodities Index

Index choice

- Problems with index construction:
 - Which commodities to include?
 - How to weight them? (What is the market capitalization of wheat?)

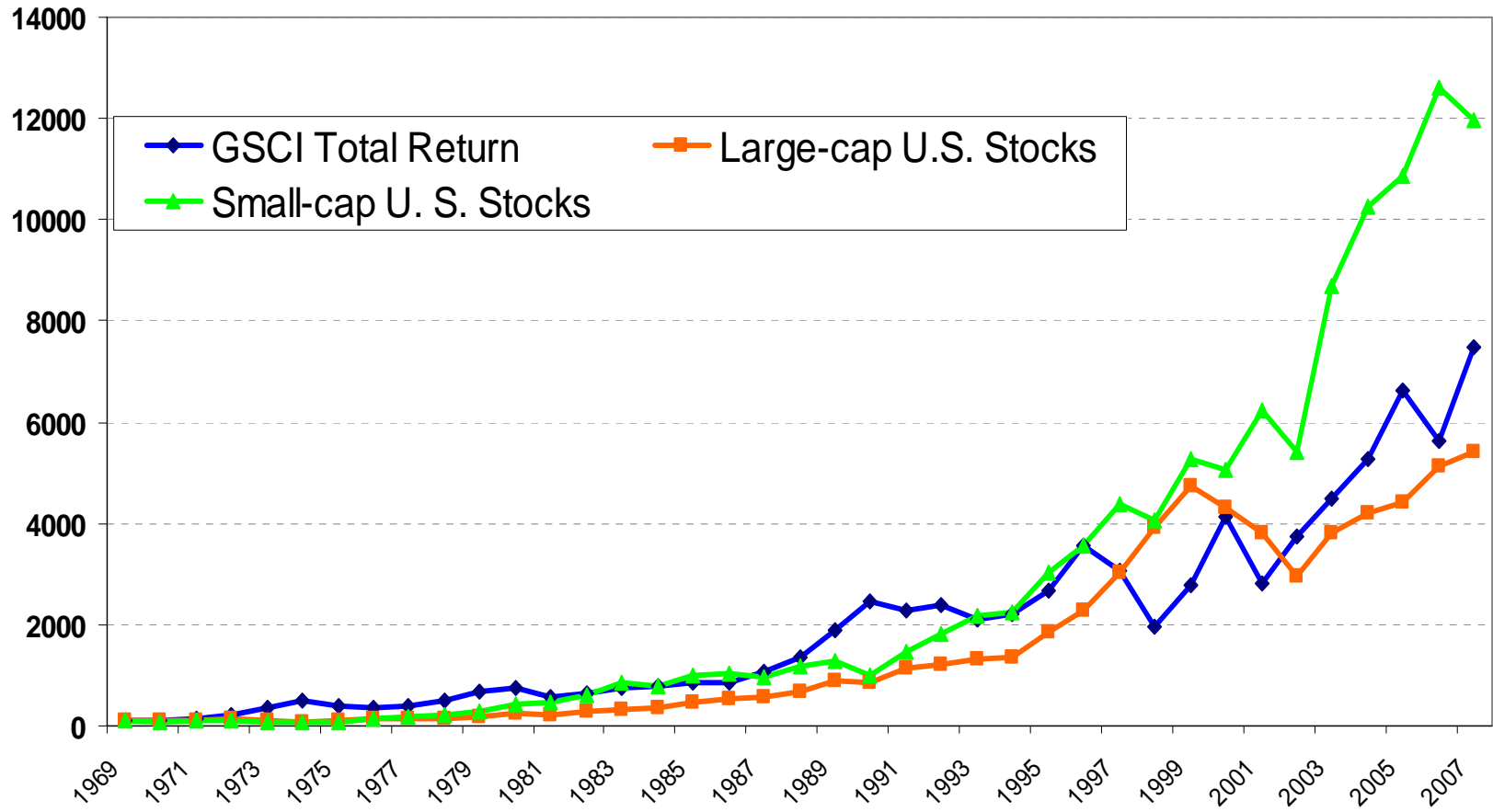
III. Investing in a Total Return Commodities Index

Index choice

- Different indices uses different approaches
 - S&P GSCI index includes 24 commodities in five sub-groups with each commodity weighted by the value of its global production.
 - DJ–AIG index includes 19 commodities weighted by a combination of liquidity and production with rules limiting weights to insure diversification.
 - Others include DBLCI, Reuters/Jefferies CRB

IV. Index Return Characteristics

Total Return Comparison
S&PGSCI TR Index vs Large-cap & Small-cap U.S. Stocks



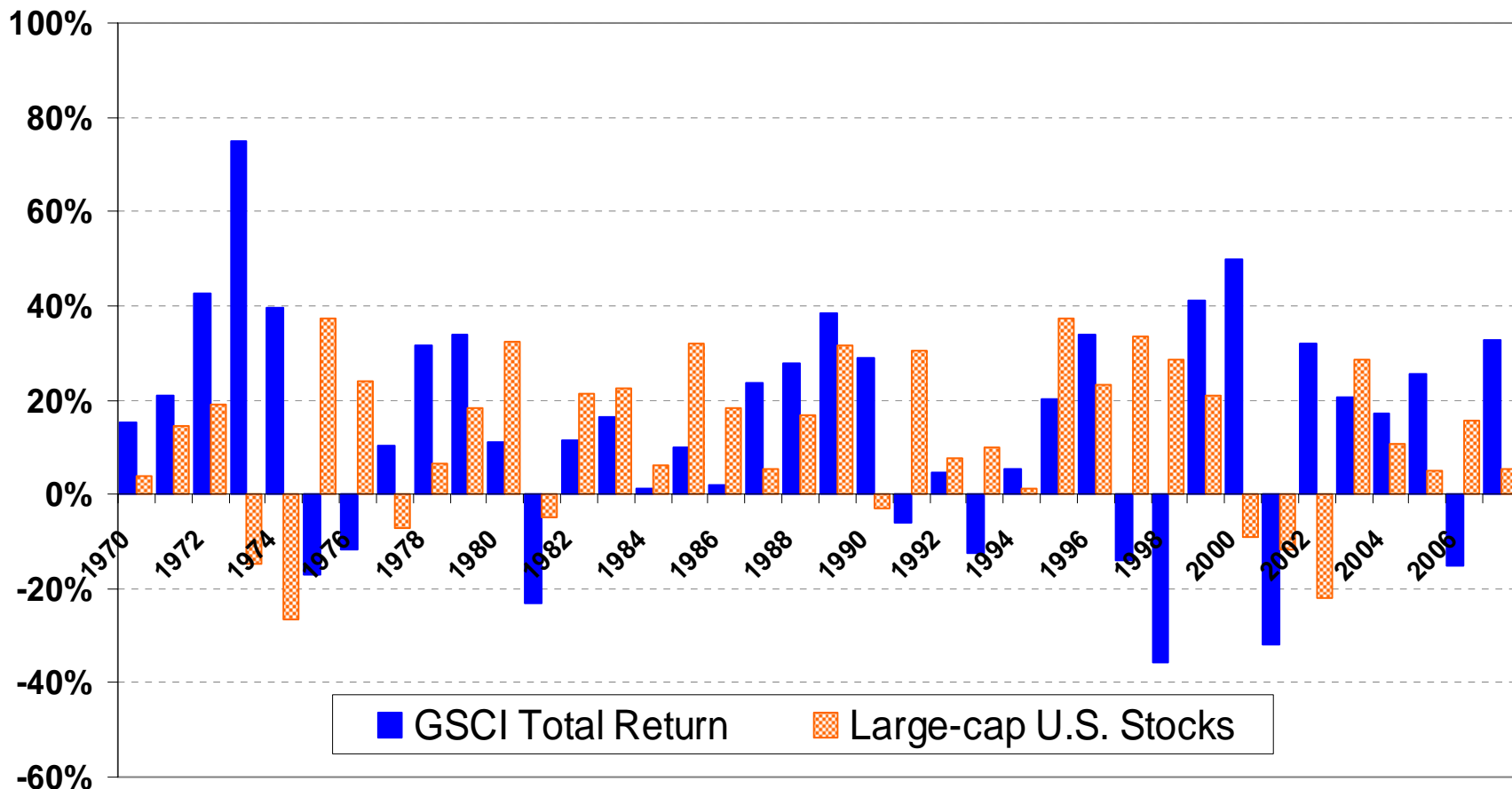
IV. Index Return Characteristics

- On a US\$ total return basis the S&P GSCI index has return characteristics between large-cap and small-cap stocks.

For 1970 - 2007	Commodities S&P GSCI TR	Large-cap stocks	Small-cap stocks
Average annual return (arithmetic average)	14.6%	12.4%	15.6%
Compound annual return (geometric average)	12.0%	11.1%	13.4%
Standard deviation	23.9%	16.6%	22.6%

IV. Index Return Characteristics

Total Return Comparison S&PGSCI TR Index vs Large-cap U.S. Stocks



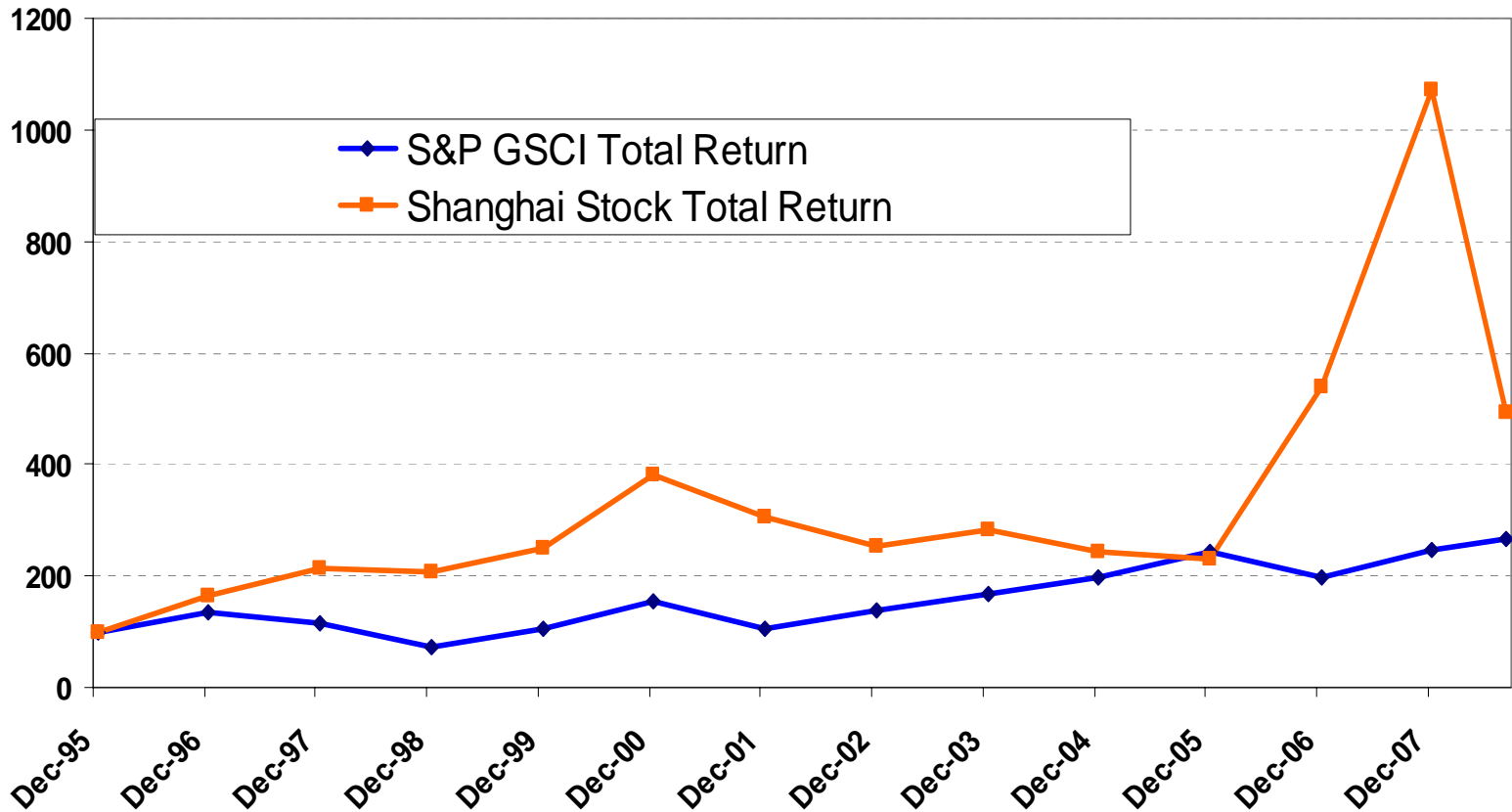
IV. Index Return Characteristics

- On a US\$ basis the S&P GSCI total return index has been negatively correlated with U. S. large-cap and small-cap stock returns.

Correlations (based on annual return 1970-2007)	Large-cap stocks	Small-cap stocks
S&P GSCI TR	-.28	-.36

IV Index Return Characteristics

Total Return Comparison
S&PGSCI TR Index vs Shanghai Stocks



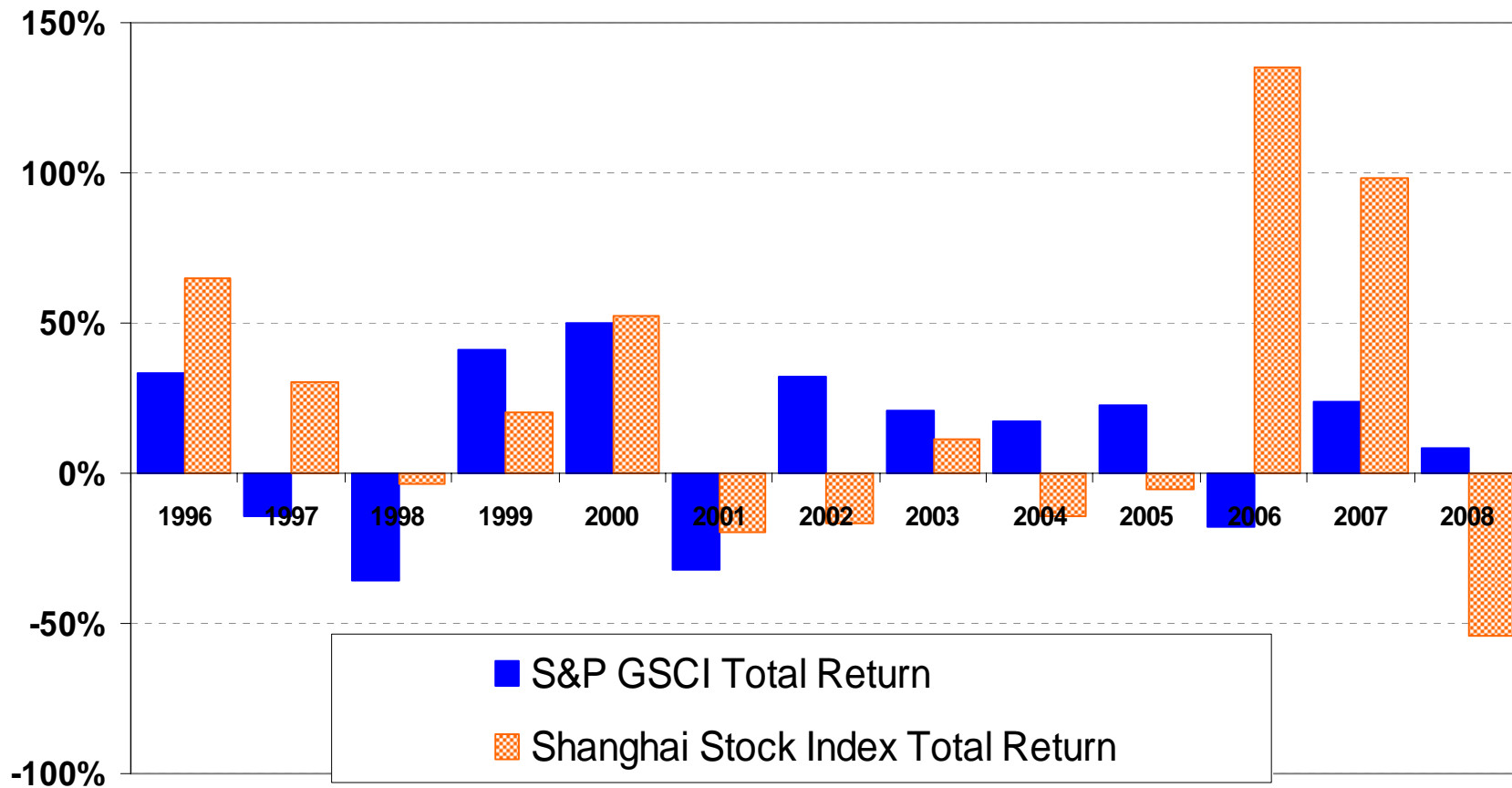
IV. Index Return Characteristics

- On a CNY total return basis the S&P GSCI index has had lower returns than Shanghai stocks
- But note short time period.

For 1996 - 2007	Commodities S&P GSCI TR	Shanghai Stocks total return
Average annual return (arithmetic average)	11.7%	29.4%
Compound annual return (geometric average)	7.8%	21.8%

IV. Index Return Characteristics

Total Return Comparison
S&P GSCI TR Index vs Shanghai Stocks



IV. Index Return Characteristics

- On a CNY basis the S&P GSCI total return index has a very low correlation to Shanghai stock returns.

Correlation (based on annual return 1996-2007)	Shanghai Stocks Total Return
S&P GSCI TR	.07

IV Index Return Characteristics

- Whether you are a U.S. or China investor, commodities have offered reasonable to robust nominal returns with low or negative correlations to stock returns.

V. Asset Allocation & Portfolio Optimization with Commodities

The goal of portfolio optimization

- Devise a mix of assets (an asset allocation) that will
 - Maximize compound return
 - Minimize risk

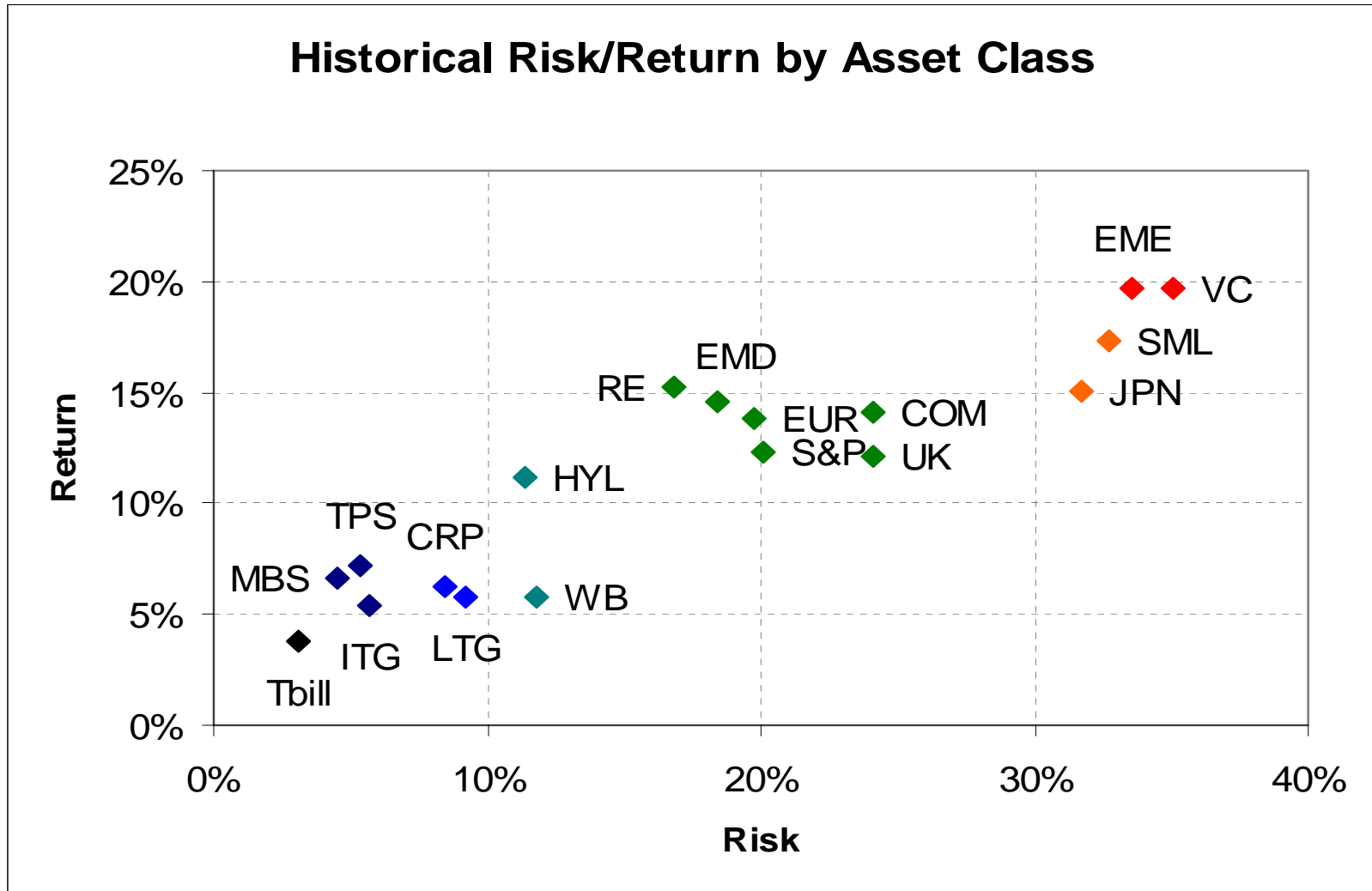
V. Asset Allocation & Portfolio Optimization with Commodities

What we need

Assets with

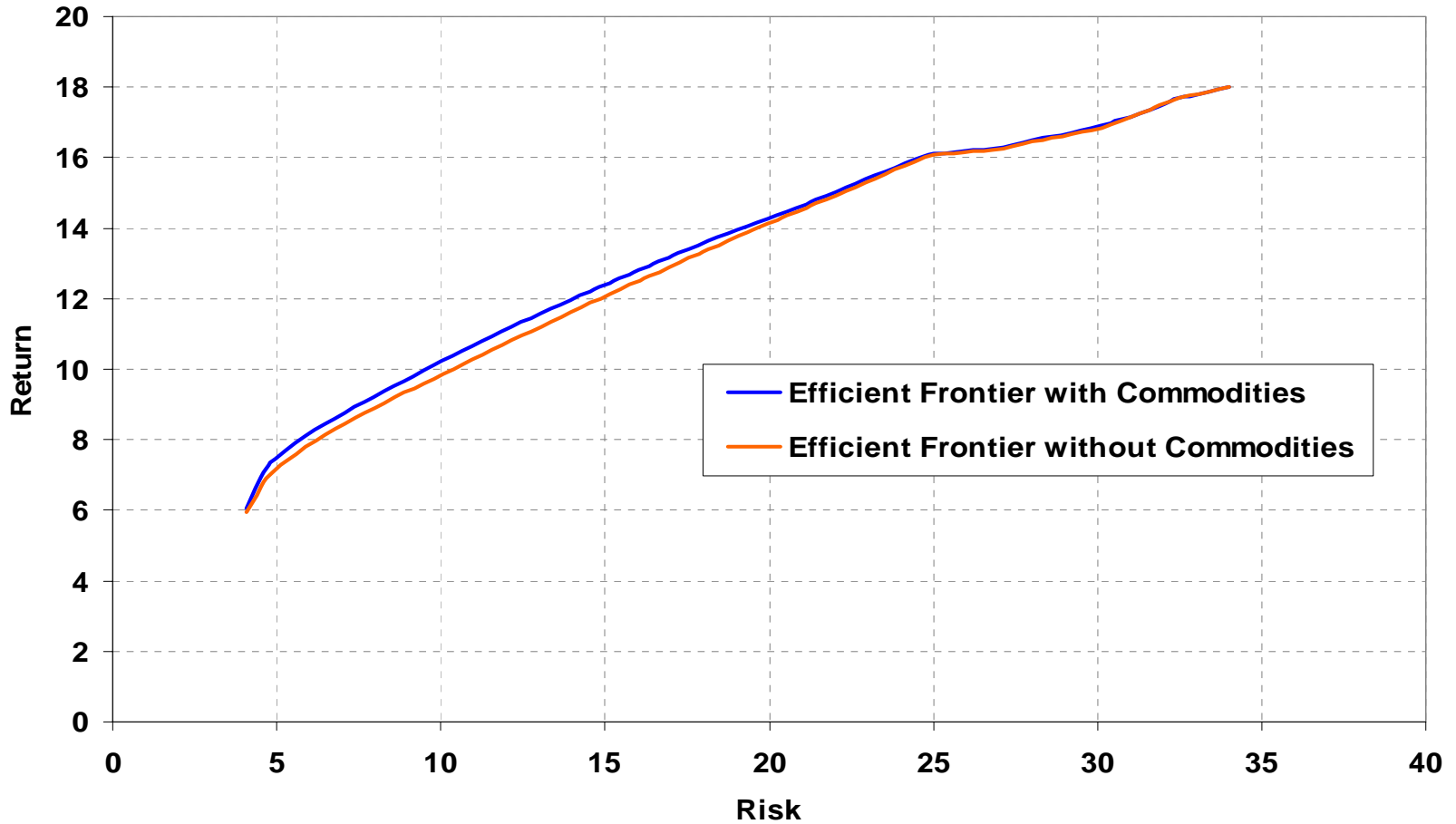
- a range of return/risk characteristics
- less than 1:1 correlation

V. Asset Allocation & Portfolio Optimization with Commodities



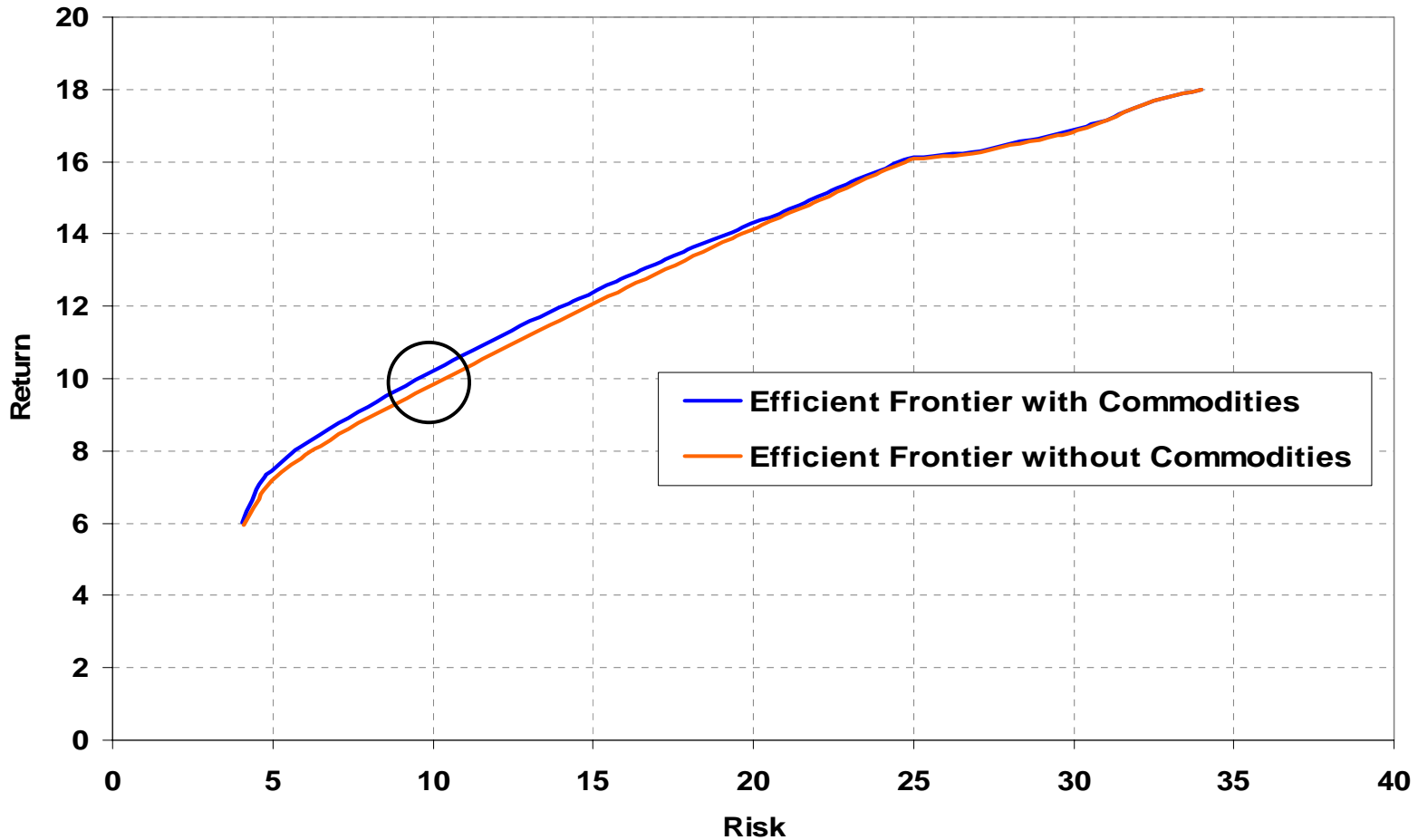
V. Asset Allocation & Portfolio Optimization with Commodities

Efficient Frontier Comparison



V. Asset Allocation & Portfolio Optimization with Commodities

Efficient Frontier Comparison



V. Asset Allocation & Portfolio Optimization with Commodities

- For portfolios with expected standard deviation of annual returns of 10%, commodities add approx. 0.4% in return.

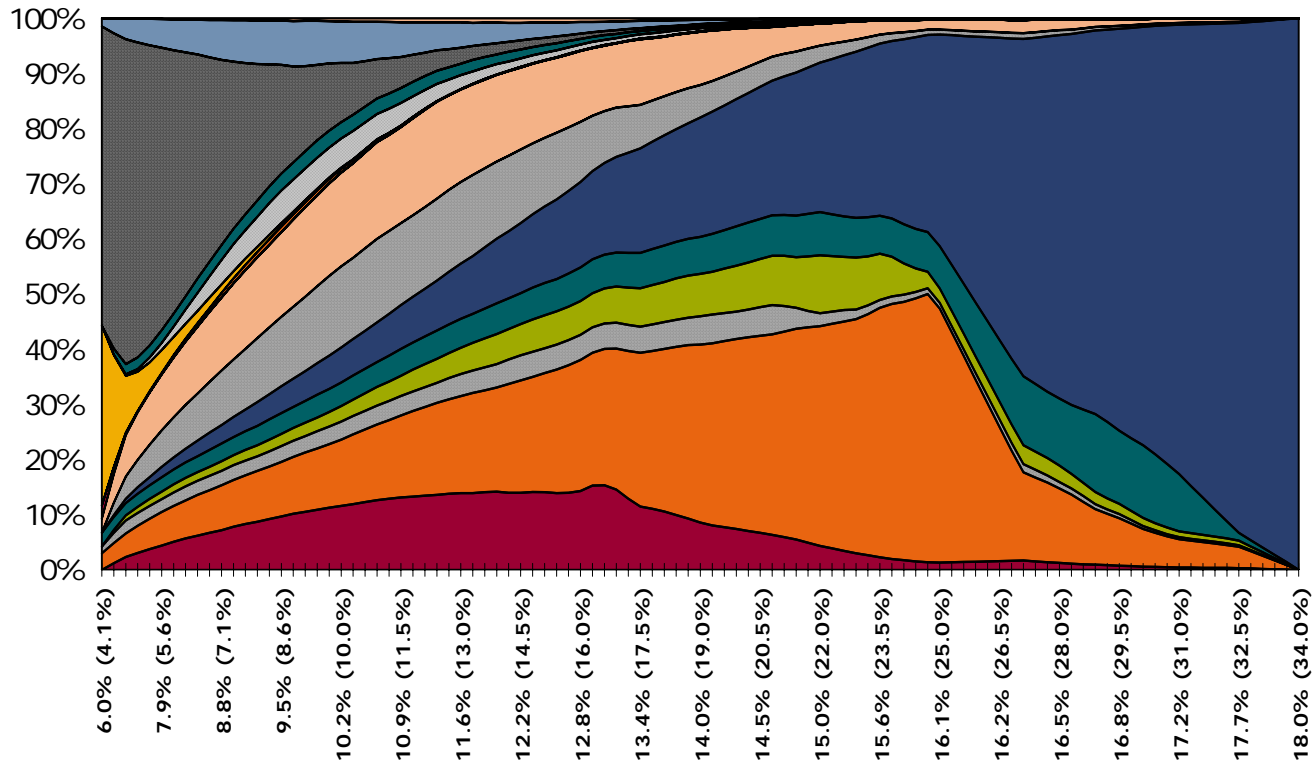
	With Commodities	Without Commodities
Expected Return	10.2%	9.8%
Expected Risk	10.0%	10.0%
Allocation	17%	0%

V. Asset Allocation & Portfolio Optimization with Commodities

- For portfolios with expected annual returns of 10%, commodities reduce risk by approx. 0.8%

	With Commodities	Without Commodities
Expected Return	10.0%	10.0%
Expected Risk	9.6%	10.4%
Allocation	16 – 17%	0%

V. Asset Allocation & Portfolio Optimization with Commodities



V. Asset Allocation & Portfolio Optimization with Commodities

- Commodities as an asset class can be an efficient contributor to portfolio risk/return performance over a wide range of risk levels.

V. Asset Allocation & Portfolio Optimization with Commodities

- Investors should not accept black-box asset allocation recommendations.
- Investors need to know:
 - Asset classes within universe
 - Asset class return, risk, and correlation projections and comparisons with history
 - Your expected portfolio risk and return (in other words your locations on efficient frontier)
 - The methodology used for portfolio optimization (something beyond Markowitz MV!)

Final thoughts

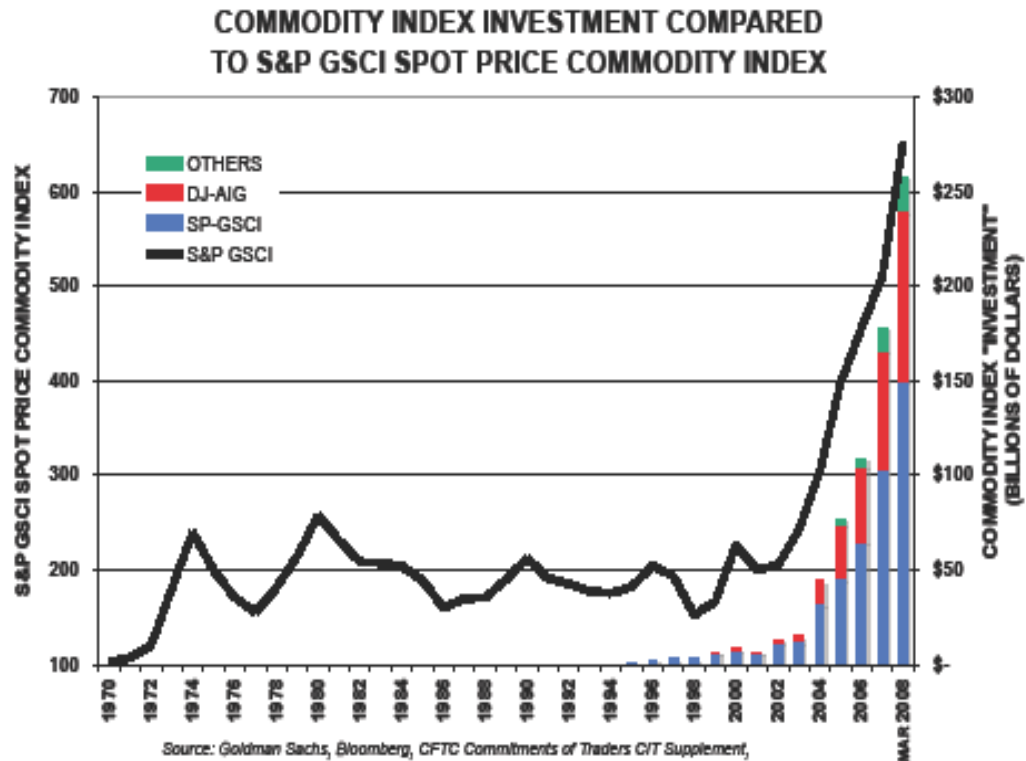
- Correlations may be converging
- The flow of capital into a market changes the dynamics of the market – commodities bear watching!
- Asset allocation is both art and science and not susceptible – at this stage of the discipline – to strictly quantitative analysis.

Final Thoughts

Changing Market Dynamics

from Michael Masters' testimony to US Senate Committee

CHART ONE



Conclusion

- 谢谢
- Thank you!