The Challenges of Investing in Commodities

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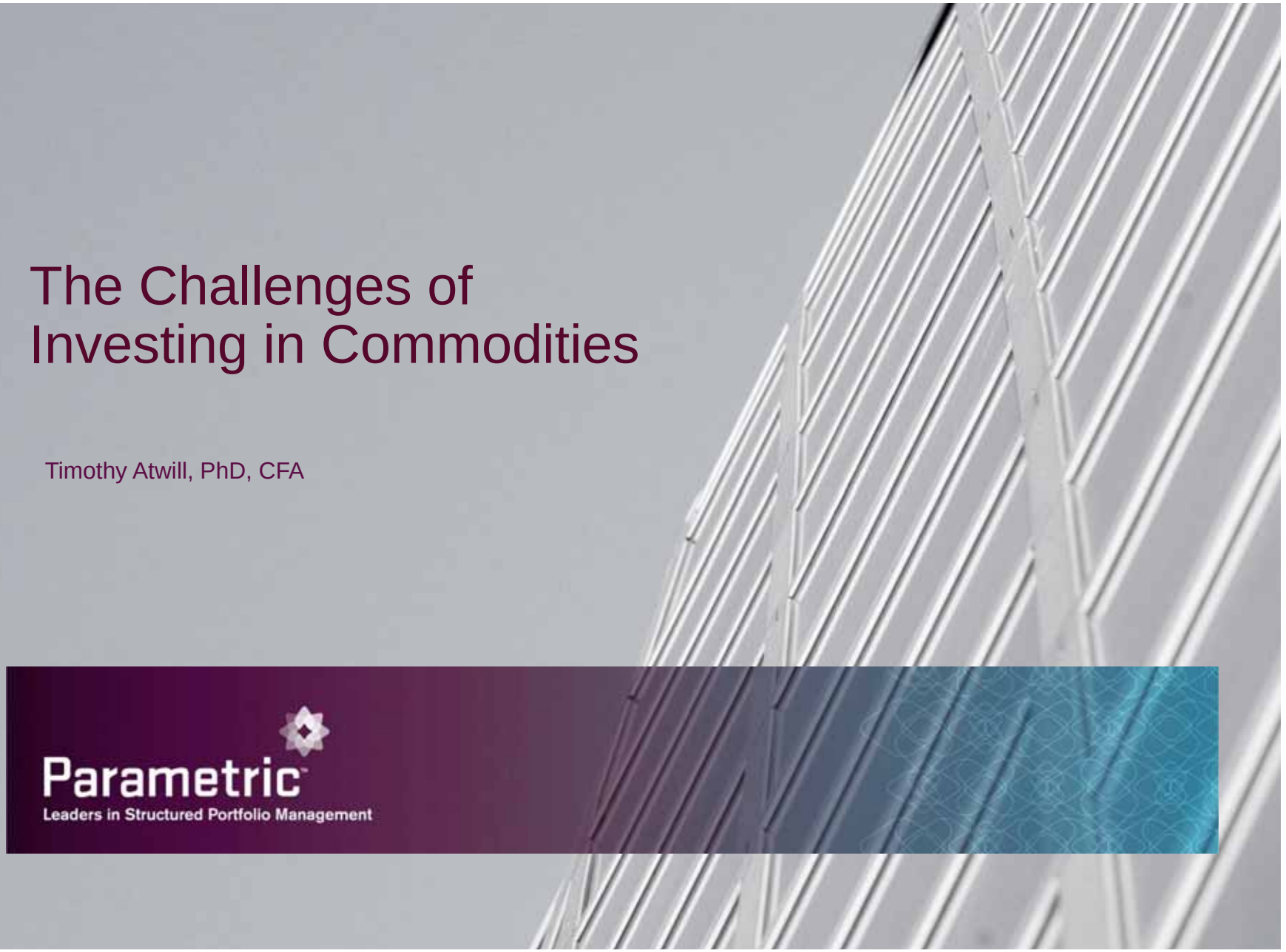

Why Invest in Commodities?

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Why Commodities?

- Inflation protection
- Portfolio diversification
- Equity-like returns

Correlation Jan 1970 - Dec 2010	S&P GSCI TR (Commodities)	S&P 500 TR (Equities)	BarCap Agg (Bonds)
S&P GSCI TR	100%	7%	-6%
S&P 500 TR		100%	26%
BarCap Agg			100%

Source: Bloomberg & Parametric, as of 31 Dec 2010, calculated using monthly returns

Risk & Return Jan 1970 - Dec 2010	S&P GSCI TR (Commodities)	S&P 500 TR (Equities)	BarCap Agg (Bonds)
Return (p.a.)	10.0%	10.1%	8.2%
Vol (ann.)	20.0%	15.7%	5.6%

Source: Bloomberg & Parametric, as of 31 Dec 2010, calculated using monthly returns

How to Get Exposure?

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Physically own commodity

- Involves transportation, storage, insurance, etc
- Not practical for most investors

Buy commodity based stocks

- Many factors aside from commodity prices affect stocks
- Many commodity producers hedge the price of their outputs
- Equity beta overwhelms commodity beta

Purchase commodity futures

- Very liquid
- If fully backed by cash collateral, leverage is minimized

Commodity Indices

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Risk & Return (January 2000 – December 2010)

	S&P GSCI®	DJ–UBSCI℠	RICI®
Return (p.a.)	5.4%	8.0%	10.8%
Volatility (ann.)	25.1%	17.5%	19.5%
Sharpe Ratio	0.11	0.31	0.42

Source: Bloomberg

Sector Weights (as of December 2010)

	S&P GSCI®	DJ–UBSCI℠	RICI®
Energy	69.8%	33.0%	44.0%
Base Metals	8.4%	17.8%	14.0%
Precious Metals	3.2%	13.7%	7.1%
Ags/Live Stock/Other	18.7%	35.4%	34.9%

Source: Goldman Sachs, Dow Jones Indices, RICI® Handbook, 2010 version

What Determines Index Weights?

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There is no “market cap” equivalent for commodities.

Index weights have been based on:

- Global production (GSCI, DJ-UBSCI)
- International trade (RICI)
- Liquidity (MLCX, DJ-UBSCI)

There is no clear argument any method is superior.

Commodity indexes do not represent investment universes.

Rather, they are explicit portfolio trading strategies.

Concentration in Commodity Indices

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S&P GSCI® Weights (%)

Energy		Industrial Metals		Precious Metals		Agriculture		Livestock	
WTI Crude Oil	34.71	Aluminum	2.70	Gold	2.80	Wheat	3.00	Live Cattle	2.59
Brent Crude Oil	15.22	Copper	3.66	Silver	0.36	Red Wheat	0.69	Lean Hogs	1.59
RBOB Gasoline	4.67	Lead	0.51			Corn	3.37	Feeder Cattle	0.44
Heating Oil	4.66	Nickel	0.82			Soybeans	2.36		
Natural Gas	4.20	Zinc	0.72			Cotton	1.24		
Gas Oil	6.30					Sugar	2.25		
						Coffee	0.76		
						Cocoa	0.39		
Total	**69.76**		**8.41**		**3.16**		**14.06**		**4.62**

Source: Average Contract Reference Prices, 2011, Standard & Poors

DJ–UBSCI^{SM} Weights (%)

Energy		Industrial Metals		Precious Metals		Agriculture		Livestock	
WTI Crude Oil	14.71	Aluminum	5.20	Gold	10.45	Wheat	4.61	Live Cattle	3.36
Natural Gas	11.22	Copper	7.54	Silver	3.29	Corn	6.98	Lean Hogs	2.00
Heating Oil	3.58	Nickel	2.25			Cotton	2.00		
RBOB Gasoline	3.50	Zinc	2.85			Soybeans	7.86		
						Coffee	2.36		
						Soybean Oil	2.94		
						Sugar	3.33		
Total	**33.00**		**17.84**		**13.74**		**30.06**		**5.36**

Source: 2011 Target Weights, Dow-Jones Indices

Concentration in Commodity Indices

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RICI® Composition for 2010 (%)

Energy		Industrial Metals		Precious Metals		Agriculture		Livestock		Other	
Crude Oil	21.00	Aluminum	4.00	Gold	3.00	Wheat	6.00	Live Cattle	2.00	Rubber	1.00
Brent Crude	14.00	Copper	4.00	Silver	2.00	Corn	4.75	Lean Hogs	1.00	Lumber	1.00
RBOB Gasoline	3.00	Nickel	1.00	Platinum	1.80	Cotton	4.20			Orange Juice	0.60
Heating Oil	1.80	Zinc	2.00	Palladium	0.30	Soybeans	3.35			Greasy Wool	0.10
Natural Gas	3.00	Lead	2.00			Coffee	2.00				
Gas Oil	1.20	Tin	1.00			Soybean Oil	2.00				
						Sugar	2.00				
						Cocoa	1.00				
						Kansas Wheat	1.00				
						Soybean Meal	0.75				
						Canola	0.75				
						Rice	0.50				
						Oats	0.50				
						Rapeseed	0.25				
						Azuki Beans	0.15				
Total	**44.00**		**14.00**		**7.10**		**29.20**		**3.00**		**2.70**

Source : RICI® Handbook, 2010 version

Perils of Passive

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Benchmarks are broken

- Are not “slice of the market”
- Different benchmarks represent very different exposures
- Most indices have concentration issues

Very explicit index rules for rolling futures

- Allows front running by others
- Impacts both the buy and the sell trades in the roll

Misunderstanding of spot returns versus futures returns

- Spot returns are unachievable, as don’t build in costs
- Futures reflect this, via a “cost of carry”
- Difference between spot and futures return can be dramatic

Aggravations of Active

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Actively manage the commodity contracts

- Being flat or short a commodity can undercut inflation fighting
- Historically demonstrate increased correlation with equity
- Academic studies show most of alpha is retained by managers

Actively manage the underlying collateral

- Diversification studies assume T-bill collateral
- Active fixed income bets increase correlation with fixed income
- Increasing duration can undercut inflation fighting

Active Indexes

- Use smart filters/algorithms to outperform
- No assurance inflation fighting and diversification properties are intact
- If attract large amounts of AUM, open to front-running

Where is the Market Heading?

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Most early adopters are very familiar with the above

Moving to an "Enhanced Index" approach

- Track an index with very modest alpha proposition
- Trading not tied to index rules
- Perform tweaks to the indexes (e.g., remove concentrations)
- Little risk taken with cash collateral
- Combine in core/satellite structure with commodity hedge funds

Avoid "perils of passive"

Lock in the strategic reasons for investing in asset class

Summing Up

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- Commodity asset class desired for diversification and inflation fighting
- The primary way of gaining exposure is a fully funded futures position
- Commodity indexes do not represent an investable universe
- Commodity indexes are instead very explicit trading strategies
- Passive vehicles are flawed in many ways
- Active management may unwind the motivations for investing in commodities
- One solution is to take an “enhanced index” approach