

Investing the Commodities “Super Cycle”

September 19, 2012

MT LUCAS



We Have All Heard It:

Commodities are going up forever!



Commodity Super Cycle - The Bull Case

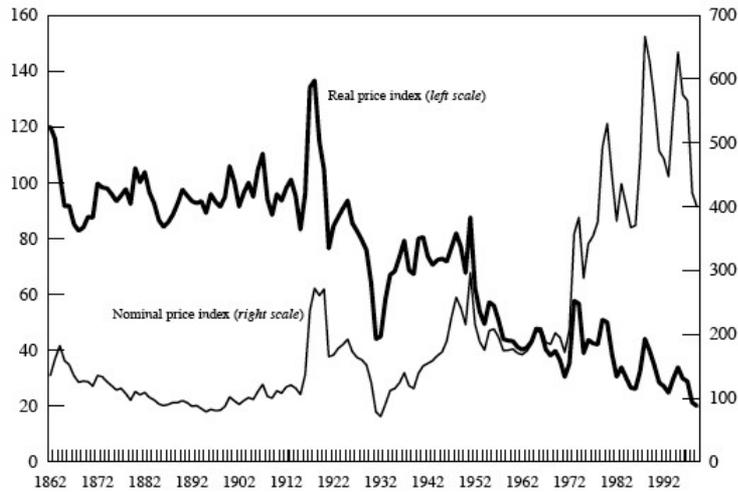
- Demographics
 - Global population at 7 Billion in 2011, to surpass 9 Billion by 2050
 - China/India represent 36.2% of global population
- China/India
 - Transitioning from emerging to developed economies
 - Higher energy needs
 - Higher protein diets
 - Higher industrial metal demand
- Limited Resources
 - Peak Oil
 - Food
 - Metals
- Gold
 - Central banks, debt, and fiat money



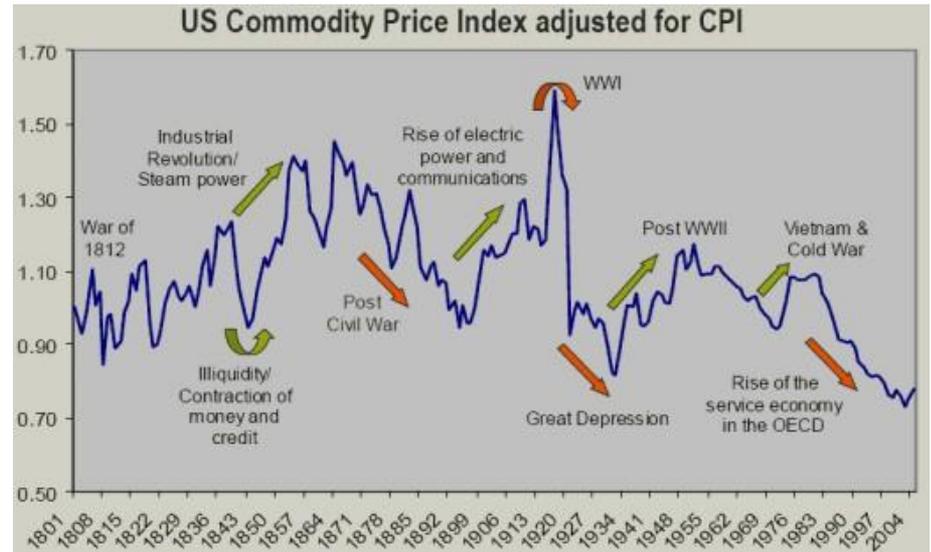
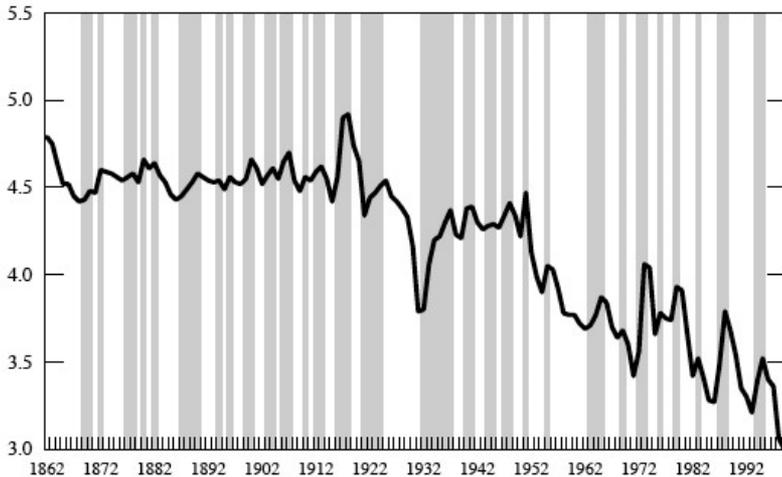
How to Invest - Just Get Long

- Price of stuff goes up over time
- Backwardation or roll yield
- Portfolio diversification

Do Prices Go Up? History Says No.



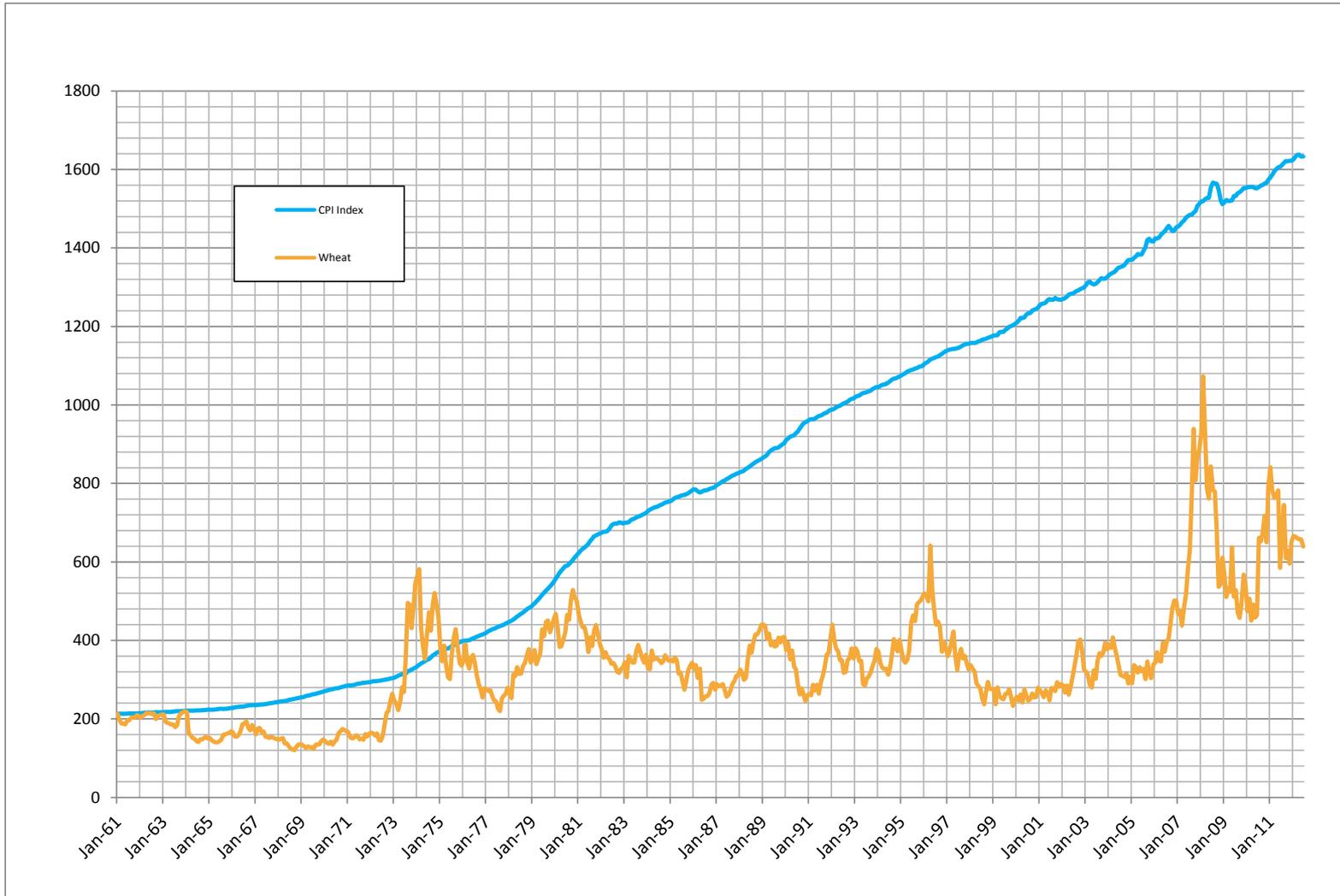
Log of real price of industrial commodities



Source: The Economist

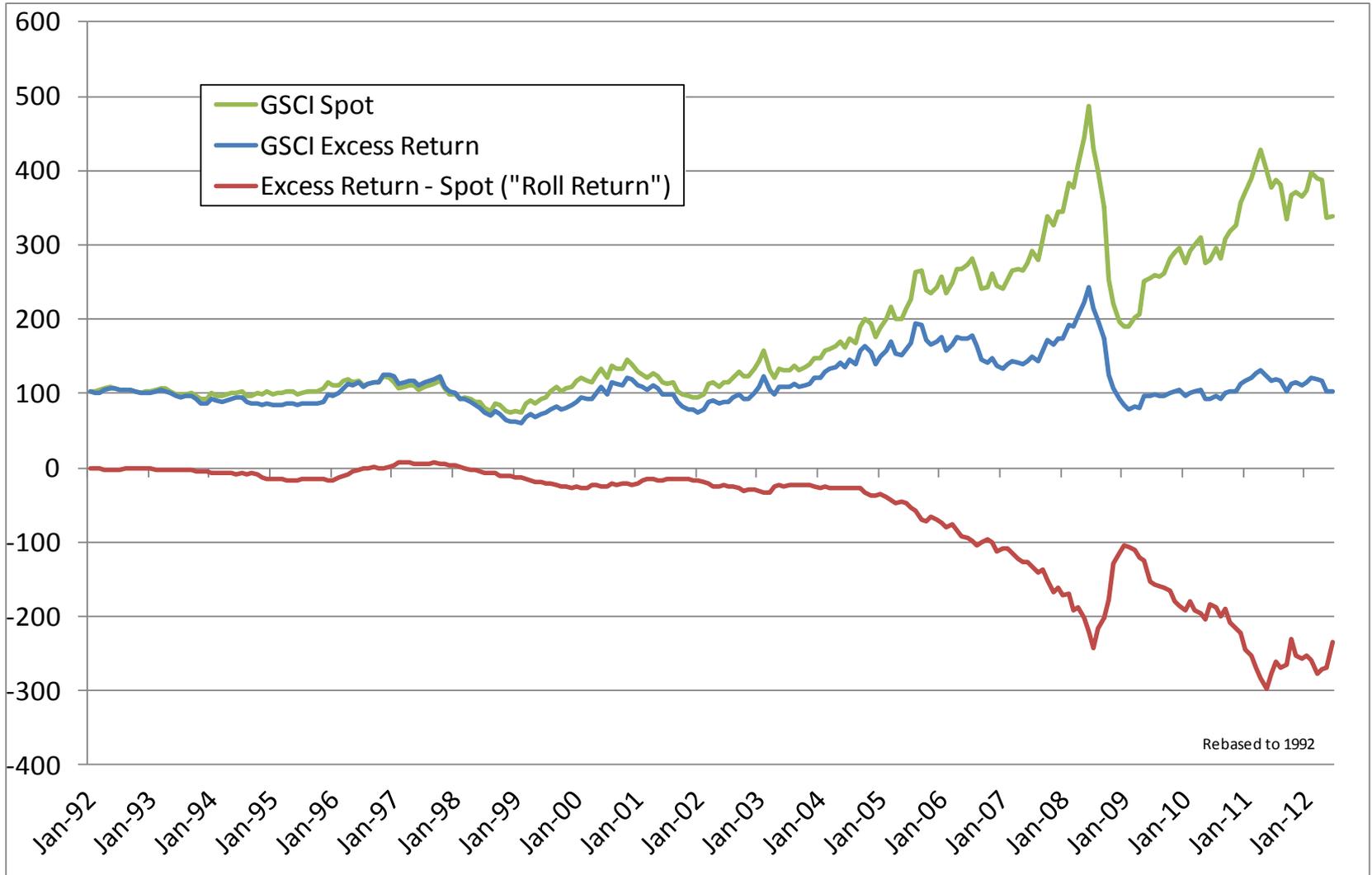


Wheat vs. Inflation



Source: Bloomberg

Backwardation - GSCI Spot vs. Excess Return



Source: Bloomberg



Gets Worse - Only Works if Weighted Correctly

- Average excess returns of individual commodity futures contracts are indistinguishable from zero¹
- A Commodity futures portfolio can have equity-like returns if it achieves high enough diversification return¹
- A Commodity futures portfolio can achieve this by skewing portfolio exposures toward markets likely to have positive roll and/or spot returns in the future¹
- The challenge for investors is identifying those markets and there is no evidence that the situation will persist¹
- Rebalancing is important¹

¹ "The Strategic and Tactical Value of Commodity Futures" with Claude Erb and Campbell R. Harvey, *Financial Analysts Journal*, 62:2, March/April, 69-97. (P91) (Prev W77)



Portfolio Diversification

- 2008 GSCI Total Return: -46.5%
- 2008 S&P 500 Total Return: -37.0%

Commodity prices can fall sharply during periods of economic contraction and financial market instability, such as 2008, when diversification versus equities is needed the most.



The Role of the Market - What Works

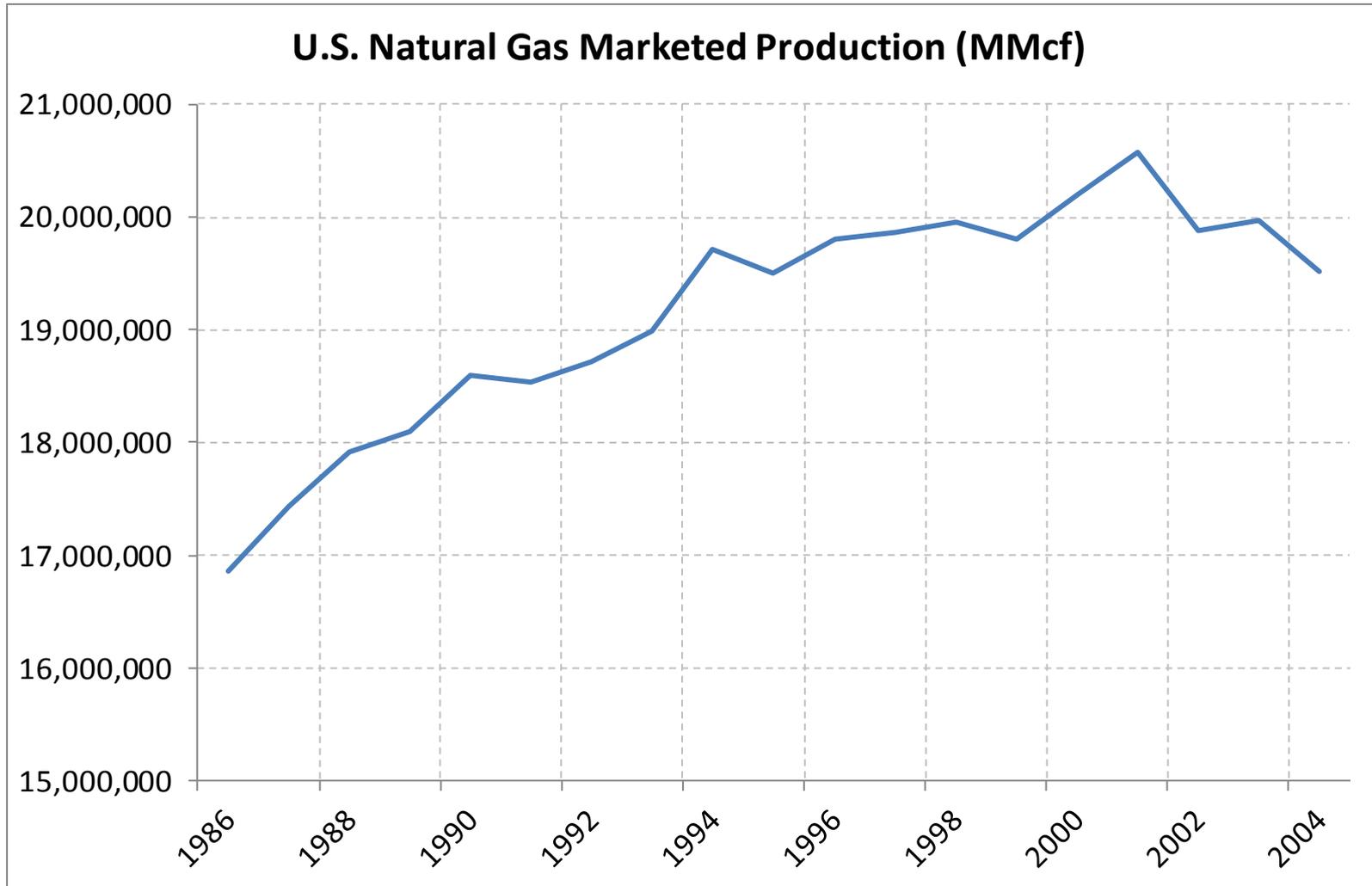
- How will we solve demographic demand?
- **Price** is single greatest resource allocator in all of human history
- High prices bring greater supply
- High prices bring human ingenuity
- High prices bring product substitution
- Increased supply, technology, product substitution brings **lower** prices
- The market forces prices lower over the long term

My Favorite - The Price of Light

Date	Source	Cents Per 1,000 Lumens	
		Current Prices	Real Prices (1800=100)
1800	Tallow/Sperm Oil/Whale Oil	40.293	100.000
1818	Tallow/Sperm Oil/Whale Oil	40.873	100.114
1827	Tallow/Sperm Oil/Whale Oil	18.632	58.186
1830	Tallow/Sperm Oil/Whale Oil	18.315	61.835
1835	Tallow/Sperm Oil/Whale Oil	40.392	138.745
1840	Tallow/Sperm Oil/Whale Oil	36.943	145.888
1850	Tallow/Sperm Oil/Whale Oil	23.199	92.490
1855	Oil Lamps/Gas Lamps/Kerosene	29.777	107.298
1860	Other Oils/Kerosene/Early lamps	10.963	41.083
1870	Other Oils/Kerosene/Early lamps	4.036	9.634
1880	Other Oils/Kerosene/Early lamps	5.035	15.340
1883	Edison carbon lamp	9.228	28.581
1890	Edison carbon lamp	1.573	5.410
1900	Filament lamp	2.692	9.987
1910	Filament lamp	1.384	4.550
1916	Filament lamp	0.346	0.997
1920	Filament lamp	0.630	0.984
1930	Filament lamp	0.509	0.954
1940	Filament lamp	0.323	0.720
1950	Filament lamp	0.241	0.314
1960	Filament lamp	0.207	0.219
1970	Filament lamp	0.175	0.142
1980	Filament lamp	0.447	0.170
1990	Filament lamp	0.600	0.144
1992	Compact Fluorescent bulb	0.124	0.029

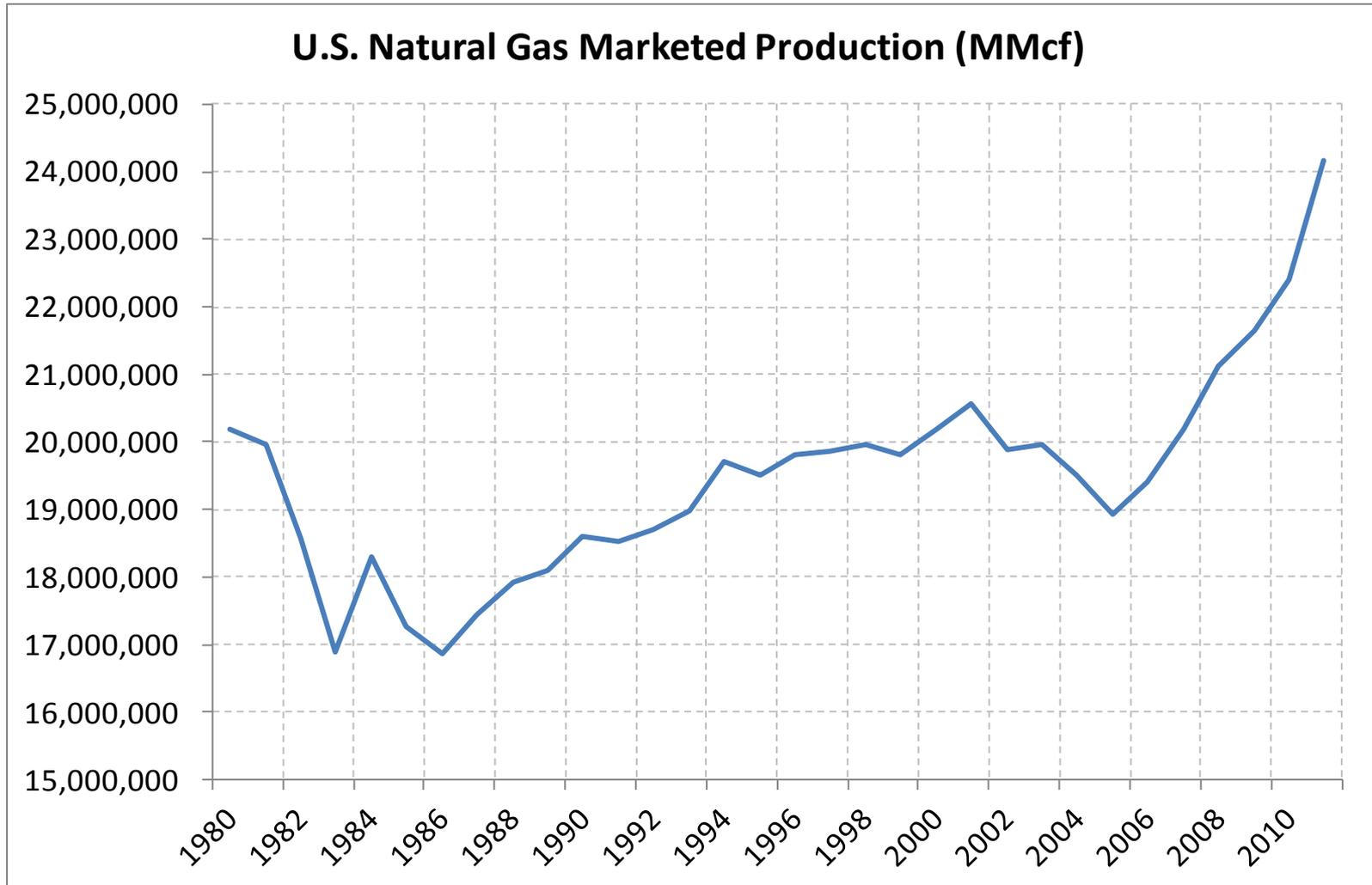
Source: Nordhaus, William D. 1998. *Do Real-Output and Real-Wage Measures Capture Reality? The History of Lighting Suggests*
 Not. New Haven: Cowles Foundation For Research In Economics At Yale University

Why U.S. Is Running Out of Gas (Time Magazine Headline - July 13, 2003)



Source: U.S. Energy Information Administration (EIA)

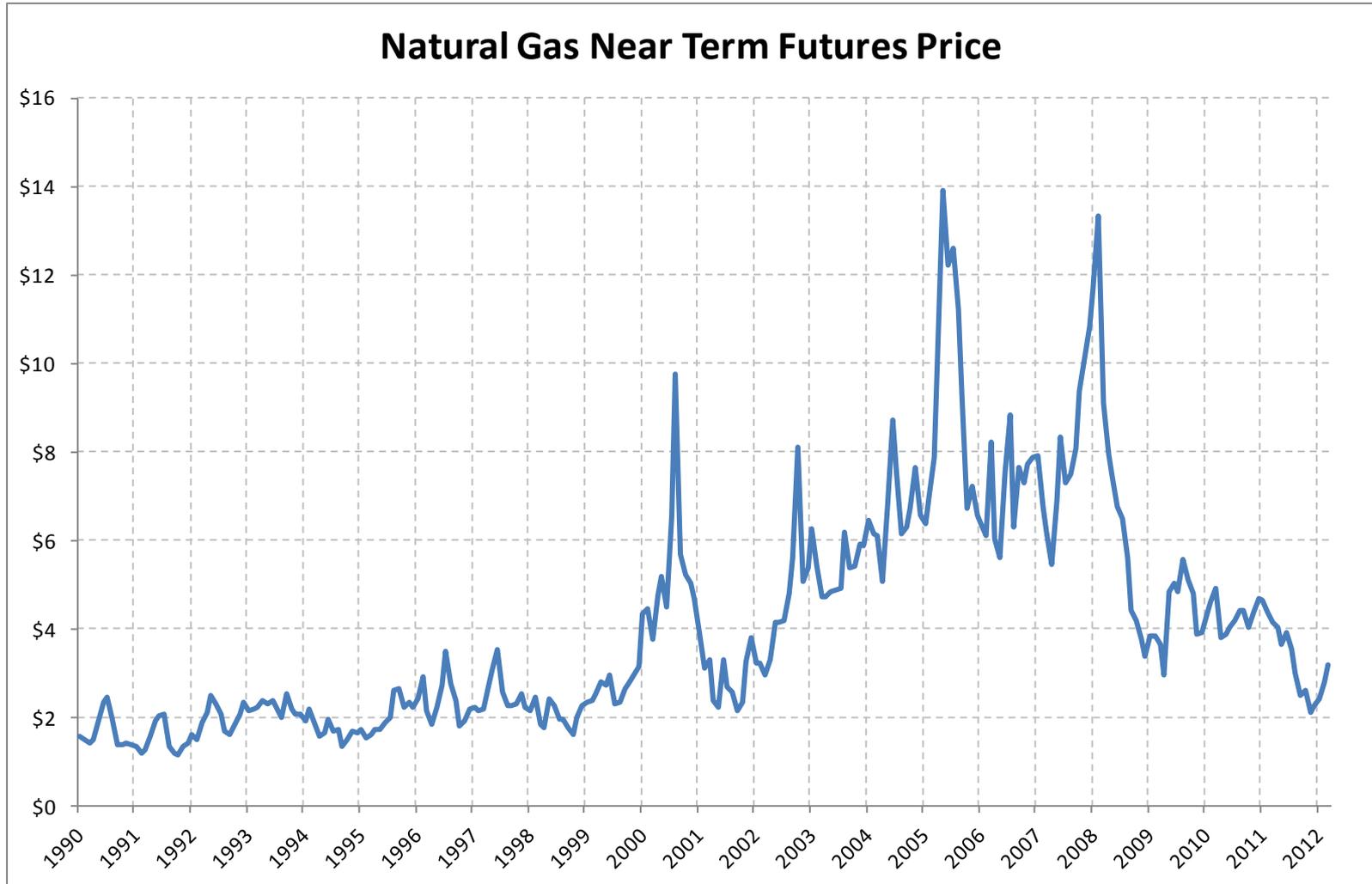
U.S. Natural Gas Production Through 2011



Source: U.S. Energy Information Administration (EIA)



Price of Natural Gas

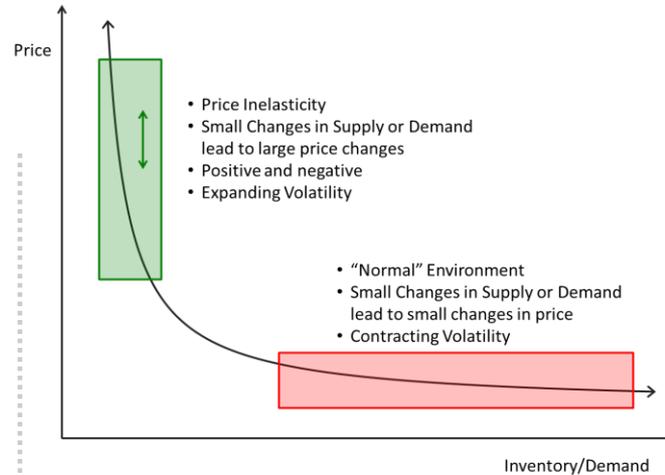
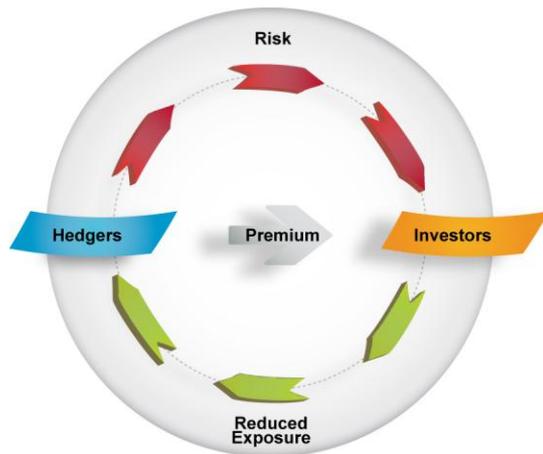


Source: Bloomberg

Commodities: Economic Sources of Return

1. Hedgers' desire to transfer risk to investors

- Major shocks to supply and demand represent a threat to the operations of businesses who seek to avoid rapid, significant increases or decreases in price
- Businesses are willing to pay a premium to transfer price risk to investors

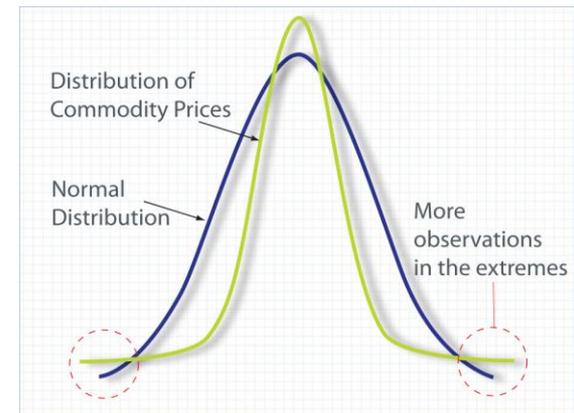


2. Hedgers are Inelastic

- In times of market equilibrium, small changes to supply or demand lead to **small** changes in price
- In times of stress, small changes to supply or demand lead to **large** changes in price

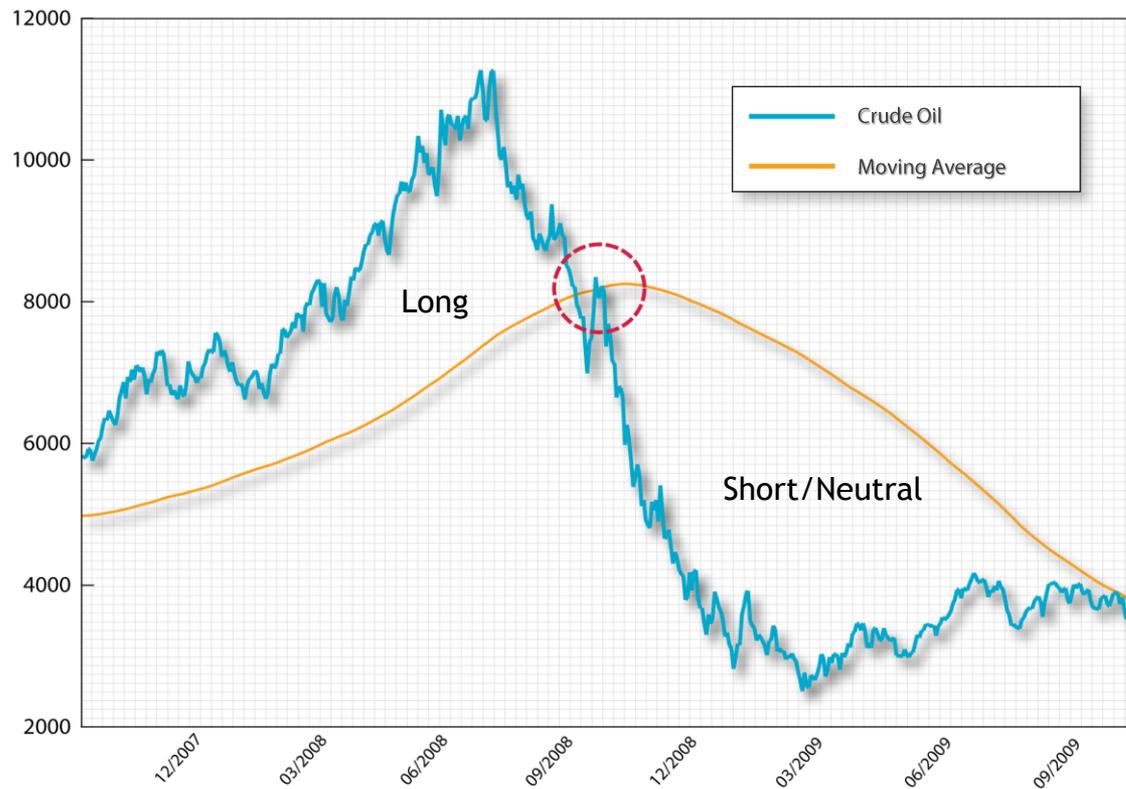
3. Fat Tails

- Large price changes occur more frequently in futures markets than expected in a normal distribution
- Significantly more observations at extremes – in tail regions
- This volatility creates opportunities for profit

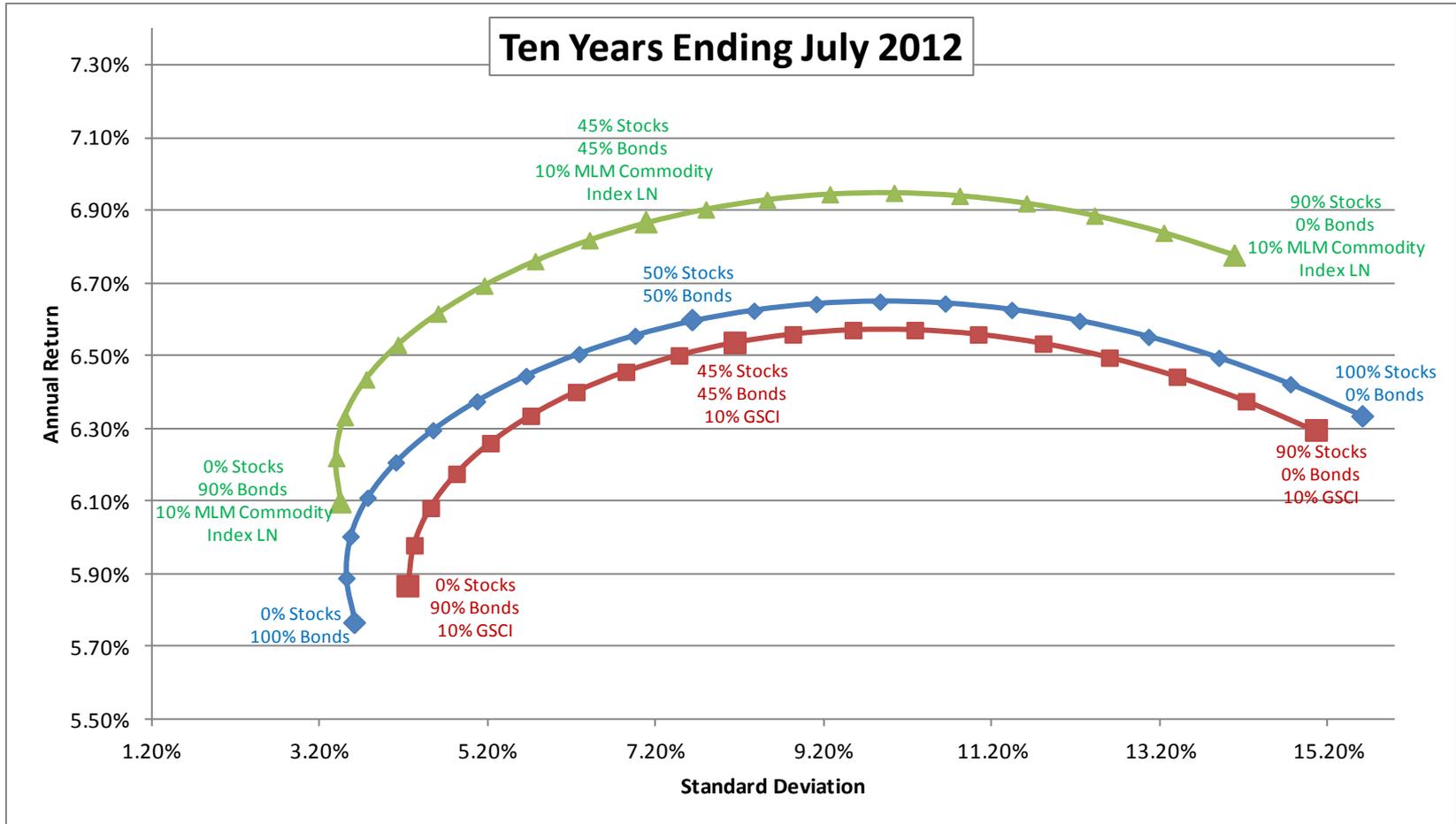


Constructing the MLM Commodity Index

- Simulates behavior of hedgers and investors in Commodity futures markets
- Captures the economic return available to investors
- Uses patented trend-following algorithm
- Signals the inception of possible large price trends
- Takes long or short/neutral positions



Portfolio Diversification - The Efficient Frontier



Stock allocation is represented by the S&P 500. Bond allocation is represented by the Barclay's Aggregate Bond Index. Asset allocations are rebalanced annually.

Past performance is not indicative of future results.



Post Script - Unintended Consequences

- Are Index Investors:
 - Raising Prices?
 - Increasing Correlations?
- Has the financialization of commodities made them more correlated with other risk assets?



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The results of various indices (i.e., S&P 500 and the Barclay U.S. Aggregate Bond) are shown herein. The indices are representative of equity securities, fixed income securities and active CTA trading results and are not necessarily representative of actual results. Neither the equity nor the bond indices include any fees or transaction costs. Comparisons to the indices are not meant to imply that any investment through Mount Lucas is comparable to an investment in the securities comprising such indices, but rather is a review of the correlation between the Mount Lucas instruments and the performance of such representative indices. The S&P 500 index is a market-weighted basket of 500 large capitalization stocks as compiled by Standard & Poors Corporation. The Barclay U.S. Aggregate Bond Index is an index representative of the investment grade bond market and consists of all investment grade bonds issued in the U.S. with a maturity greater than 12 months.