# BULL MARKET IN FEAR

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**We live in uncertain times… a bull market in fear**
**<u>Volatility is the market price of uncertainty</u>**

**"You cannot stop the waves, but you can learn to surf"**
Jon Kabat-Zinn

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*Definition of fear from Merriam-Webster*

## What is Volatility?

### Volatility at World's End Deflation

**Imagine the world economy as an armada of ships passing through a narrow and dangerous strait between the *waterfall of deflation* and *hellfire of inflation***

***Our resolution to avoid one fate may damn us to the other***

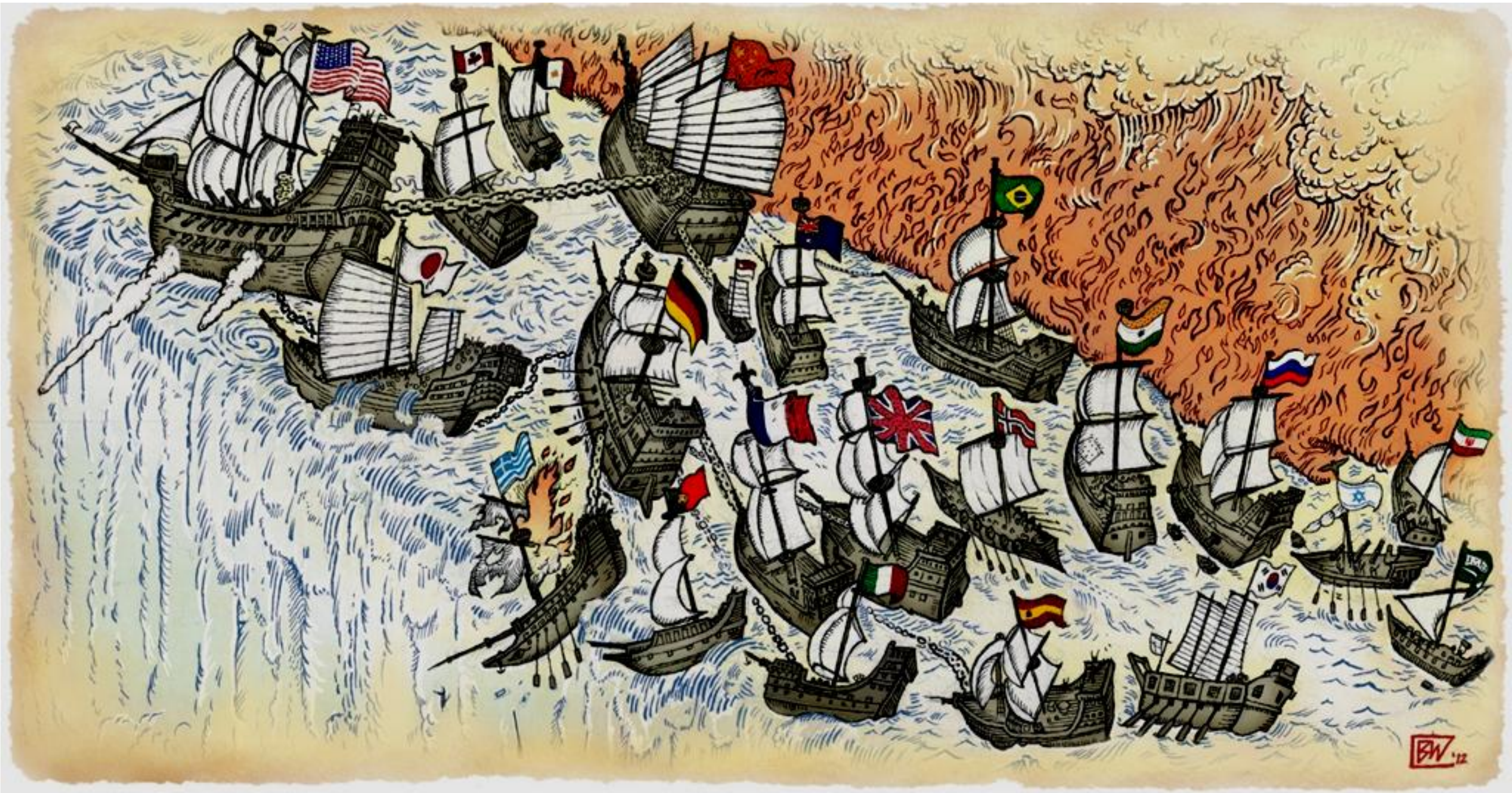

*Illustration by Brendan Wuiff based on concept by Christopher Cole*

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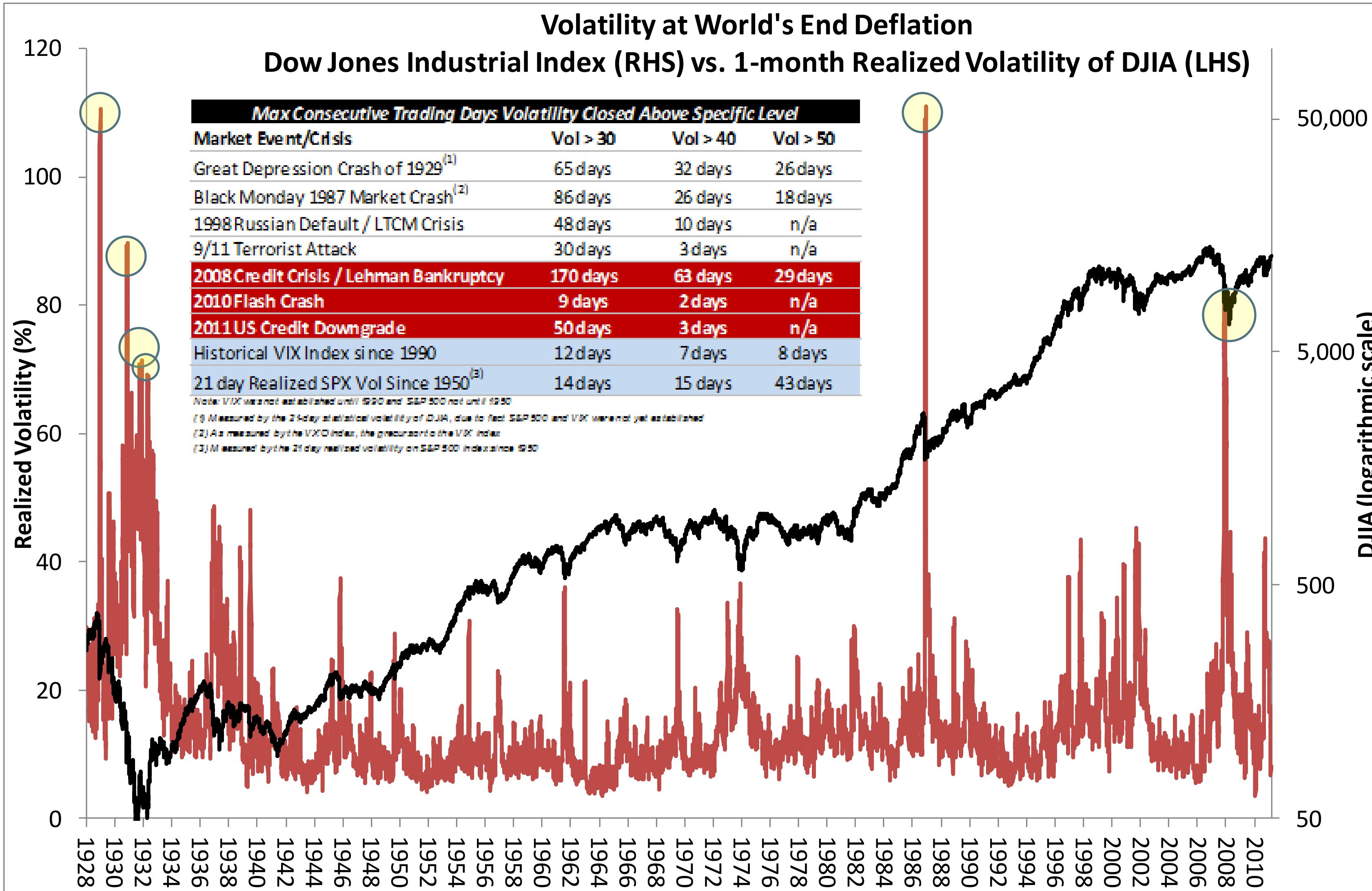
# Volatility in World's End Deflation

## Volatility shocks are rightfully associated with deflationary crashes




*Max Consecutive Trading Days Volatility Closed Above Specific Level*

| Market Event/Crisis | Vol > 30 | Vol > 40 | Vol > 50 |
|---|---|---|---|
| Great Depression Crash of 1929[1] | 65 days | 32 days | 26 days |
| Black Monday 1987 Market Crash[2] | 86 days | 26 days | 18 days |
| 1998 Russian Default / LTCM Crisis | 48 days | 10 days | n/a |
| 9/11 Terrorist Attack | 30 days | 3 days | n/a |
| **2008 Credit Crisis / Lehman Bankruptcy** | **170 days** | **63 days** | **29 days** |
| **2010 Flash Crash** | **9 days** | **2 days** | **n/a** |
| **2011 US Credit Downgrade** | **50 days** | **3 days** | **n/a** |
| Historical VIX Index since 1990 | 12 days | 7 days | 8 days |
| 21 day Realized SPX Vol Since 1950[3] | 14 days | 15 days | 43 days |

*Note: VIX was not established until 1990 and S&P 500 not until 1950*

*(1) Measured by the 21-day statistical volatility of DJIA, due to fact S&P 500 and VIX were not yet established*

*(2) As measured by the VXO index, the precursor to the VIX index*

*(3) Measured by the 21 day realized volatility on S&P 500 index since 1950*

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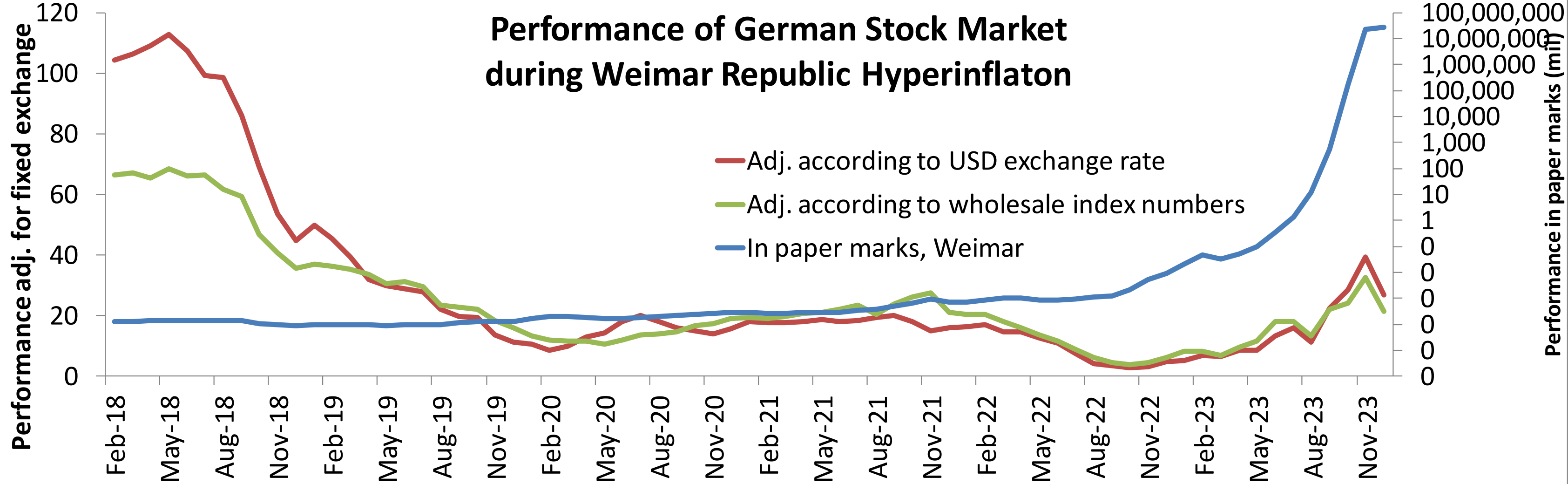
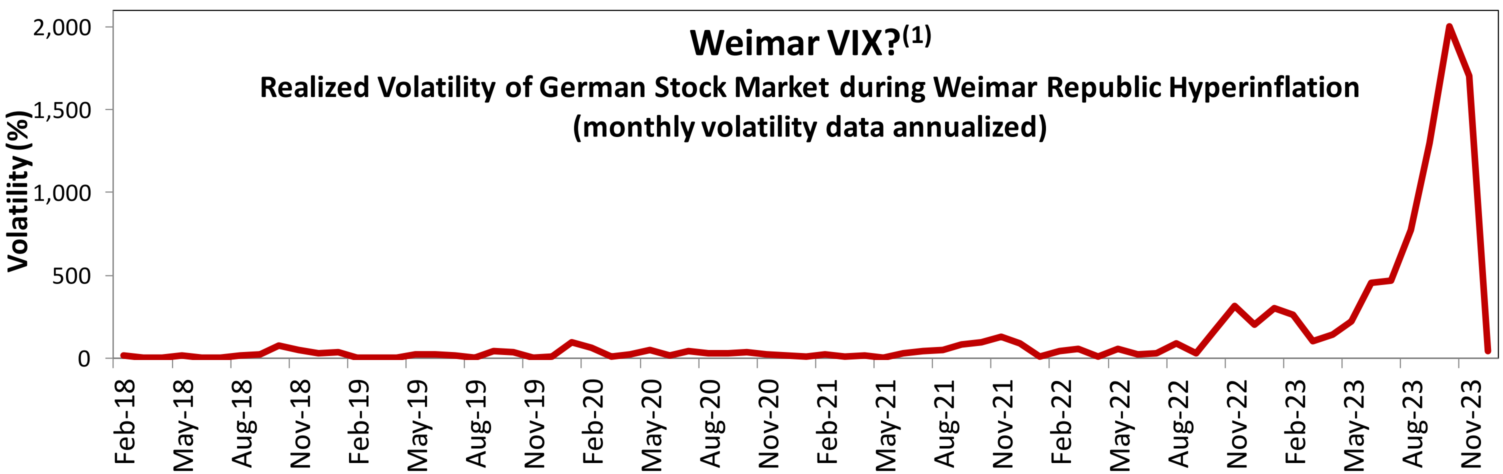
# Volatility in Hellfire of Inflation

## Extreme volatility can also occur in hyperinflation




*Source: "Economics of Inflation; A Study of Currency Depreciation in Post-War Germany" by Constantino Bresciani-Turroni Out of Print / 1968*
*(1) Based upon monthly realized variance from available stock price data.*

## Everything you need to know about trading volatility

**"There are known knowns; there are things we know that we know. There are known unknowns; that is to say there are things that, we now know we don't know. But there are also unknown unknowns – there are things we do not know, we don't know."**

**Donald Rumsfeld, United States Secretary of Defense**

### *Known Unknowns*

- US Fiscal Cliff
- China hard landing
- War with Iran
- European Crisis
- Global Recession
- Fiscal Austerity

#### *Volatility*

- Vanilla Options
- VIX Index
- Realized Volatility
- Variance Swap

Risks that you know and can quantity

Risks that you know but can't quantify

### *Unknown Unknowns*

**?**

#### *Volatility of Volatility*

- Forward Volatility
- Convexity
- Tail Risk Hedging
- Vol Curve Trades

Risks that you don't know but could quantify

Risks that you don't know and can't quantify



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# Two very different styles of crash depending…

## *Known Unknowns*

### *Debt-Cycle Crash*
### *(2008 Crash, Great Depression)*

- Crash occurs over time (months)
- Slow recovery
- Natural end of leveraging cycle
- High volatility for long period
- Elevated volatility-of-volatility
- Start of a recession or depression

**Predictable**
**(in retrospect)**

## *Unknown Unknowns*

### *Existential Flash Crash*
### *(Black Monday 1987, 2010 Crash)*

- Hyper-speed crash (days, seconds)
- Fast recovery
- Market fragmentation
- Extreme volatility for shorter period
- Extreme volatility-of-volatility
- Omen of future recession (often)

**Unpredictable**
**(even In retrospect)**

## What is the "Bull Market in Fear"?

***New paradigm for pricing risk that emerged after the 2008 financial crisis as related to our collective fear of the next deflationary crash***

### Bull Market in Fear is Defined by

1. **Abnormally Steep Volatility Term-Structure**
2. **Distortions in Volatility from Monetary Policy**
3. **Expensive Portfolio Insurance**
4. **Violent Volatility Spikes and Hyper-Correlation**

## Structural imbalances in supply-demand dynamics of volatility markets

### I. Emotional
- Post-traumatic Deflation Disorder
- Desire for safety and security at any cost

### II. Monetary
- Forced participation in risk assets drives desire for hedging
- Unspoken feeling that gains in financial assets are “artificial”

### III. Macro-Risks
- Debtor-developed economies face structural headwinds
- Unrest in Middle East

### IV. Regulatory
- Government regulation (Dodd-Frank, Volcker rule) has constrained risk appetite for banks to supply volatility
- Lower demand for structured products by investors

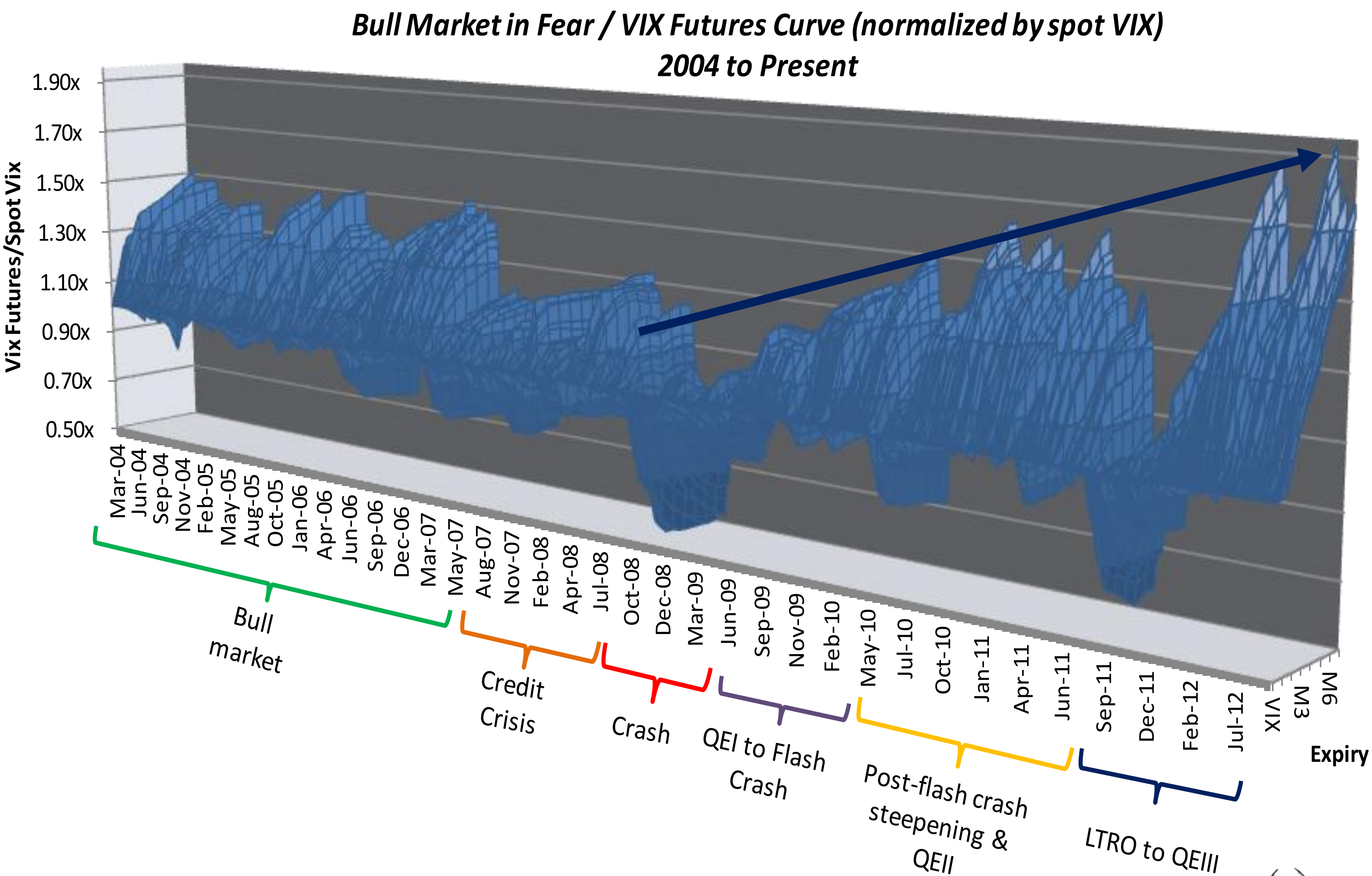
**Greater Demand for Volatility**

**Less Supply of Volatility**

## Abnormally Steep Volatility Term Structure

**"There is no terror in the bang, only in the anticipation of it." Alfred Hitchcock**

**Volatility term-structure measures the anticipation of future volatility**

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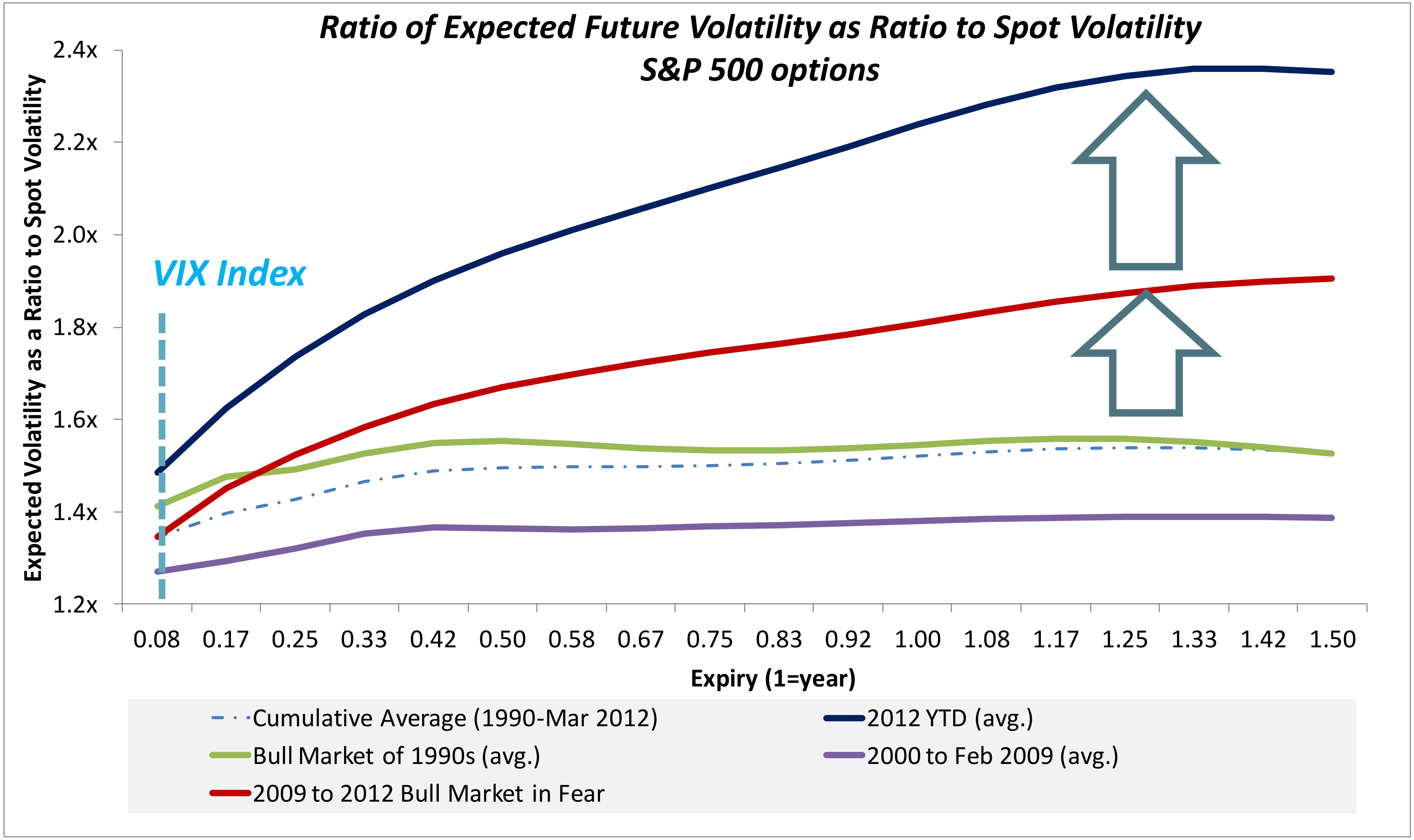
## Abnormally Steep Volatility Term Structure

**The most extreme term-structure for S&P 500 index volatility in two decades reflects continued anticipation of a deflationary collapse**



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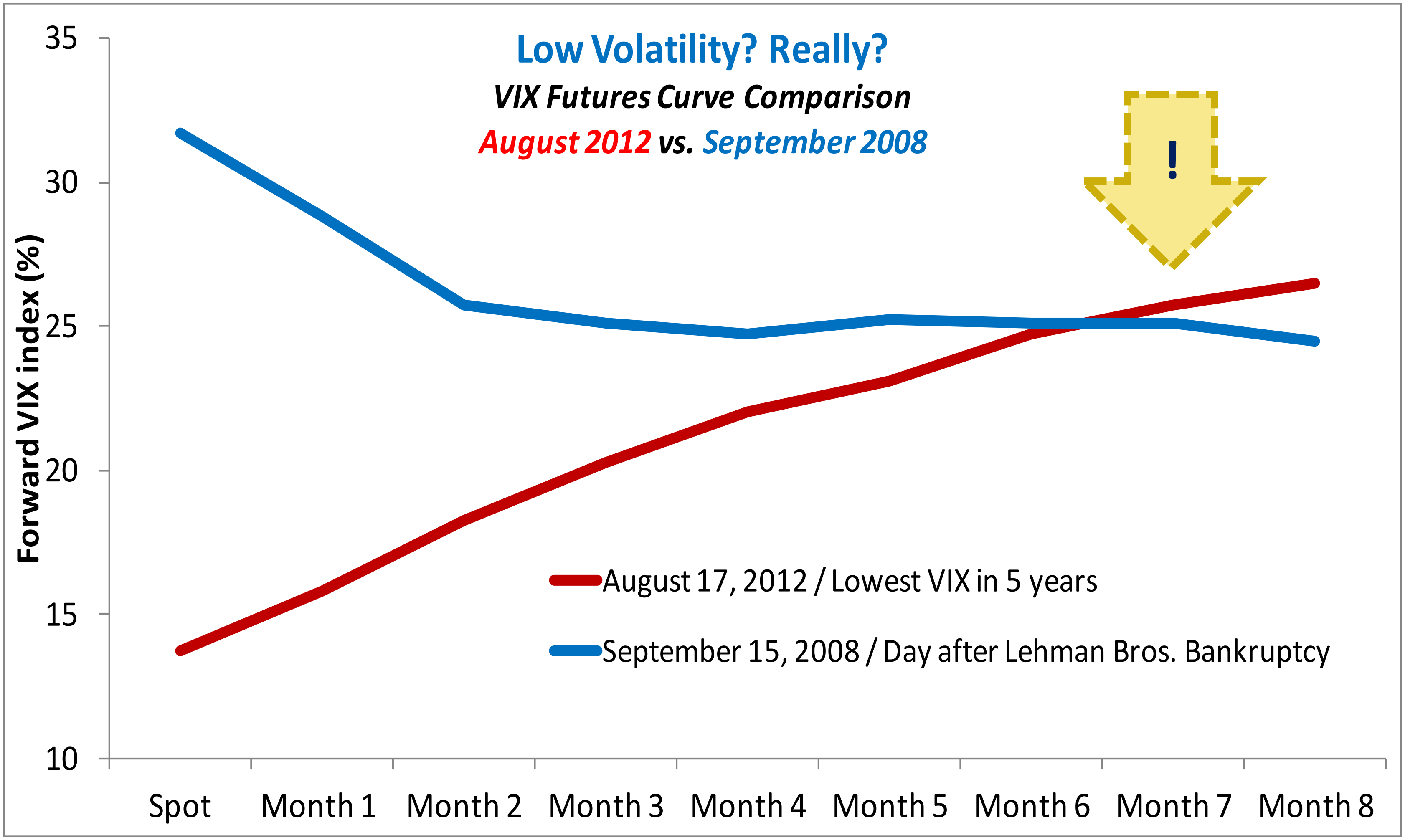
# Volatility is cheap and expensive at the same time

## *Low VIX index does not mean cheap volatility*



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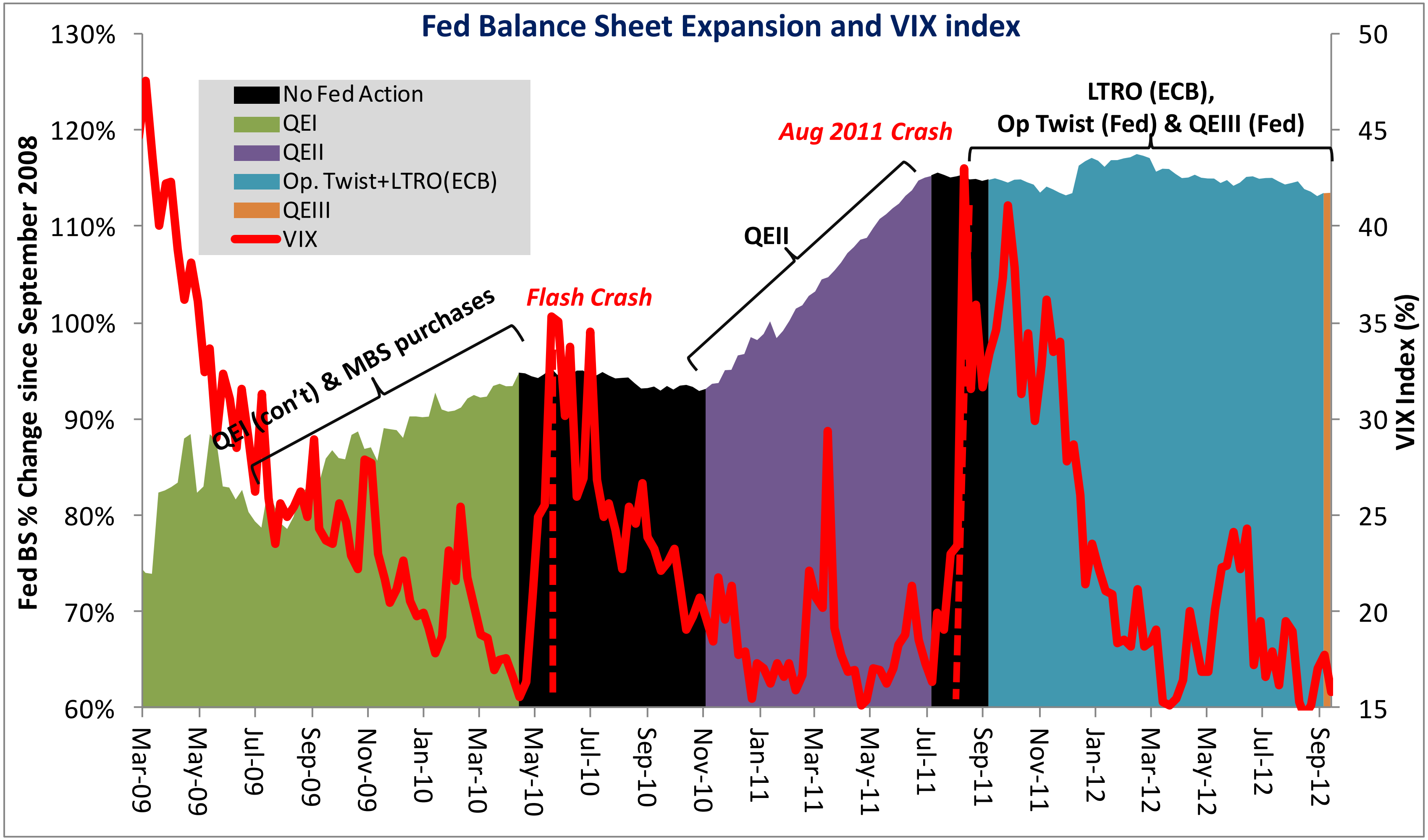
# Volatility Regimes Defined by Central Banking

## Volatility spikes consistently occur after the end of central bank balance sheet expansion




***Since 2008 global central banks have expanded their balance sheets by <u>$9 trillion</u> - enough fiat money to buy every person on earth a 55'' wide-screen 3D television***



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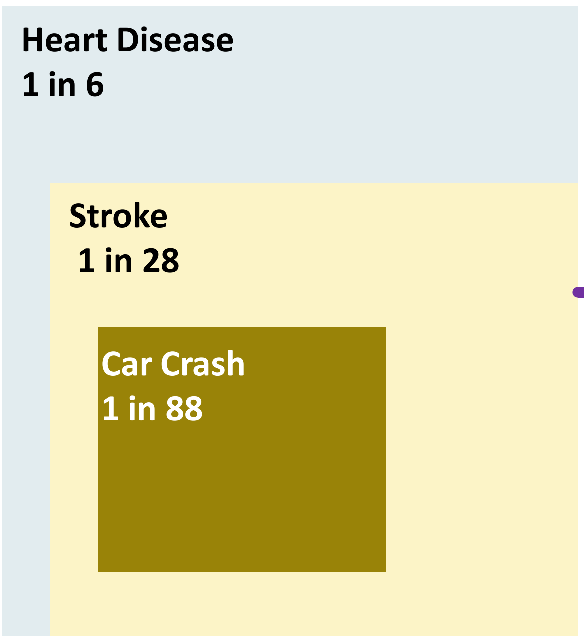
# Post-Traumatic-Deflation-Disorder (PTDD)

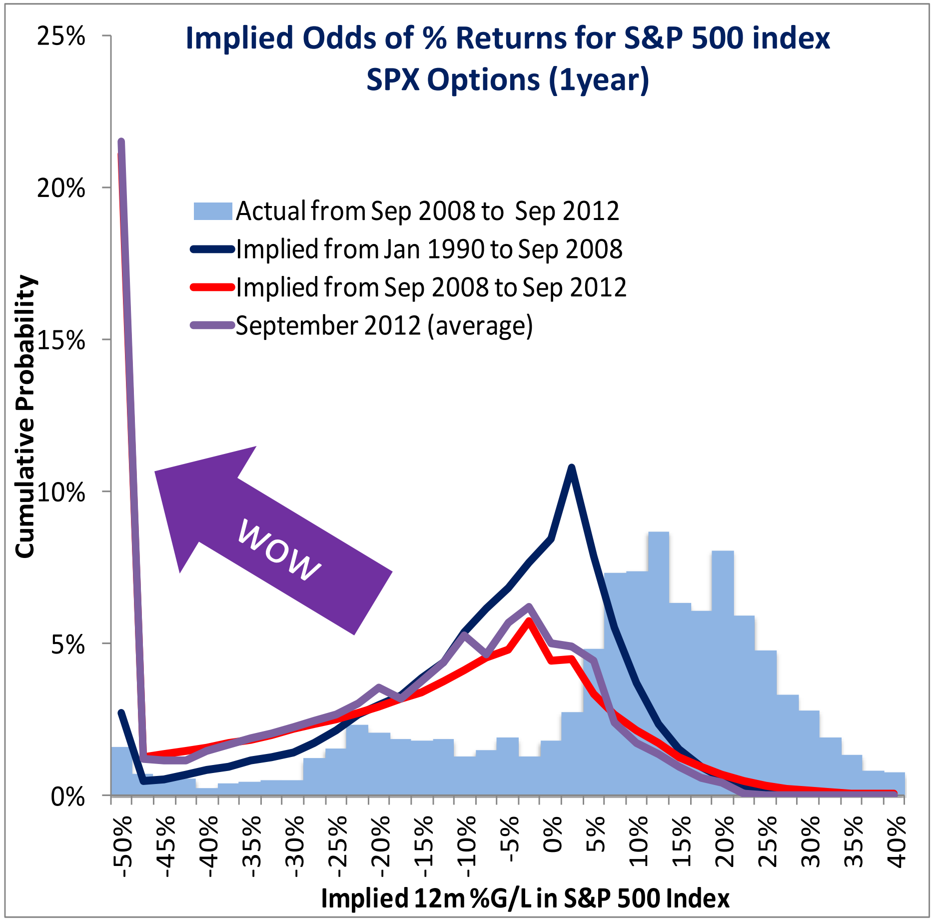
## Tail Events are now priced as if they are standard risks

***Highly unlikely events are either ignored or vastly over weighted based on our collective experiences***

***Lifetime odds of Dying from these causes is 1 in 4.7[(1)]***

**Black Swan?**



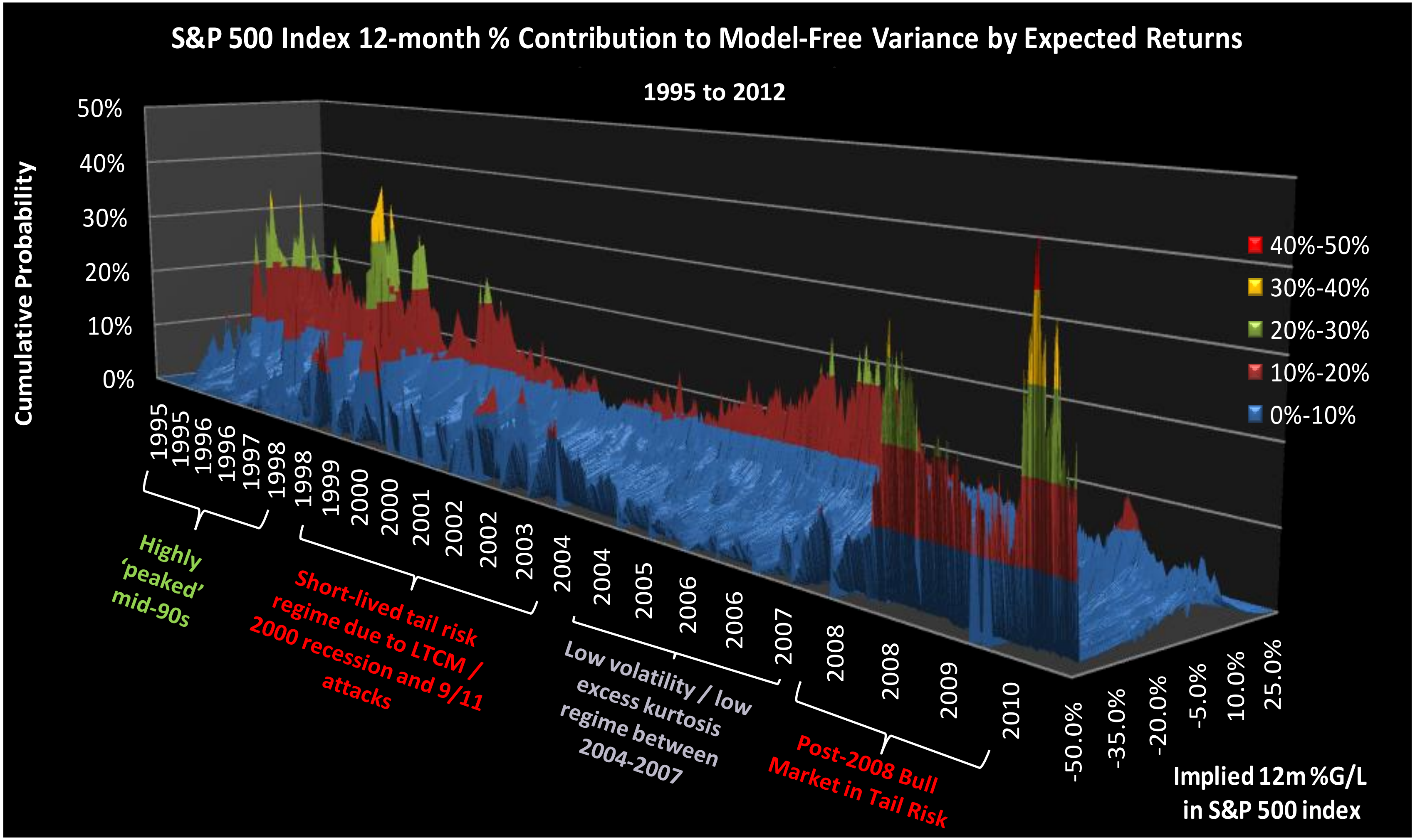

**A "black swan" is not dying because your parachute didn't open while skydiving…. it is dying because the guy whose parachute didn't open landed on you while you were golfing**

*Note: Artemis calculates the implied probability distribution using interpolated weights from variance swap pricing. This methodology may occasionally give higher weightings to tails in down markets than other methods like taking the second derivative of call prices, fitting mixture of normal PDFs to recover prices, or fitting vol models (SVI,SABR).*

*(1) "Lifetime Odds of Death for Selected Causes, United States, 2007" / National Safety Council 2011 Edition*

## High Cost of Tail Risk Insurance

**Fear of deflation is not MISPLACED but it is MISPRICED**
***You are not smart for hedging what everyone else already knows!***

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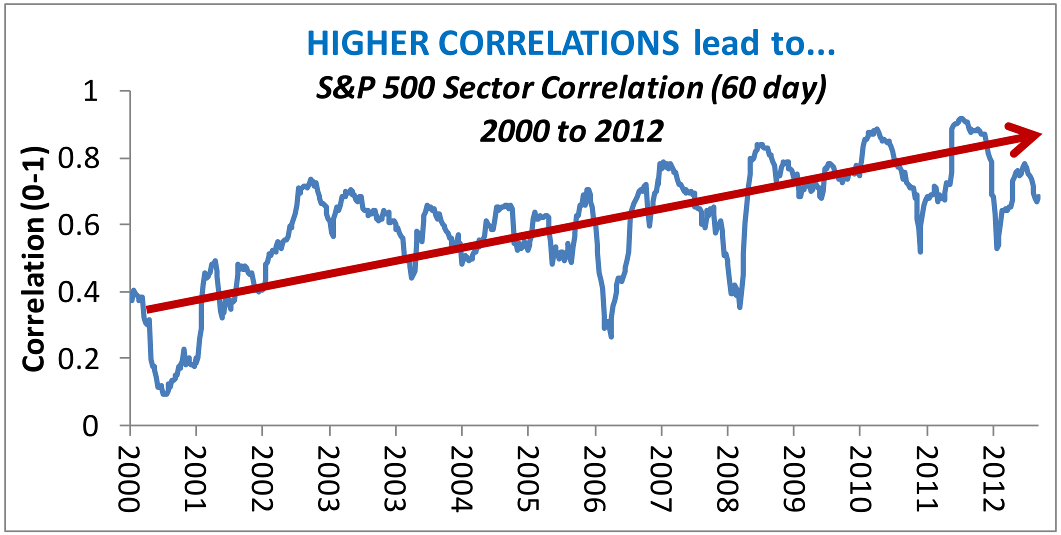
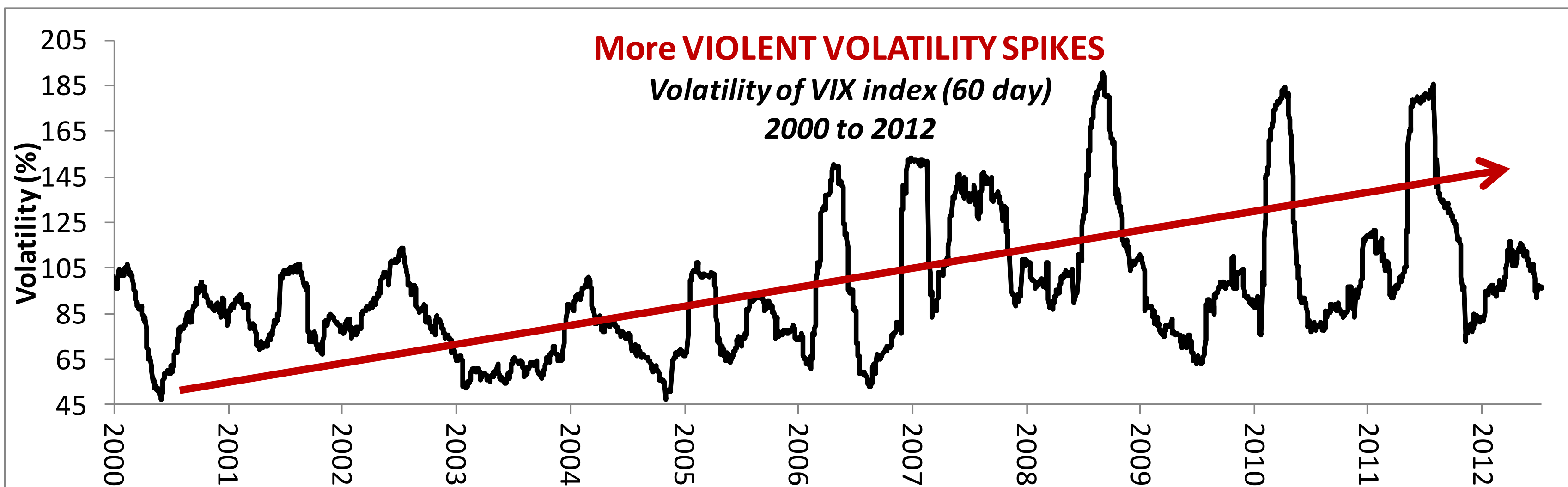
## Extreme Volatility-of-Volatility and Hyper-Correlations

### *Fire Risk is High Today in the Forest*

**Higher correlations are *kindling* for violent volatility fires (spike)**





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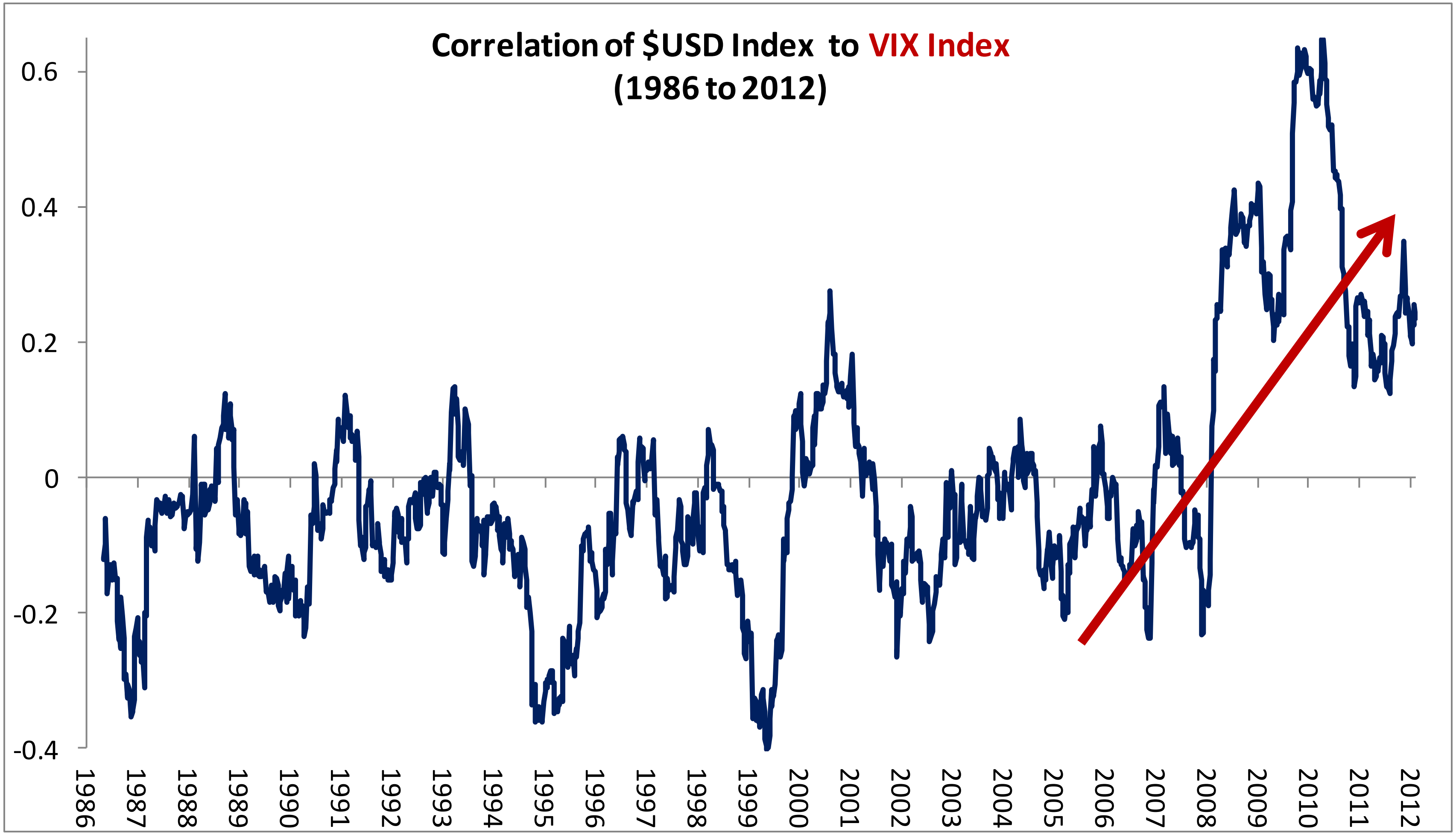
**Extreme Volatility-of-Volatility and Hyper-Correlations**

# Volatility is a Shadow Currency in the Bull Market for Fear
## $USD currency index strength = Higher Volatility




*Note: Prior to 1990 there was not VIX index. We have substituted the CBOE VXO index, the precursor to the VIX, which was available starting in 1986.*

# How to beat a "Bull Market in Fear"

## Hedge unknown unknowns and sell known unknowns

*When the market identifies a risk it is usually overpriced in volatility markets*

## The more we fear the left tail the more you should buy the right

*Tail risk pricing (both left and right) has been consistently late to the game*

## Fear is a better reason to buy than fundamentals

*Volatility (fear) is an effective leading indicator to inform asset allocation*

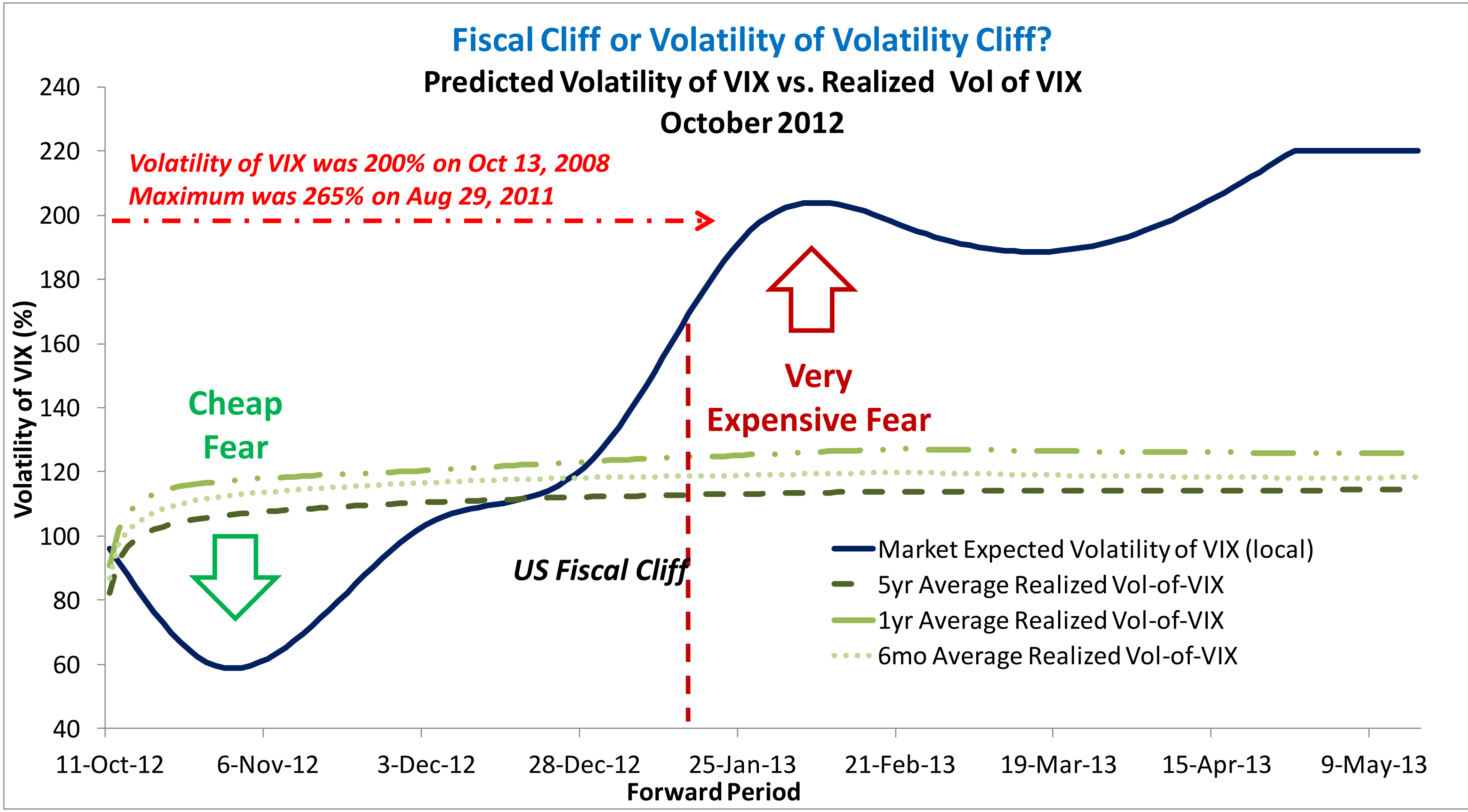
## When Risk-Free is Risky… buy Volatility on Safety Itself!

*when a "bull market in fear" meets a "bubble in safety" bet on interest rate volatility*

## Bet on unknown unknowns… don't hedge known unknowns

**Volatility *markets are surprisingly <u>bad at predicting future risk</u>***

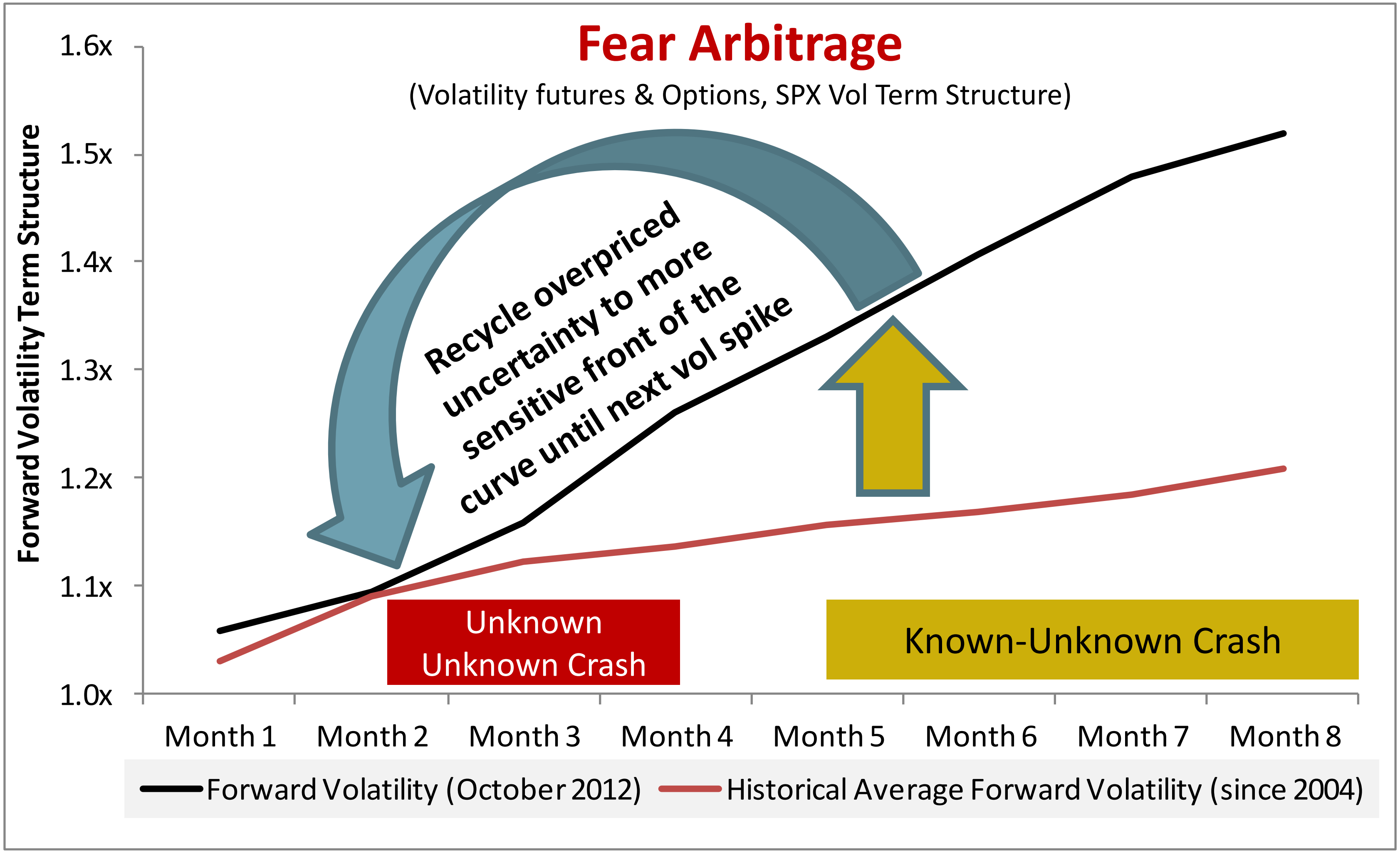
*When markets identify a 'known unknown' that risk traditionally is overblown or at the very minimum over-hedged*



**Bet on unknown unknowns… don't hedge known unknowns**

***Sell "known unknowns" and Buy "unknown unknowns"…***

***…monetize the bull market in fear by playing the term structure***

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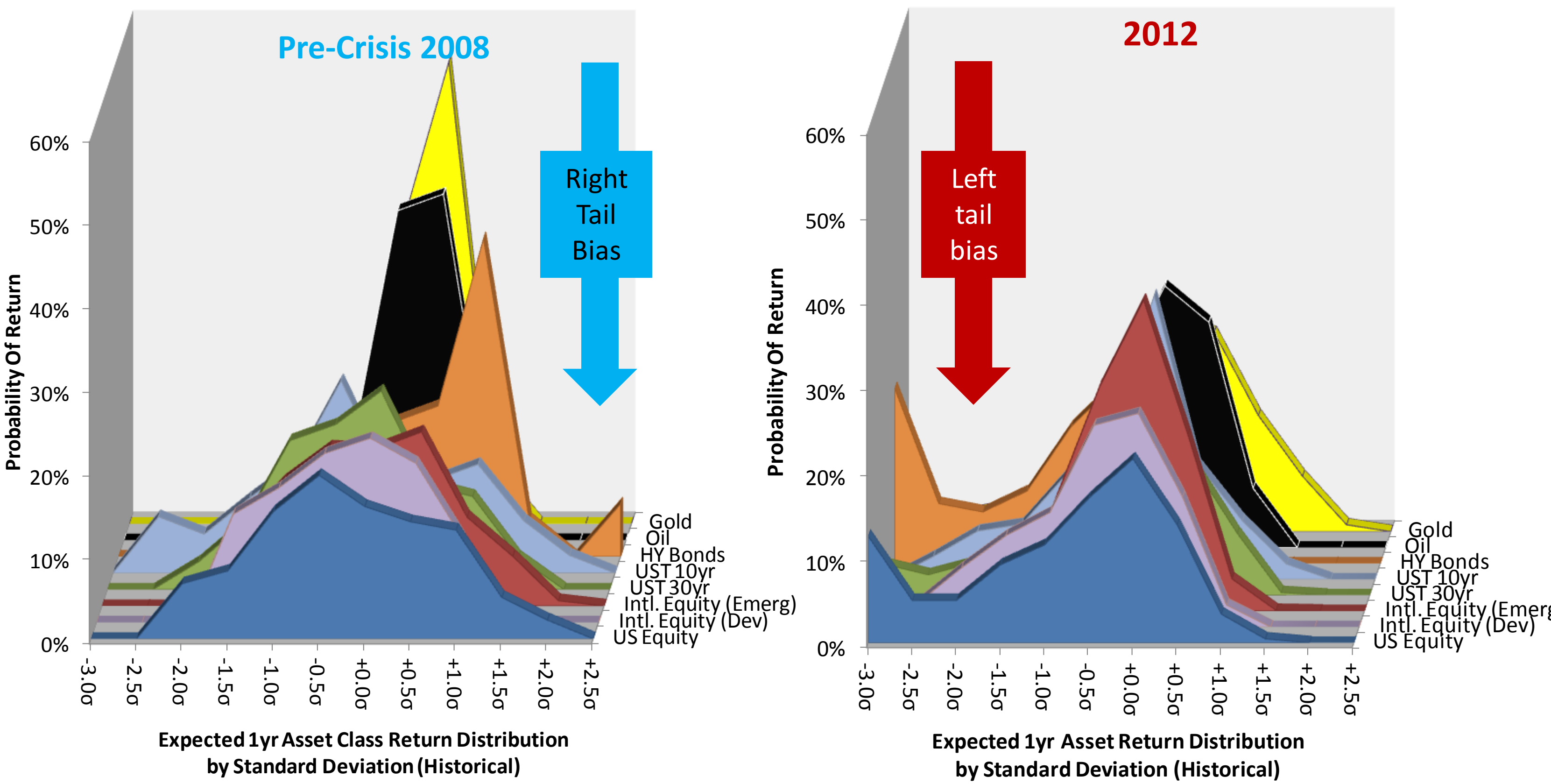
**The more people fear the LEFT TAIL the more you should buy the RIGHT… and vice versa**

**Role of the trader is not so much to predict the future but to identify mispriced risk**

*The options market is consistently late to the game in pricing both the right and left tails*

## Cross Asset Implied Probability Distribution Comparison (2008 pre-crisis to 2012)

**Variance Swap Weighting { SPY, EFA, EEM, TLT, IEF, HYG, USO, GLD }**




*Note: Artemis calculates the implied probability distribution using interpolated weights from variance swap pricing. This methodology may give higher weightings to tails in down markets than more traditional methods like taking the second derivative of call prices, fitting mixture of normal PDFs to recover prices, or fitting vol models (SVI,SABR).*

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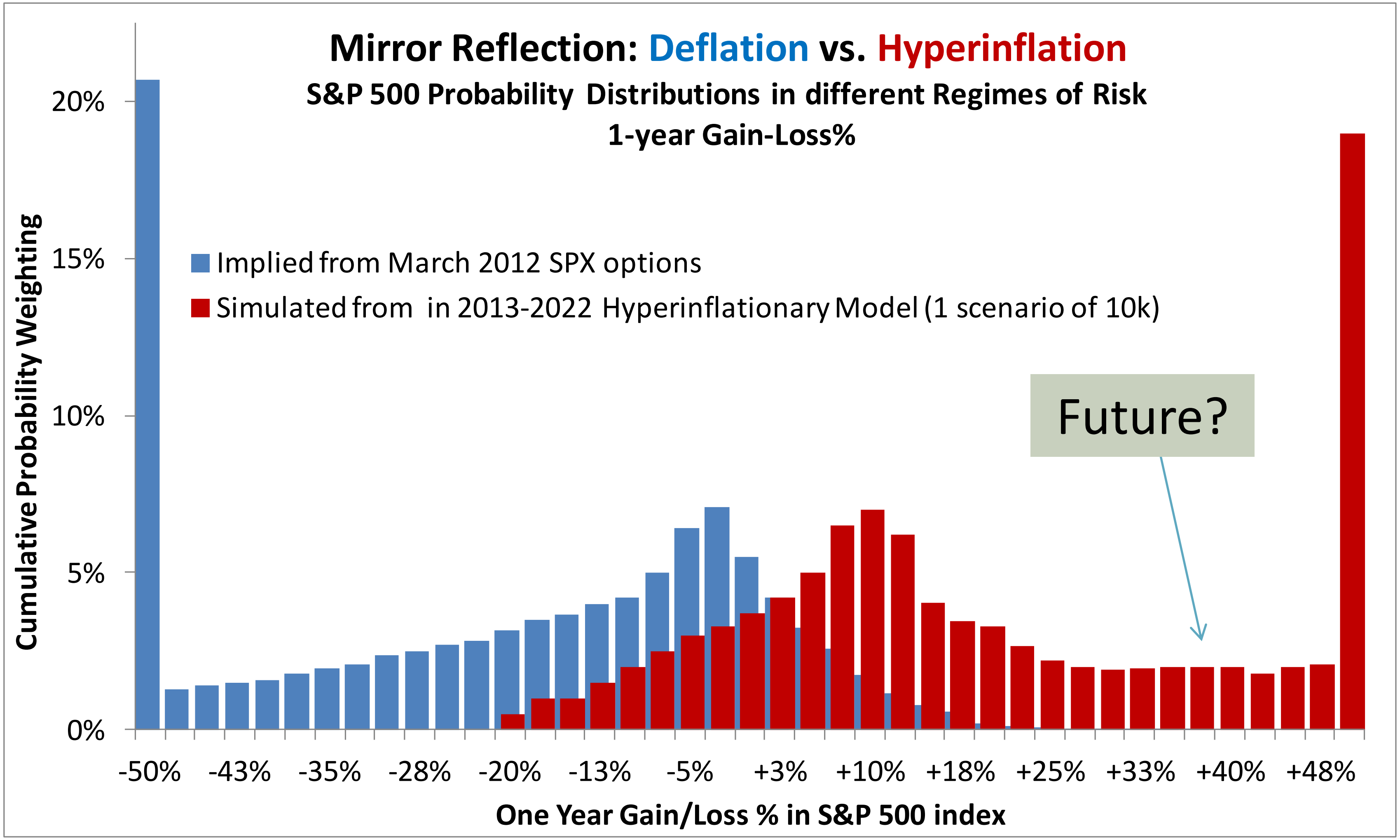
## The more people fear the LEFT TAIL the more you should buy the RIGHT…

## Maybe it is correct to buy tail risk insurance ... but is everyone just hedging the wrong tail?




*Note: Artemis created a model to simulate the behavior of the S&P 500 index and volatility during an inflationary shock. The model is not intended to be a prediction of the future but is merely a rudimentary stochastic-based method to understand what modern markets may look like in rampant inflation. The simulation runs 10,000 price scenarios for the S&P 500 index over 10 years modeling daily stock price behavior using a generalized Wiener process (Wiener.. not Weimar) and a drift rate that assumes linkages between annual CPI and equity performance. We assume inflation rises sharply from current levels of 2.87% in 2012 to 26% by 2015 and stays elevated at that level until 2017 (20% a year overall). The average volatility shifts are based upon assumptions regarding equity return to variance parameters observed in prior inflationary episodes (1970s US & 1920s Germany). The simulation shows annualized SPX returns for the decade at +9.94% but adjusted for inflation this drops to -9.8%.*

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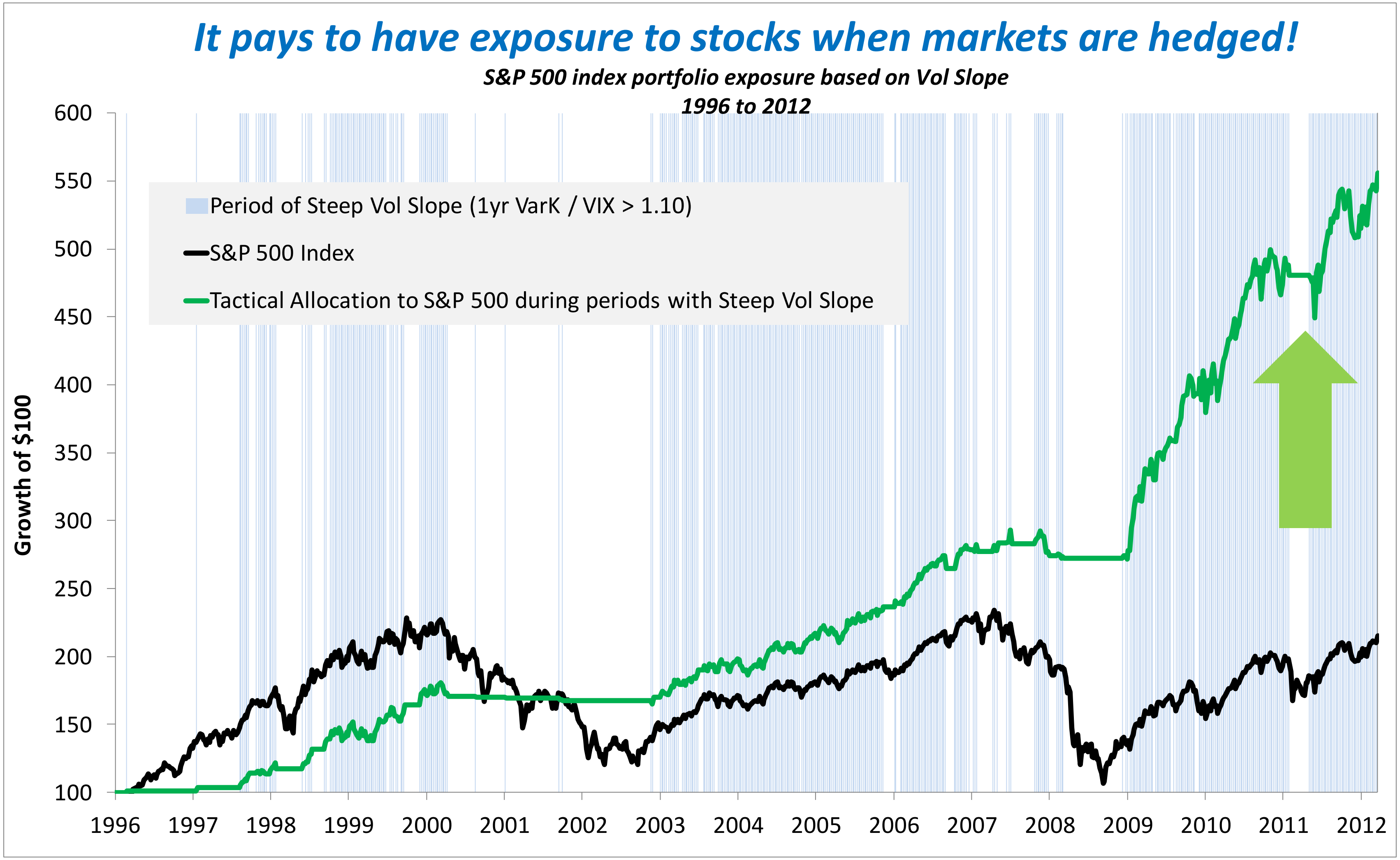
**Fear over Fundamentals**

## It is hard to have a bear market in a bull-market for fear
## Volatility term-structure is an effective indicator to inform equity exposure



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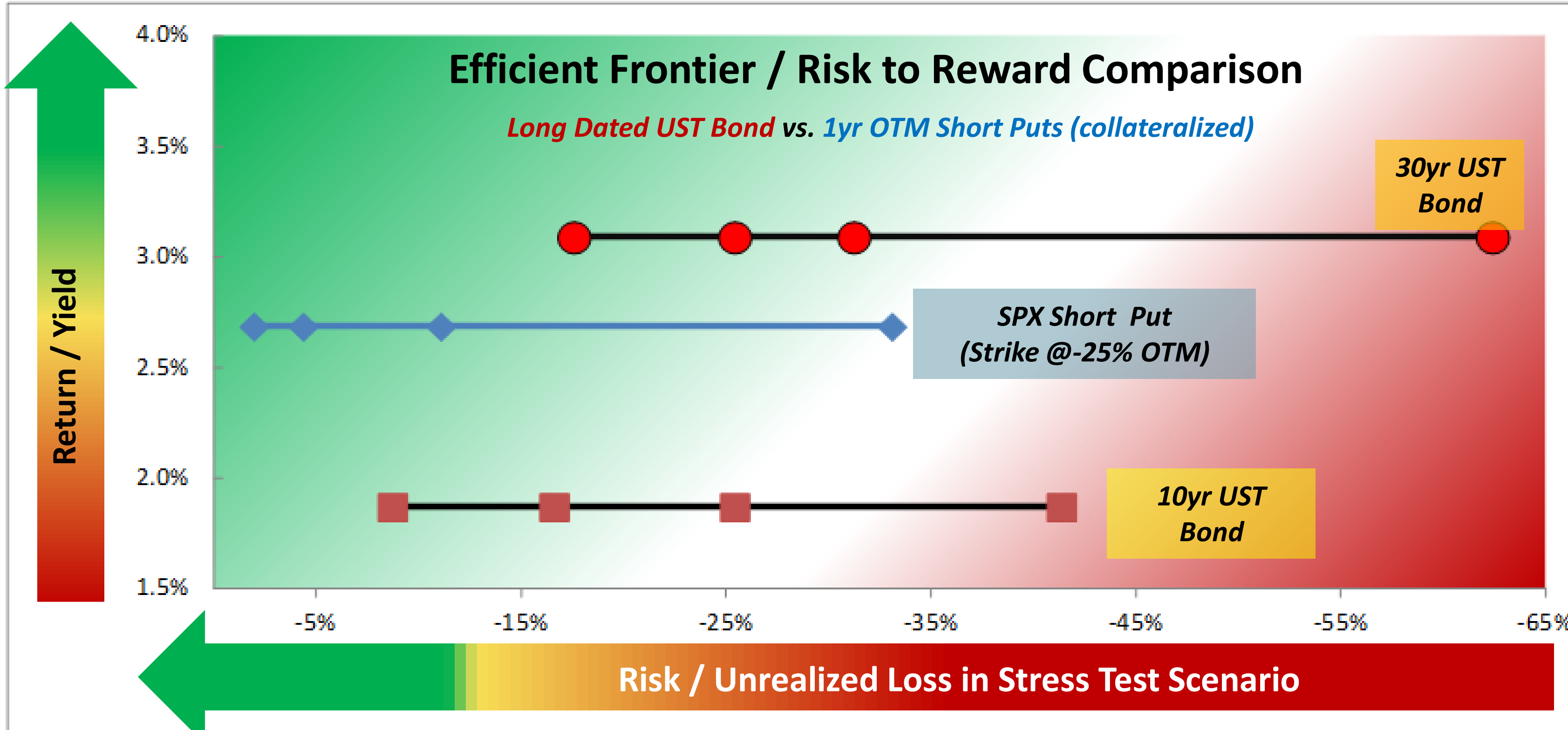
# Risk Free Assets are Risky

## When the "Bull Market in Fear" meets a "Bubble in Safety" a short equity option position and "risk-free' UST bond have similar risk-to-reward payoffs!




| | | | |
|---|---|---|---|
| SPX Put Stress Test | SPX ↓ -9% to -14%<br>68% to 33% probability | SPX ↓ -25%<br>13% chance | SPX ↓ -50%<br>2% probability |
| UST Bond Stress Test | Rates ↑ 100bps to 200bps<br>68% to 33% probability | | Rates ↑ 320bps to 600bps<br>13% to 2% probability |

*Note: All data as of September 14, 2012. Estimated unrealized loss on position given stress test scenario. Historic probability data based on period of 1960 - 2012 for the UST bonds and 1950 to 2012 for the S&P 500 index. Option pricing based on estimated local volatility shifts, however actual shifts may differ from estimates during a real crash depending. All stress tests are assumed to occur close to the purchase period of the instrument. Unrealized losses may differ closer to maturity.*

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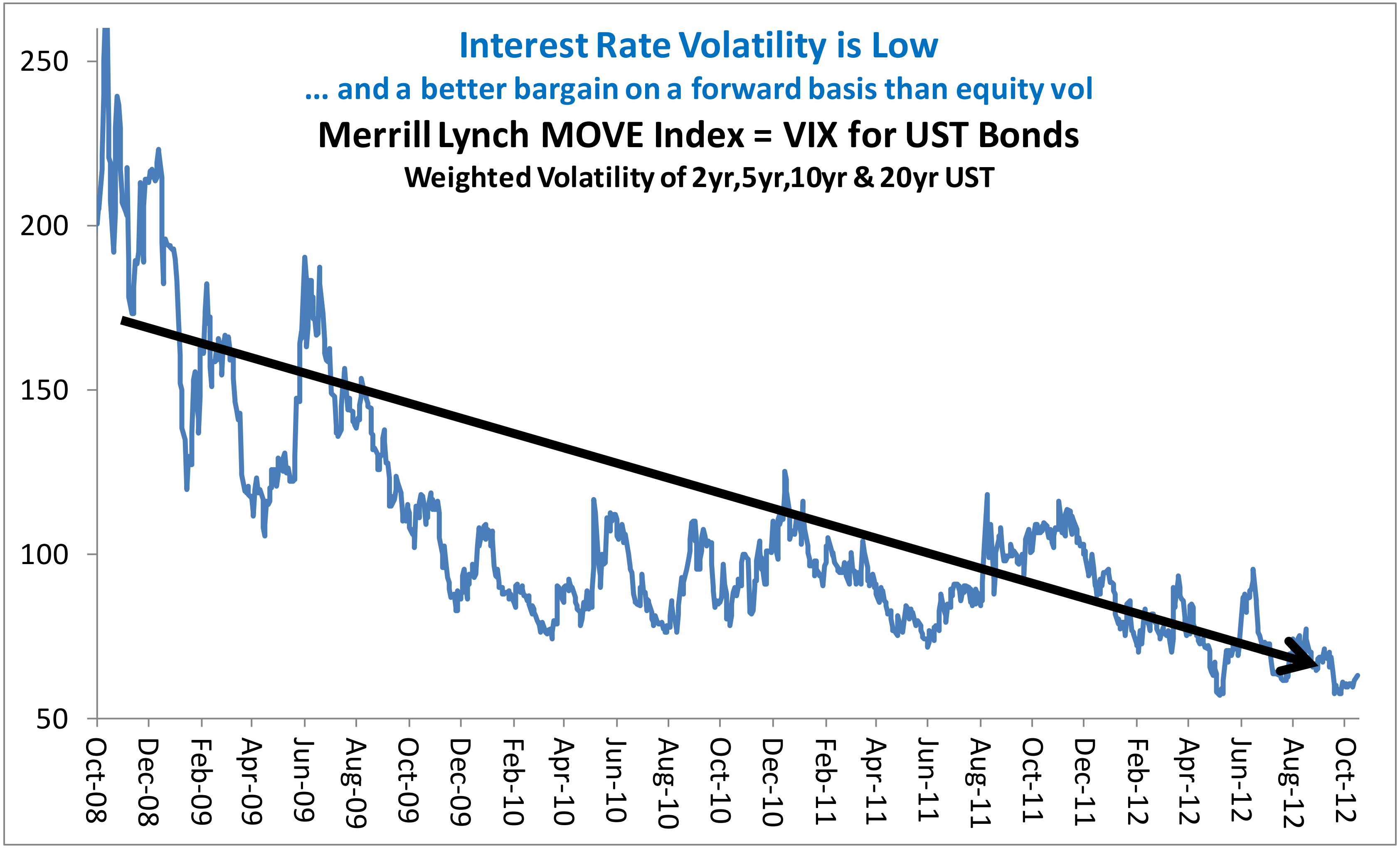
## Risk Free Assets are Risky

**When risk-free is risky … it is time to buy volatility on safety itself**
***Higher interest rate volatility can be realized in deflation and inflation***




*Source: Bloomberg*



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## Volatility of an Impossible Object

**Modern financial markets are an impossible object**
**Volatility of an impossible object is our changing perception of risk**


*Illustration by Brendan Wiuff based on concept by Christopher Cole*

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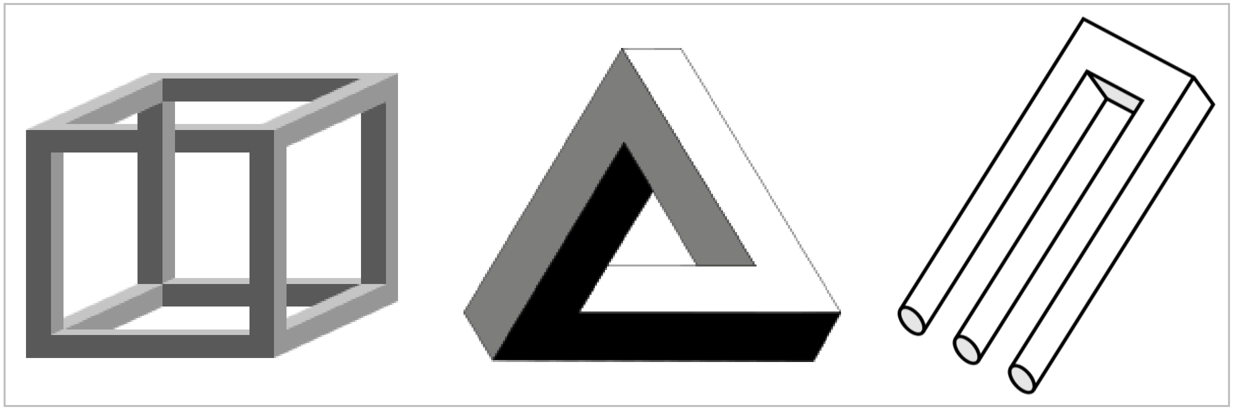
## Volatility of an Impossible Object

**the next "Unknown Unknown" Crash…**
**What is not priced into markets that will seem as obvious in 10 years as it is laughable today?**

**Bull Market in Fear is prepared for yesterday's crash…**
**you want to be hedged for what happens tomorrow**

**Fracture between the fundamental**
**and the abstract is a source of great risk**

**Today everyone is afraid of the next 2008**
**I am afraid of the next 1987…. possibly for stocks…**
**but more likely bonds**



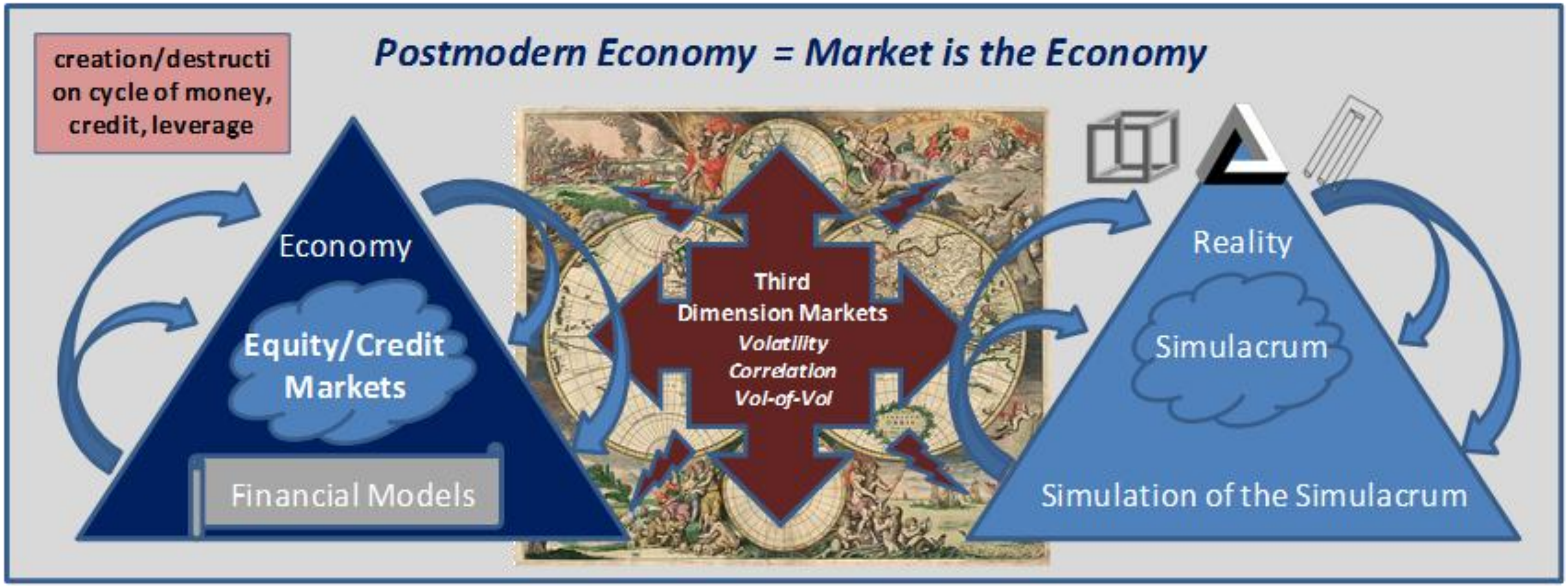
# Post-Modern Economy

## Post-Modern Economy & "Simulacra and Simulation"

***Baudrillard recalls Borges fable about cartographers of a great empire who drew a detailed map***

***When the empire collapses the map is accepted as truth and the empire forgotten***

***In the postmodern economy market expectations are more important to fundamental growth than the reality of supply and demand the market was designed to mimic***




**What Baudrillard calls "the desert of the real" is what Bernanke identifies as the "wealth effect"**

**The real economy is not slave to the shadow banking system… our economy IS the shadow banking system the empire is gone and *we live in the abstraction***

## Volatility can be more than just FEAR

## Volatility is the perfect post-modern asset class for our existential economic future…



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# Truth and Volatility



**Volatility as a concept is widely misunderstood. Volatility is not fear. Volatility is not the VIX index. Volatility is not a statistic or a standard deviation, Black-Scholes input, or any other number derived by abstract formula.**

**Volatility is no different in markets than it is to life.**

**Volatility is an instrument of truth**

***Regardless of how it is measured volatility reflects the difference between the world as we imagine it to be and the world that actually exists***

***We will only prosper if we relentlessly search for nothing but the truth, otherwise the truth will find us through volatility***

**the Truth is that Capitalism can save us…**
**but First We Must Find a Way to Save Capitalism**

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Ocean wave pictures provided by istockphoto.com

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## Key Information/ Biography

***Christopher Cole, CFA***

***Managing Partner & Portfolio Manager / Artemis Capital Management LLC***

Christopher R. Cole, CFA is the founder of Artemis Capital Management LLC and the portfolio manager of the Artemis Vega Fund LP. Mr. Cole's core focus is systematic, quantitative, and behavioral based trading of exchange-traded volatility futures and options. His decision to form a fund came after achieving significant proprietary returns during the 2008 financial crash trading volatility futures. His research letters and volatility commentaries have been widely quoted including by publications such as the Financial Times, Bloomberg, International Financing Review, CFA Magazine, and Forbes. He previously worked in capital markets and investment banking at Merrill Lynch. During his career in investment banking and pension consulting he structured over $10 billion in derivatives and debt transactions for many high profile issuers. Mr. Cole holds the Chartered Financial Analyst designation, is an associate member of the NFA, and graduated Magna Cum Laude from the University of Southern California.

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CERTAIN DATA CONTAINED HEREIN IS BASED ON INFORMATION OBTAINED FROM SOURCES BELIEVED TO BE ACCURATE, BUT WE CANNOT GUARANTEE THE ACCURACY OF SUCH INFORMATION.

## General Disclosure Statement

*An investment in the Partnership and strategies discussed in this document involve a number of significant risks. For a full list of potential risk factors please review the Offering Memorandum. Prospective Limited Partners should read the entire Memorandum and the Partnership Agreement and consult with their own advisers before deciding whether to invest in the Partnership. In addition, as the Partnership's investment program develops and changes over time, an investment in the Partnership may be subject to additional and different risk factors. Prospective investors should also consult with their own financial, tax and legal advisors regarding the suitability of this investment. Artemis Capital Management, L.L.C. does not guarantee returns and investors bear the risk of losing a substantial portion of or potentially their entire investment.*

*All 2009 performance numbers quoted within this document are derived from financial statements that were audited by Spicer Jeffries. Proprietary trading results for White Fox, LLC (the "Proprietary Account") are presented within this document that were verified by Spicer Jeffries. The Principal of the General Partner, Christopher R. Cole, used the Proprietary Account as a vehicle to incubate the investment strategy of the Partnership with personal funds as well as those of close family members. Note that no management or performance fees were charged to the Proprietary Account profiled. Accordingly, the Pro Forma Performance presented in this document includes imposition of a 2% Management Fee and 20% Performance Allocation (in line with those charged against the Partnership).Past performance is not indicative of future returns.*

## Commodity Pool Operator Disclosure Statement

***YOU SHOULD CAREFULLY CONSIDER WHETHER YOUR FINANCIAL CONDITION PERMITS YOU TO PARTICIPATE IN A COMMODITY POOL. IN SO DOING, YOU SHOULD BE AWARE THAT FUTURES AND OPTIONS TRADING CAN QUICKLY LEAD TO LARGE LOSSES AS WELL AS GAINS. SUCH TRADING LOSSES CAN SHARPLY REDUCE THE NET ASSET VALUE OF THE POOL AND CONSEQUENTLY THE VALUE OF YOUR INTEREST IN THE POOL. IN ADDITION, RESTRICTIONS ON REDEMPTIONS MAY AFFECT YOUR ABILITY TO WITHDRAW YOUR PARTICIPATION IN THE POOL.***

***FURTHER, COMMODITY POOLS MAY BE SUBJECT TO SUBSTANTIAL CHARGES FOR MANAGEMENT, ADVISORY AND BROKERAGE FEES. IT MAY BE NECESSARY FOR THOSE POOLS THAT ARE SUBJECT TO THESE CHARGES TO MAKE SUBSTANTIAL TRADING PROFITS TO AVOID DEPLETIONS OR EXHAUSTION OF THEIR ASSETS. THE OFFERING MEMORANDUM CONTAINS A COMPLETE DESCRIPTION OF EACH EXPENSE TO BE CHARGED THIS POOL AND A STATEMENT OF THE PERCENTAGE RETURN NECESSARY TO BREAK EVEN, THAT IS, TO RECOVER THE AMOUNT OF YOUR INITIAL INVESTMENT .***

***THIS BRIEF STATEMENT CANNOT DISCLOSE ALL THE RISKS AND OTHER FACTORS NECESSARY TO EVALUATE YOUR PARTICIPATION IN THIS COMMODITY POOL. THEREFORE, BEFORE YOU DECIDE TO PARTICIPATE IN THIS COMMODITY POOL, YOU SHOULD CAREFULLY STUDY THE OFFERINGMEMORANDUM, INCLUDING A DESCRIPTION OF THE PRINCIPAL RISK FACTORS OF THIS INVESTMENT.***

***YOU SHOULD ALSO BE AWARE THAT THIS COMMODITY POOL MAY TRADE FOREIGN FUTURES OR OPTIONS CONTRACTS. TRANSACTIONS ON MARKETS LOCATED OUTSIDE THE UNITED STATES, INCLUDING MARKETS FORMALLY LINKED TO A UNITED STATES MARKET, MAY BE SUBJECT TO REGULATIONS WHICH OFFER DIFFERENT OR DIMINISHED PROTECTIONS TO THE POOL AND ITS PARTICIPANTS. FURTHER, UNITED STATES REGULATORY AUTHORITIES MAY BE UNABLE TO COMPEL THE ENFORCEMENT OF THE RULES OR REGULATORY AUTHORITIES OR MARKETS IN NON-UNITED STATES JURISDICTIONS WHERE TRANSACTIONS FOR THE POOL MAY BE EFFECTED.***