Volatility and the Allegory of the Prisoner’s Dilemma

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Christopher Cole, CFA
“The only thing that will redeem mankind is cooperation”

Bertrand Russell

“Peace is not the absence of conflict”

Dorothy Thompson
Volatility and the Allegory of the Prisoner’s Dilemma

Investors are trapped in a Prisoner’s Dilemma
Global central banking “arms race” to fight deflation has trapped investors in an equilibrium of excessive risk, debt, and false prosperity

Volatility is the only real asset class
Most active management strategies are short volatility in sheep's clothing

Volatility is your only escape from the Prisoner’s Dilemma
Hedge unknown unknowns and sell known unknowns
Global Macro Straddle + Asset Beta
Volatility in the Prisoner’s Dilemma

two purely rational entities may not cooperate, even if it is in their best interests to do so

Global central banks are in an arms race of devaluation resulting in suboptimal outcomes for all parties and greater systemic risk
Volatility in the Prisoner’s Dilemma

Prisoner’s Dilemma - Forced to Take Excessive Risk
Yields on UST Bonds, Investment Grade Corporate, High Yield, and Short Volatility

Source: Artemis Capital Mgmt LP, FRED, MarketDataExpress
Volatility and Asset Prices in the Prisoner’s Dilemma

US Monetary Base (lhs) vs. World Equity Prices (rhs) & Volatility

vs. Commodity Prices (rhs)

(1970 to 2014)

Regime of Prisoner’s Dilemma

(2009 to 2015)

Volatility of World Equity (1yr Realized)

Source: Artemis Capital Mgmt LP, Global Financial Data
Volatility in the Prisoner’s Dilemma
Exchanges short term equilibrium for longer term tail risk

EFFECT OF GOVERNMENT INTERVENTION ON VOLATILITY
S&P 500 Index - 1960 to 2015
S&P 500 Index 21d Returns - QEII and QEIII

- Suppress Tail Risk
- Increase Peak of the Distribution
- Suppress Tail Risk

Deflation
War
Political Revolution

SIGMA Movement

Source: Artemis Capital Mgmt LP, Bloomberg
Volatility in the Prisoner’s Dilemma

Total Debt-to-GDP by Country & World

- China: 282%
- UK: 252%
- World: 286% (+40% since 2007)
- Spain: 401%

UNFORTUNATELY WE NEVER DE-LEVERED!
US PUBLIC AND PRIVATE DEBT AS % OF GDP

Great Depression

WWI

WWII

Great Recession

Source: Global Financial Data, Recent Debt-to-GDP data from McKinsey Global Institute
Volatility in the Prisoner’s Dilemma

Is global deflation an economic or a demographic phenomenon?

Global Inflation by Country (YOY%) and World Population Growth (YOY%)

1881 to 2014

Source: Global Financial Data
We are all volatility traders
Most active management strategies produce alpha by being short volatility
or correlation

Source: Hedge fund monthly returns from HFRX, volatility returns from Artemis Capital.
Volatility is the Only Real Asset Class
In the real world... there are two asset classes... long and short volatility

WHEN DOES PORTFOLIO #1 turn into PORTFOLIO #2?
1. **Deflationary collapse** followed by **financial repression** and **negative real rates** and/or;
2. **Historical correlation** (negative correlation) between equities and bonds **breaks down** rendering traditional diversification useless

Sources: Special thanks to Drobny Global Macro for original visual conceptualization of this idea
Volatility is the Only Real Asset Class
Changing Correlations Between Fixed Income and Equity Prices

Inconvenient Truth for Modern Portfolio Theory
Bonds do not always move opposite Stock Prices
Relationship between 10yr UST Yield and Domestic Equity Earnings Yield
3-year rolling correlation (monthly data) - 1885 to 2015

Source: Global Financial Data, Artemis Capital Management LLC
Volatility is the Only Real Asset Class

Cross-Asset Volatility

Rolling 12-month volatility adjusted by 30 year standard deviations / surface graph

Source: Global Financial Data, Artemis Capital Management LP
What Will be the Outcome of the Economic Prisoner’s Dilemma?

Source: The Tower of Babel / Pieter Bruegel the Elder
What Will be the Outcome of the Economic Prisoner’s Dilemma?

Cooperation + Growth + Austerity

Volatility and the Allegory of the Prisoner’s Dilemma

Source: istockphoto.com, worldly
Volatility is your Only Escape from the Prisoner’s Dilemma
GLOBAL MACRO STRADDLE + BETA

Note: Artemis created a model to simulate the behavior of the equity returns, volatility movement, and “greek” sensitivities of options. Volatility simulations are expected to represent real potential scenarios but there is no guarantee as to accuracy of the model.
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 exist.
One Last Thing...

Tea tray madness is a ‘sell’ signal if ever there was one

Sir, The next financial apocalypse is imminent. I know this to be true because the House & Home section in FT Weekend is now assuming the epic proportions last seen before the great crash. Twenty-four pages chock full of adverts for mansions and wicker tea trays for a $1,000. You’re all mad. Sell everything and run for your lives.

Matt Long
Seilh, France
Christopher Cole, CFA

Managing Partner & Portfolio Manager / Artemis Capital Management LP

Christopher R. Cole, CFA is the founder of Artemis Capital Management LLC. Mr. Cole’s core focus is systematic, quantitative, and behavioral based trading of volatility derivatives. His decision to form a fund came after achieving proprietary returns during the 2008 financial crash trading volatility futures. Mr. Cole's research letters and volatility commentaries were influential in derivatives circles and thereafter widely referenced and quoted by the mainstream financial media, academic, and institutional asset management communities. He previously worked in capital markets and investment banking at Merrill Lynch. During his career in capital markets 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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