Fasanara Investor Call

MAY 2018

MARKET FRAGILITY (PART II)

BUBBLE MARKETS ON THE 'EDGE OF CHAOS'

TIPPING POINTS & CRASH HALLMARKS

Things always become obvious after the fact. To prevail in an uncertain world, get Convex.
Nassim Taleb

We're experiencing a hysteresis effect in global groupthink, led by the Fed, believing we can depress term and risk premia without consequences for inflation or financial stability."
Tudor Jones

History teaches, but she has no students
Gramsci

Trading profits are achieved by discounting the obvious and placing capital in the direction of the unexpected. George Soros

''Disease is the body's attempt to cure itself. Disease is the cure. It's a healing process."
Dr Isaac Jenning

"When you change the way you look at things, the things you look at change." Max Planck

Today's markets exhibit the signature characteristics of criticality, lack of resilience, flipping feedback loops and likely proximity to critical tipping points.
F.C.

INTRODUCTION

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WHAT IF..

Many interpreted the market being off all-time highs as an HEALTHY and TEMPORARY CORRECTION, driven by fears of trade wars escalation and their impact on economic growth.

But there may be an ALTERNATIVE EXPLANATION as to why we are still off, and that is CRITICAL SLOWING DOWN, decreasing rate of recovery: a general property of complex dynamical systems as they come close to a tipping point / bifurcation event, leading to a major critical transformation into an alternative stable state, a rupture caused by a relatively minor disturbance, or entirely endogenously. The unstable equilibrium, up until then in display, shifts into chaos outburst.

Dynamics of criticality: ***''if we have reasons to suspect the possibility of a critical transition, early-warning signals may be a significant step forwards when it comes to judging whether the probability of such an event is increasing''*** *Prof Marten Scheffer, (ecologist, math biologist)*

..THEN WHAT

Are we sure we can never know when a bubble is a bubble, and when will it burst? Does timing matter? If this is indeed a phase transition zone for markets, how severe a damage could be next? A still acceptable 5% to 10% digression below the moving average, or an easily justifiable 30% to 60%?

Have you ever seen a Fat Tail Risk with a 25% probability? Can it even exist?

Have you ever seen it go unattended/unhedged, for both investors at large and regulators?

What rare moment in history would that be?

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OUR PREVIOUS NOTES ON THE SUBJECT

Today's presentation is the update to the deck on MARKET FRAGILITY we presented last year, and provides the conceptual framework around previous work on Tail Risk, where we argued that an unstable equilibrium in financial markets is brought about by positive feedback loops between public and private investors, exposing markets to systemic risk escalation. We here discuss specific points of critical transformation and upcoming regime shift for markets, pointing to the generic early warning signals for chaos outburst.

MARKET FRAGILITY | PART 1 | Presentation (Oct 2017) LINK

POSITIVE FEEDBACK LOOPS AND FINANCIAL INSTABILITY: The Blind Spot of Policymakers
A Dangerous Market Structure is More Worrying than Expensive Asset Valuations and Record Debt
(Nov 2017) LINK (and a MACROVoices podcast on the topic LINK)

FAKE MARKETS: HOW ARTIFICIAL MONEY FLOWS KILL DATA DEPENDENCY, AFFECT MARKET FUNCTIONING AND CHANGE THE STRUCTURE OF THE MARKET (May 2017) LINK

THE POSITIVE FEEDBACK LOOP BETWEEN FAKE MARKETS AND INVESTORS CREATES SYSTEM INSTABILITY, AND DIVERGENCE FROM EQUILIBRIUM (July 2017) LINK

THE TRAP OF SHORT VOL ETFS (July 2017) LINK

WHAT IS THE 'EDGE OF CHAOS'

'YOU'VE GOT RANDOMNESS, AND YOU'VE GOT ORDER. AND RIGHT BETWEEN THEM, YOU'VE GOT A PHASE TRANSITION ZONE."
John Beggs, biophysicist.

PILE OF SAND

POINTS OF NO RETURNS

POISED AT CRITICALITY:

- Sand grains are dropped one by one to form a pile. For a long time, nothing happens. Until when, at one point, a single grain can trigger a miniature avalanche.
- Nothing much else causes the slide, but just the additional grain. The pile falls under its own weight.
- Avalanches can be small or large. Sometimes they don't happen at all.
- Just before the pile enters its avalanche-prone state, it is poised for criticality.

THE POINT OF NO RETURN WHERE:

- snowflakes into avalanches
- fluid crystallize
- desertification rapidly oversets a green valley
- a volcano breaks into eruption
- a forest burns itself out
- a pandemic breaks loose

INTER-DISCIPLINARY:

- mathematics
- biology
- physics
- ecology
- psychology

Please refer to our Fragile Markets On The 'Edge Of Chaos', 10th January 2018

TRANSITIONS ARE COMMON IN ECOSYSTEMS

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EXAMPLES OF CATASTROPHIC SHIFTS IN BIOLOGY, SOCIETIES, ECOSYSTEMS, CLIMATE,

NATURE ISN'T VERY CONSTANT

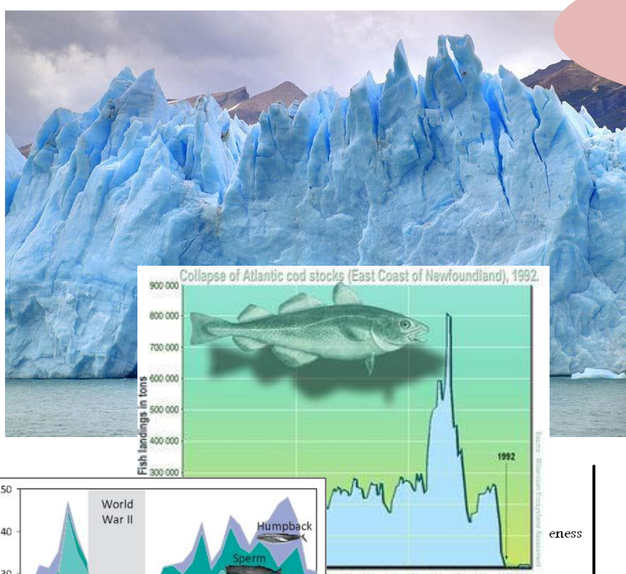
Complex systems occasionally lead to regime shifts.
Evolution via major jumps, deep discontinuity

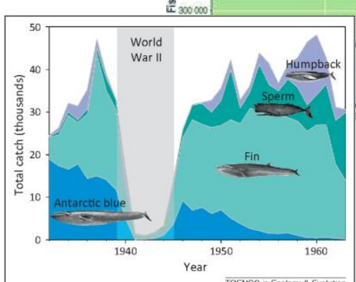
HOW TO PREDICT WHEN A SYSTEM WILL COLLAPSE?

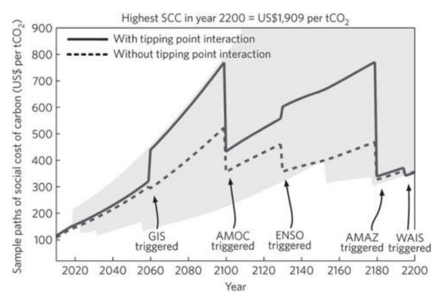
Extrapolation fails. Avoid dichotomous thinking: impossible to know, nothing to know

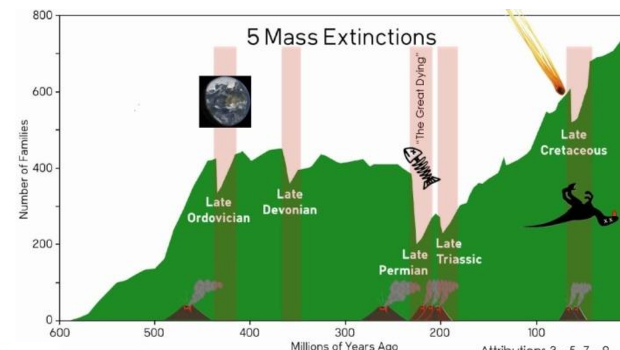
WHAT GENERAL PROPERTIES

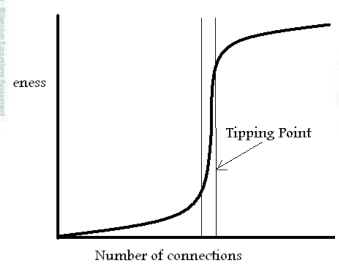
What do ecosystems, societies, climate, oceans, brain, financial markets, human immune system have in common?

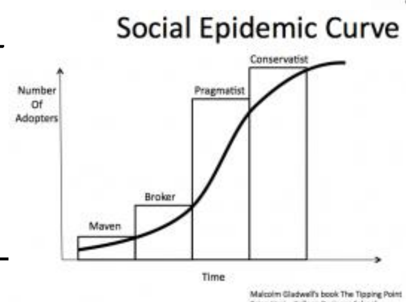


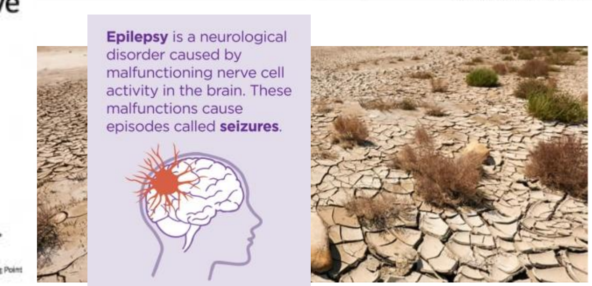












A FASCINATING SUBJECT

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CATASTROPHE THEORY & TIPPING POINT ANALYSIS

CATASTROPHE THEORY attempts at isolating global properties for systems drifting into disorder beyond certain critical thresholds.

Analysis of Bifurcation Events

Beyond Chaos Theory and the 'butterfly effects', small change in initial conditions

Salvador Dalí's last painting, 'Homage to Rene' Thom' (1983): The Swallow's Tail Catastrophe

Cedric Villani pays homage to Boltzmann's Entropy equation

THE THEORETICAL ZONE, BETWEEN ORDER AND DISORDER

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THE 'EDGE OF CHAOS': PHASE TRANSITION ZONE. WHERE RARE EVENTS BECOME TYPICAL

Complexity scientists from fields such as mathematics, biology, physics, ecology, psychology theorize on the **existence of this mysterious space, a theoretical zone, which sits in between order and disorder**, between symmetry and randomness. 'You've got randomness, and you've got order. And right between them, you've got a phase transition.'' in the words of biophysicist John Beggs.

It is the **space, hypothesized to exist by scientists**, where snowflakes suddenly accrete to form avalanches at some critical tipping point, where fluid crystallize, where desertification rapidly oversets a green valley, where a volcano breaks into eruption, a forest burns itself out, a pandemic breaks loose.

'Evolvability'

Order vs Entropy. Symmetry vs Deterministic Chaos

Stability vs Flexibility, Efficiency vs Redundancy

Positive Feedback Loops vs **Resilience**

Evolution via major jump, a deep discontinuity

Critical transformation, into chaos and then an **alternative stable state**.

Resilience is adaptability. It is the capacity of a system to bounce back from a shock and revert to original state, continue functioning, the capacity to learn from disturbances.

WHAT CAN BE LEARNED FROM NATURE

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SYSTEM FRAGILITY: DISEASE IS THE CURE

''The more efficient a market is, the less resilient it becomes.
When a system is tight in all directions, it loses the ability to learn, it becomes brittle.''
Roland Kupers, Resilience Action Initiative

''The disease is due to a deficiency of force.
The disease is the body's attempt to cure itself.
The disease is the cure.
It's a healing process."
Dr Isaac Jennings, founder of philosophy of natural hygiene

"If you never burn a forest the species in there who are capable of putting up with fire eventually go out-competed; the only way to make a forest resilient to fire is to burn it.
The only way to make children resilient to the environment is to expose them to it ['sheltered kids do not make for capable adults' Lythcott-Haims].
Resilience is maintained by probing the boundaries of the basin, otherwise the basin becomes smaller and smaller.
That's how the body maintains a body temperature of 38 degrees (at 41 you die). We had 10 million years to develop the feedbacks we needed to adapt. Our earlier versions extinguished / got extinct."
Brian Walker, Stockholm Resilience Centre

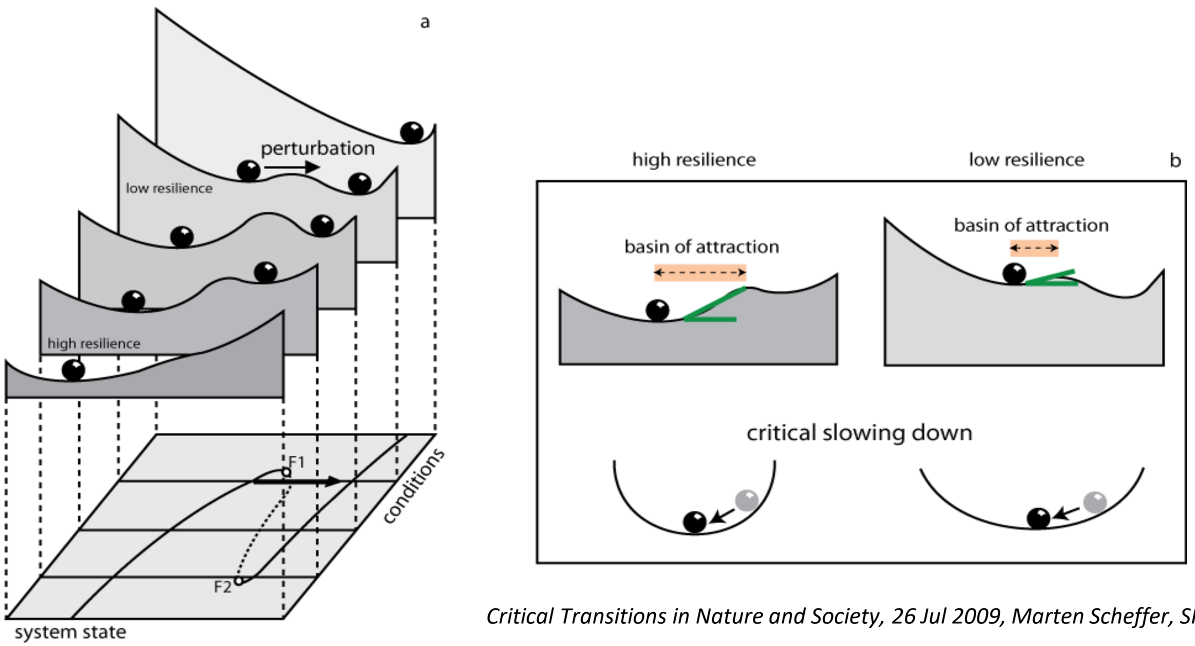
CRITICAL SLOWING DOWN

SYSTEM DEGRADATION, BASIN OF ATTRACTION FLATTENING

It is the theory that says that if the system is close to a critical tipping point the recovery rate decreases

It is hypothesized to exists at phase transition zones, when the system degrades following a weakening of its internal stabilizing forces (fading negative feedback loops and no buffers/redundancy left)

According to Professor Marten Scheffer, the loss of resilience will eventually be reflected in a critical slowing down in getting back to original positions after disturbances. Such **critical slowing down has got to do with very fundamental mathematical properties of systems that are close to a tipping point.** His analysis focuses on lakes and ecological domains, but can be applied broadly across complex systems.



Critical Transitions in Nature and Society, 26 Jul 2009, Marten Scheffer, SPARCS

MARKETS LIKE COMPLEX ADAPTIVE SYSTEMS

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SYSTEM FRAGILITY AND GENERAL PROPERTIES OF SYSTEMS APPROACHING A MAJOR SHIFT

This note posits that **systemic risk in financial markets should be analyzed through the prism of complexity science**, using the analytical tools available to non-linear socio-ecological systems, where a shift in positive loops comes in anticipation of a dramatic transformation.

Years of monumental **Quantitative Easing / Negative Interest Rate** monetary policies affected the behavioural patterns of investors and changed the structure itself of the market, in what accounts as **self-amplifying positive feedbacks**. This is the under-explored unintended consequence of extreme monetary policymaking. A far-from-equilibrium status for markets is reached, where system resilience weakens and **market fragility approaches critical tipping points**.

A small disturbance is then able to provoke a large adjustment, pushing into another basin of attraction, where a whole new equilibrium is found. While it is impossible to determine the threshold for such critical transitioning within a stochastic world, it is very possible to say that we are already in such phase transition zone, where markets got inherently fragile, poised at criticality for small disturbances, and where it is increasingly probable to see severe regime shifts. **Fragile markets now sit on the edge of chaos. This is the magic zone where rare events become typical.**

*The relevance of a tipping point is **clear to the human mind when associated to a simple element**. Too many people on the side on a boat, at some tipping point the boat flips. Or the pushing of a chair out of balance, at some tipping point the chair flips. However, we struggle with the concept when it comes to complex systems.*

TIPPING POINTS:
The question then becomes one of identification of such critical tipping points, or 'bifurcation events'. What is the level beyond which a small change can provoke a large swing, a big transformation? What is the last grain of sand on the pile that the system can take in before transformation? **How to predict when a system collapses?**

CRASH HALLMARKS:
What are the 'early warning signals' that the system is approaching a tipping point and at risk of transitioning to a contrasting state

TRIGGERS: If the system degraded and the cliff is near, it is ready for critical transformation. A butterfly is all it takes then to flip into chaos outburst.

TIPPING POINTS, CRASH HALLMARKS, BUTTERFLIES

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SYSTEM-WIDE FAULT LINES, EARLY SIGNALS, TRIGGERS

REGIME SHIFT DETECTION

1. If you have reasons to believe a saturation point nears
2. Look for confirmation signals
3. Then look for what may jumpstart the autolytic effect

LACK OF RESILIENCE, DISCONTINUITIES, MAJOR SHIFTS

ANALYSIS OF FAR-FROM-EQUILIBRIUM CONDITIONS

TIPPING POINT ANALYSIS

1

EARLY WARNING SIGNALS

2

TRIGGERS / BUTTERFLY EFFECTS

3

WHY ARE BUBBLE MARKETS AT THE ‘EDGE OF CHAOS’

TEACHER: ‘YOU KNOW THE EARTH ISN’T FLAT, DON’T YOU?

PUPIL: ‘IT IS WHERE I LIVE’

Will Hay

TIPPING POINTS ANALYSIS: MARKET SYSTEM IS TIGHT IN ALL DIRECTIONS

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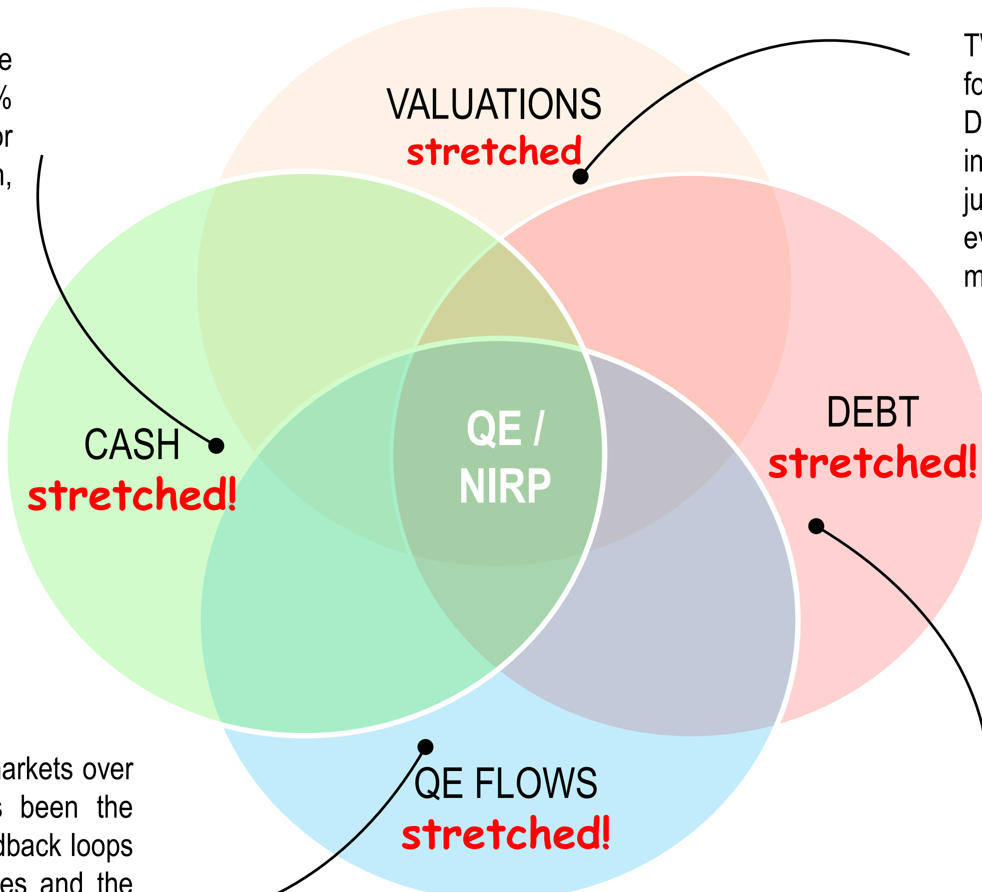
MARKETS IN A PHASE TRANSITION ZONE

'SYNCRONICITY' IN CAPACITY CONSTRAINTS IS WHAT MATTERS

Most institutional investors are all-in, invested between 90% and 100%. Limited scope for further valuation expansion, marginal buyers go scarce.



TWIN BUBBLES: extreme valuations for bonds and equities together. Disconnect to fundamentals is largest in modern financial history, when judged against most valuation metrics ever used. No buffer in bonds no more.

The biggest change in markets over the last few years has been the formation of positive feedback loops between QE/NIRP policies and the private investment community.

Closeness to BIS' debt saturation / Rogoff's debt tolerance limits / Minsky Moment for several subsets within the system, despite the record-low interest rates available to service such debt

MARKETS ON THE EDGE OF CHAOS

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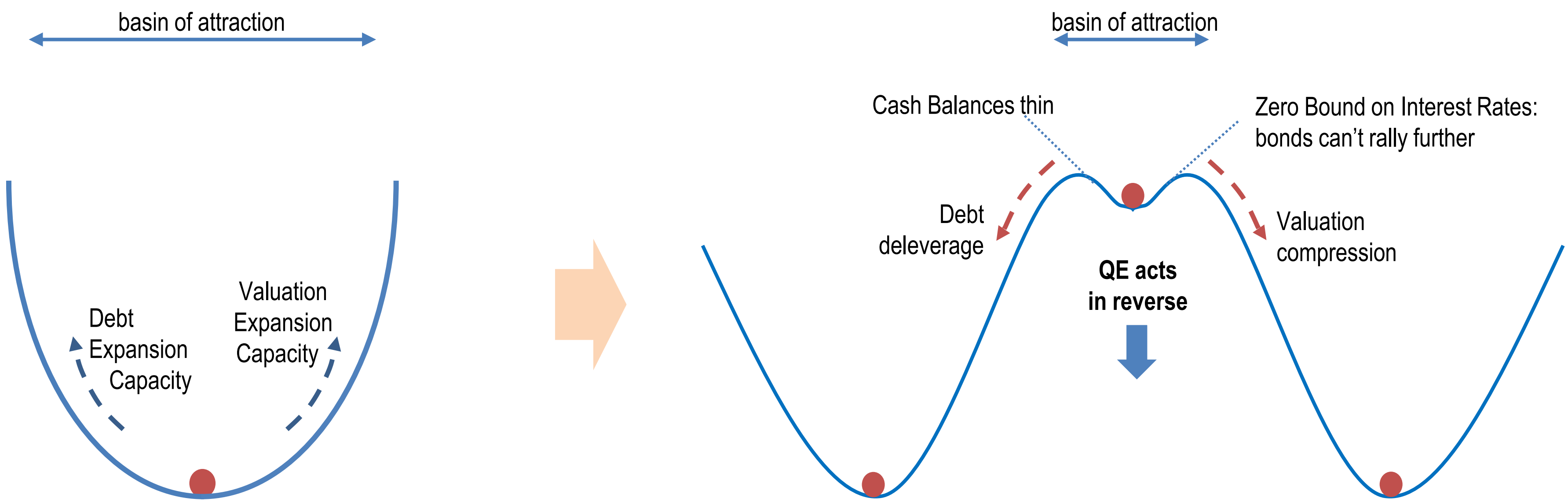
MARKETS THROUGH THE PRISM OF COMPLEX THEORY: LOW RESILIENCE, TIPPING POINTS AND CRITICAL TRANSFORMATION

BEFORE | **NOW**



QE tsunami
+ positive feedback loops
with passive investor

DISTURBANCES

- Endogenous → QE and trend / vol feedback loops in reverse
- Exogenous → Real Rates/ Inflation, Cryptos, Politics, USD shortage, or just a butterfly

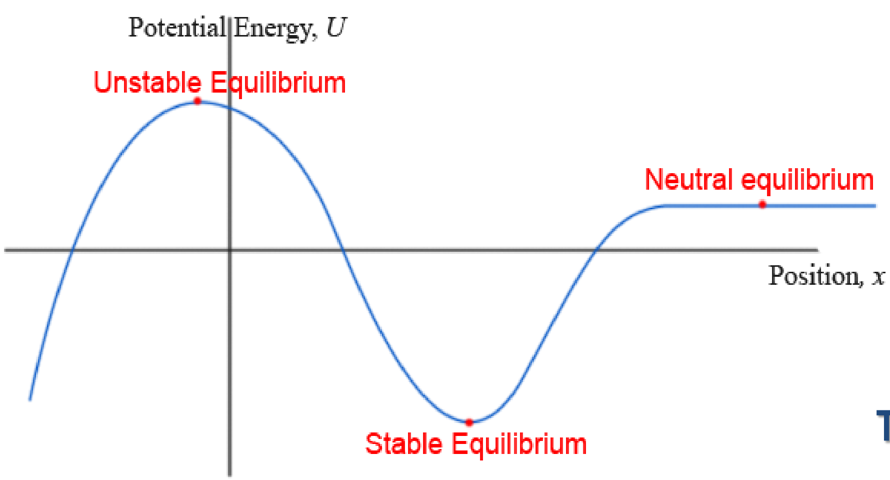
HIGH RESILIENCE
low risk of critical transition

LOW RESILIENCE
high risk of critical transition

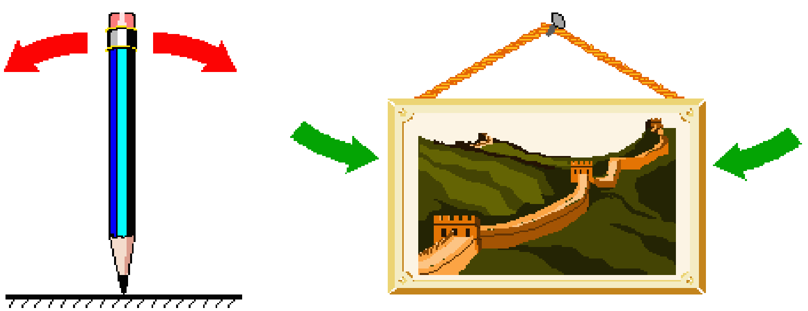
UNSTABLE EQUILIBRIUM

AN EQUILIBRIUM CAN BE STABLE OR UNSTABLE

A body is said to be in unstable equilibrium, if it does not return to its original position after a small disturbance. The small disturbance can instead trigger outsized moves.



TODAY'S MARKETS ARE PENCILS, NOT PAINTINGS



CHASING NARRATIVES

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HOW NARRATIVES EVOLVE TO COVER FOR FAKE MARKETS

1 Chasing Yields

- *Financial repression and negative yields pushed investors into riskier assets*
- *Equities still bought at whatever multiples of cyclically-adjusted earnings*

NOT DEFLATION

2 Chasing Growth

- *As of July last year, yields bottomed out and started rising*
- *Following Trump elections, global equity and EM FX rallied in expectation of 'Trumpflation' and fast GDP recovery*
- *Soft Data advance impressively to price in the recovery to come, invisible in Hard Data*

NOT HARD DATA

3 Chasing Earnings

- *'Trumpflation' gets downgraded, Soft Data collapse, flattening out on hard data, which never moved*
- *Geopolitical red lines are drawn on concrete (not sand), and a nuclear war is threatened in North Korea*
- *Focus moves to earnings, the one bit of information that came out well, the dominant data and the only one that matters*

NOT SOFT DATA

4 Synchronized Global Growth

- *Global QE + US Tax Cuts + Fiscal Expansion = Sugar rush*
- *What is real, structural and durable VS what is nominal, fleeting and elusive*

NOT GEOPOLITICS

POSITIVE FEEDBACK LOOPS

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CHANGING MARKET STRUCTURE: A REVIEW OF MARKET PLAYERS

$ 15 trn
PUBLIC FLOWS

$ 10.1 trn
PRIVATE PASSIVE or QUASI-PASSIVE ASSETS

MASSIVE PUBLIC PASSIVE FLOWS

1. $15tn printed in last 10 years by major Central Banks, $3.6tn just in 2017
2. Trending bull markets: "**TREND FACTOR**"
3. Financial repression of volatility: "**VOLATILITY FACTOR**"

POSITIVE FEEDBACK LOOPS with PRIVATE INVESTORS
$10tn of which is now passive-aggressive

creates ***SYSTEM INSTABILITY*** *and* ***DIVERGENCE FROM EQUILIBRIUM***

ETF and Passive Index Funds	Risk Parity & Vol target Funds	Short Vol ETP / Funds	Trend Algos	ARP & Factor Investing	Machine Learning & AI	Active Investors Go With the Flow	EXIT: Value Investors, Bears
($5.5 trn)	($3.75 trn)	($0.05 trn)	($0.50 trn)	($0.25 trn)	($0.10 trn)		

1. **Massive High-Beta Long-Bias in disguise HOT MONEY FLOWS**
2. **Short Vol & Trend-Chasing Crowding in Private Passive Flows**
3. **Illusory Diversification Illusory Liquidity**
4. **UNSTABLE EQUILIBRIUM: a state in which a small disturbance produces a large change**

Please refer to our Positive Feedback Loops and Financial Instability: The Blind Spot of Policymakers, Nov 2017

THE TREE OF POSITIVE FEEDBACK LOOPS

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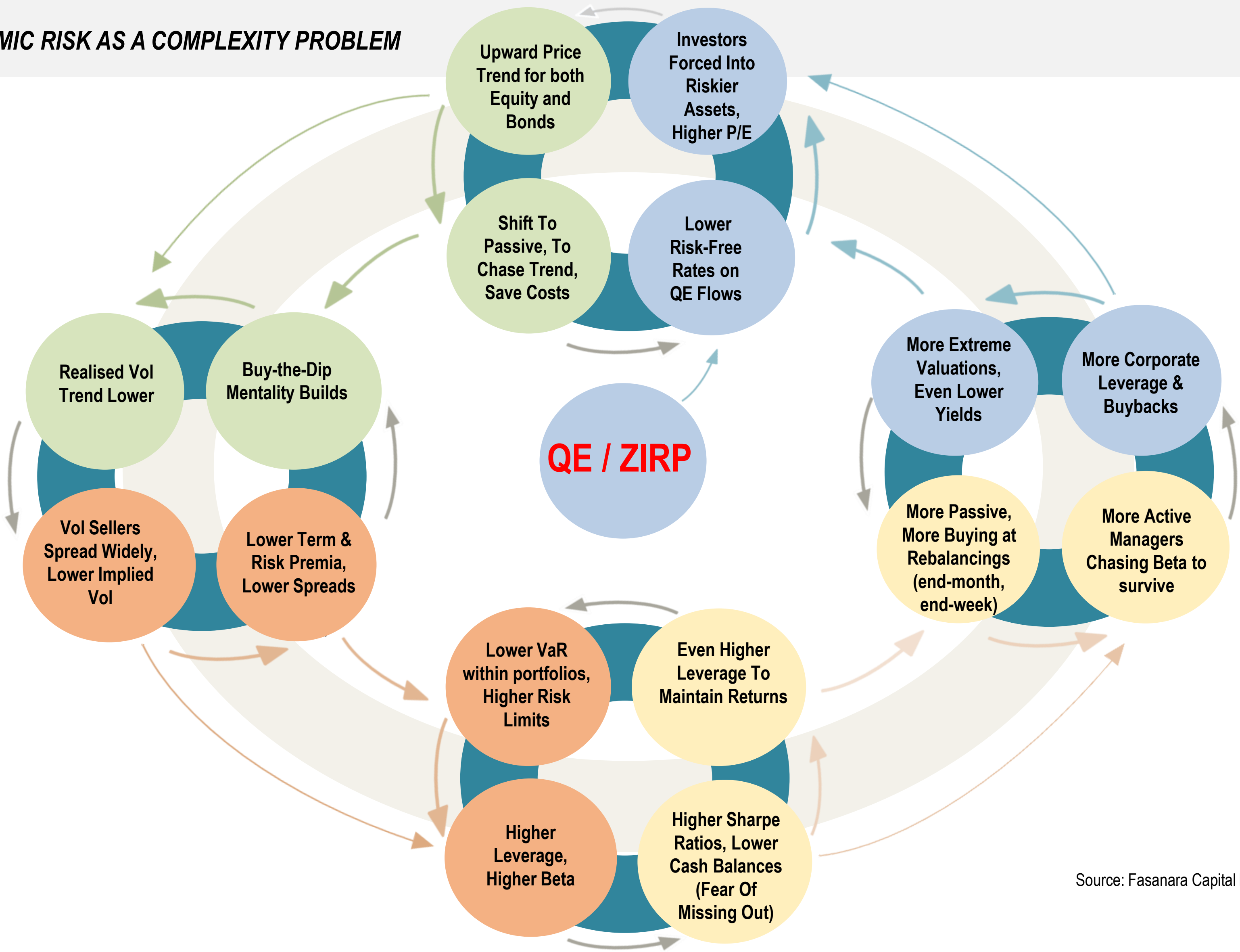
SYSTEMIC RISK AS A COMPLEXITY PROBLEM



Source: Fasanara Capital ltd

SYSTEMIC RISK: FUNDS, NOT JUST BANKS

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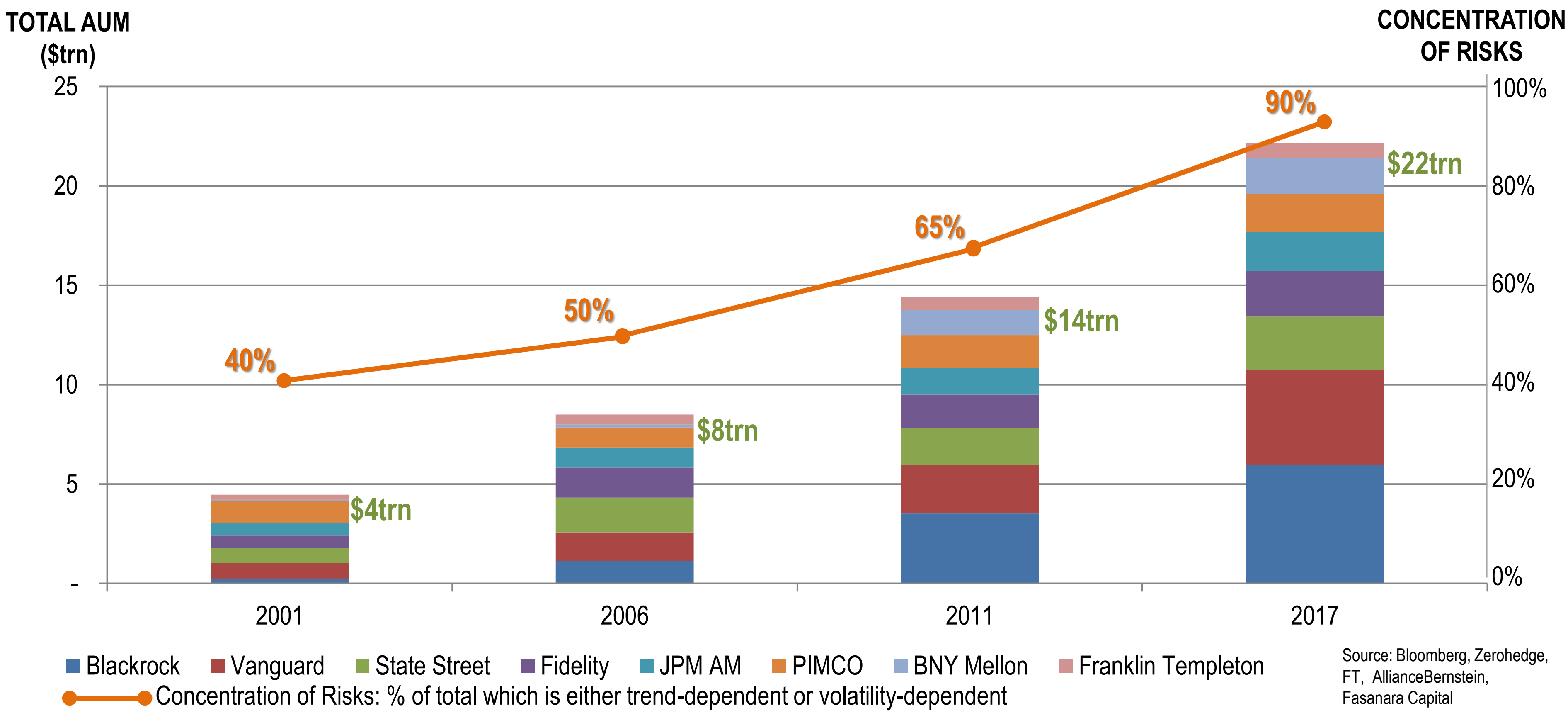
SIZE + CONCENTRATION = SYSTEMIC RISK

In recent years, there was a meteoric rise in:

- **CONCENTRATION OF RISKS ACROSS INVESTMENT STRATEGIES**: ca. **90%** of strategies today are **TREND-linked** or **VOLATILITY-linked**
- **CONCENTRATION OF RISKS ON FEW TOP PLAYERS:** top 8 AM shops account today for **$22trn**, from $8trn in 2006
- **SIZE OF 'PASSIVE' OR 'QUASI PASSIVE'**: considering leverage and turnover, ca. **90%** of flows in equity today are passive



Source: Bloomberg, Zerohedge, FT, AllianceBernstein, Fasanara Capital

HOW MARKET RISK BECAME SYSTEMIC RISK

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THE BLIND SPOT OF POLICYMAKERS

- The **role of trending markets** is known when it comes to systemic risks: a not sufficient but necessary condition.

- The **role of volatility** is also well-researched:
  - Hayman Minsky ("Financial Instability Hypothesis" in 1977): economic agents observing a low risk are induced to increase risk taking, which may in turn lead to a crisis: "stability is destabilizing".
  - Jon Danielsson, Director of the Systemic Risk Centre at the LSE (study), finds unambiguous support for the 'low volatility channel': **prolonged periods of low volatility have a strong predictive power over the incidence of a banking crisis, owing to excess lending and excess leverage.** The economic impact is the highest if the economy stays in the low volatility environment for **five years:** a 1% decrease in volatility below its trend translates in a 1.01% increase in the probability of a crisis. He also finds that, counter-intuitively, **high volatility has little predictive power**: very interesting, when the whole finance world at large is based on retrospective VAR metrics, and equivocates high volatility for high risk.

"WHEN YOU CHANGE THE WAY YOU LOOK AT THINGS, THE THINGS YOU LOOK AT CHANGE." Max Planck

- **What is the role of prolonged periods of uptrend and low-vol on the Asset Management industry?**
  - In 2014, the Financial Stability Board (FSB), published a consultation paper asking whether fund managers might need to be designated as "**global systemically important financial institution**" or **G-SIFI**, a step that would involve greater regulation and oversight. It did not result in much, as the industry lobbied in protest, emphasizing the difference between the levered balance sheet of a bank and the business of funds.
  - The reason for asking the question is evident: (i) **sheer size**, as the AM industry ballooned in the last few years, to now represent over $15trn for just the top 5 US players!, (ii) funds have partially **substituted banks** in certain market-making activities, as banks dialled back their participation in response to tighter regulation and (iii) , funds can indeed do damage: think of **LTCM** in 1998, the fatal bailout of two Real Estate funds by **Bear Stearns** in 2007, the **money market funds 'breaking the buck'** in 2008 amongst others.
  - **But it is not just sheer size that matters for asset managers.** What may worry more is the **positive feedback loops** discussed above and the resulting **concentration of bets in one single global pot**, life-dependent on infinite momentum/trend and ever-falling volatility. **positive feedback loops are the link for the sheer size of the AM industry to become systemically relevant. They morph market risks in systemic risks.**
  - If positive feedback loops are ignored and bubbles are left unchecked, that may one day most unambiguously qualify as a policy mistake: the addiction to monetary steroids and price control that could not be let go, on time. A bust that was entirely predictable, if only macropru conditions had been a real target, and short termism had not prevailed.

LOW VOLATILITY AND BOILING FROGS

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Low Volatility is More Dangerous Than High Volatility.. and More Predictive

The **boiling frog** is a fable describing a frog being slowly boiled alive.

If a frog is put suddenly into boiling water, it will jump out. However, if the frog is put in tepid water which is then brought to a **boil slowly, it will not perceive the danger** and will be cooked to death.

The story is often used as a metaphor for the inability or unwillingness of people to react to or be aware of **threats that arise gradually**.

BEWARE OF LOW VOLATILITY, NOT HIGH VOLATILITY

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When It Comes To Systemic Risk, Low Volatility Is Groundwork

In July 2017, we argued that: ''Record-Low Volatility breeds Market Fragility. Ordinarily, low volatility and complacency themselves are necessary ingredients for market fragility, and the financial instability that follows. **The Positive Feedback Loop between Fake Markets and investors creates System Instability, and Divergence from Equilibrium**. Many fashionable investment strategies these days are not un-contingent to the artificial markets they operate within: ETFs, risk-parity, algo trend-chasing, machine learning, behavioral ARP, short-vol ETFs.

As they successfully profit from an artificial set of variables, they cannot but derive as artificial a signal from it. In circular reference, **artificial markets feed, and are fed, by a crowding effect in high-beta long-bias in disguise**. In a downturn, they may likely play as hot money or weak-hands, exacerbating a down-move.'' LINK

''Is it me, or is it getting hot in here?''

SHIFTS IN MARKET STRUCTURE ARE EVIDENT

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CHANGING LIQUIDITY PATTERNS

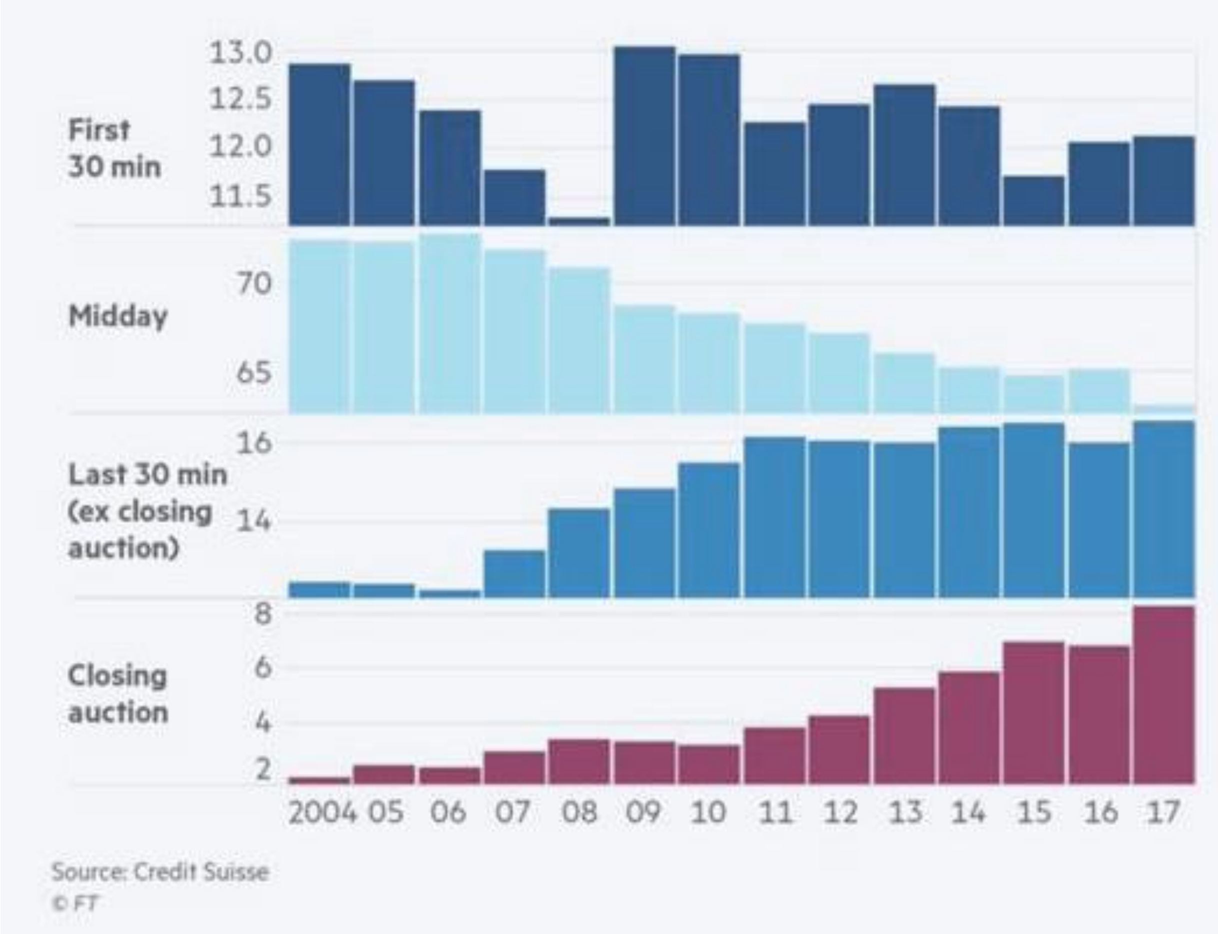
Robin Wigglesworth at the FT: ''the **increasing concentration of buying and selling of US stocks in the final 30 minutes of the day** has some investors calling for a shorter trading period to help limit the market's **growing operational risk**.'' JPMorgan along similar lines last year.

See **"flash crash" of 2010,** when the US stock market suddenly swooned at 2.45pm.

Real float is the other thing. If ETFs never sell, it is equivalent to sticky money/insiders money, creating supply/demand imbalances in equities.

Market bouncing 10 times over the 200 days moving average on the S&P speak volumes of passive flows.

S&P500 % Volume During The Day



HOW SEVERE A DOWNSIDE. LOOK AT THE MARKET STRUCTURE

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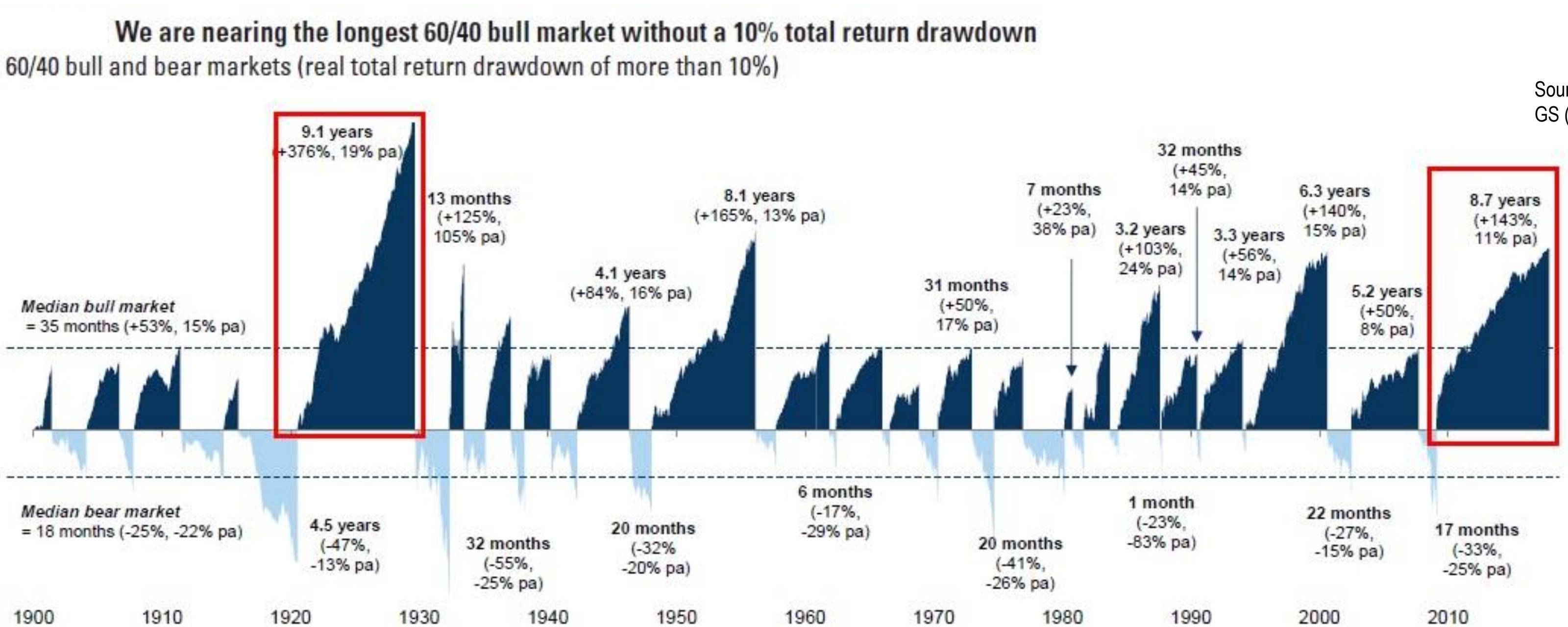
BALANCED PORTFOLIOS: THE RISKIEST IN HISTORY

Don't be fooled by elusive market narratives. Market structure is inflammable. In Fake Markets, Artificial Money Flows Killed Data Dependency, and Changed the Structure of the Market. Positive Feedback Loop between Fake Markets and investors created System Instability: overconcentration across investment strategies and asset managers, dominance of passive in daily flows. Complexity Theory gives clues: **absence of buffers / redundancy / lack of resilience, in the form of value investors or bonds. Inability of bonds to hedge equities makes balanced portfolios the most fragile ever.**



Source: ZeroHedge, GS (link)

EARLY WARNING SIGNALS

EXTRAORDINARILY IMPROBABLE EVENTS ARE COMMONPLACE

David Hand, 'The Improbability Principle'

HOW PROBABLE IS A MAJOR GAP RISK

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Assessing the probability of critical transformations: early warning signals

We can never predict the exact point at which the system transforms. We live in a stochastic world and the final little push out of equilibrium may happen randomly.

But what we can say is when the system has become inherently unstable, fragile, vulnerable, ready for small perturbations to trigger critical transitions, in phase transition zone.

''If we have reasons to suspect the possibility of a critical transition, the analysis of **generic early warning signals** may be a significant step forward when it comes to judging whether the **probability of a transition** is increasing.'' *Marten Scheffer*

EARLY WARNING SIGNALS

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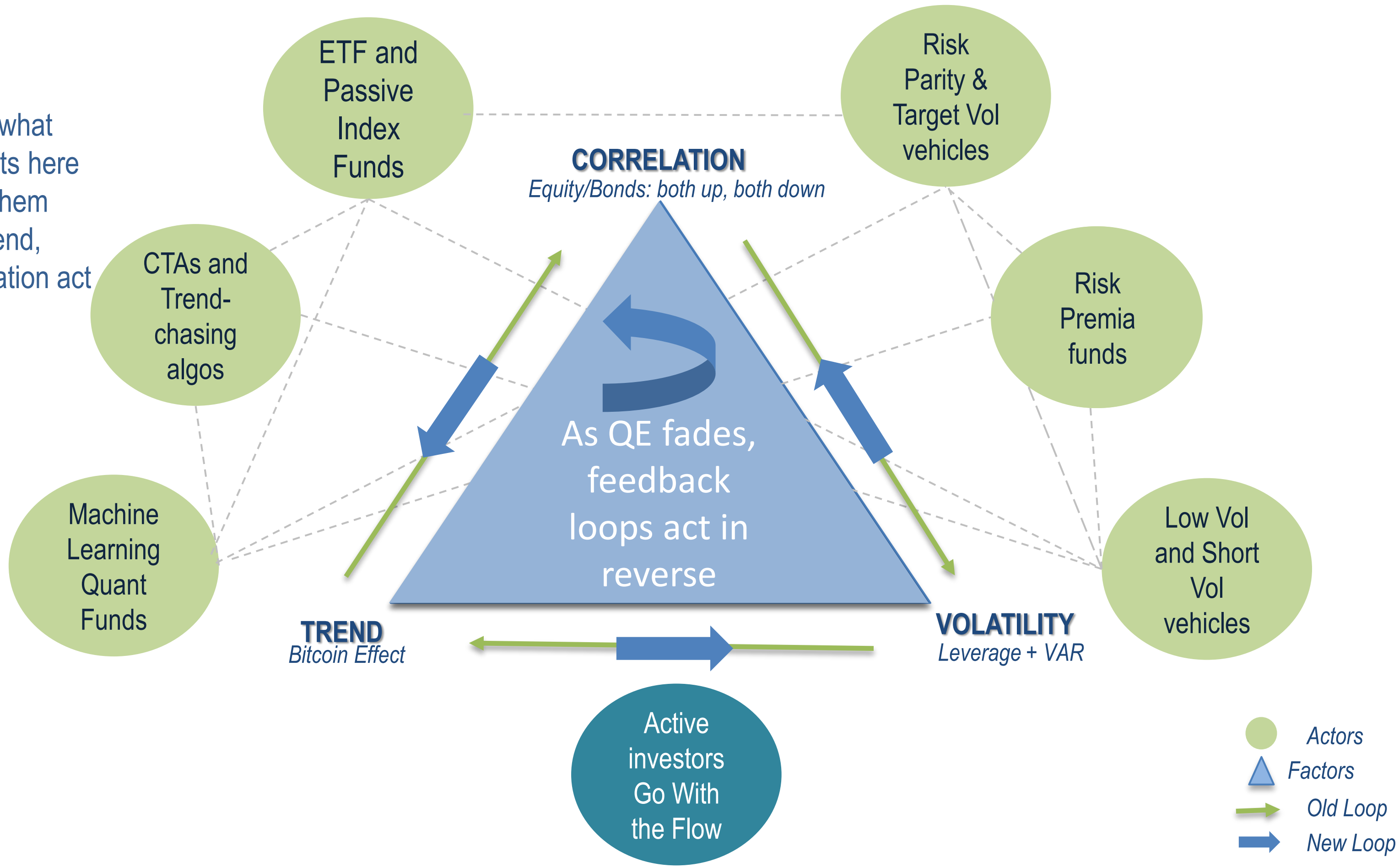
CRITICAL TRANSFORMATION HYPHOTHESIS

1	CRITICAL SLOWING DOWN	The **rate of recovery** rate **after a small perturbation is reduced, and will approach zero when a system moves towards a catastrophic bifurcation point (less slope of basin of attraction).** The difference to Oct14, Aug15, Jan16, Trump, Brexit may be informative. Calls for further investigation.
2	VARIANCE	1) Volatility had already bottomed out 9 months ago; 2) Volatility rising with market in January; 3) Volatility still not reflected in longer expiries and other asset classes. **As a bifurcation approaches (eigenvalue zero), the impact of shocks do not decay, and their accumulating effect increases the variance of the state variable**
3	CORRELATION / AUTOCORRELATION	1) Correlation across asset classed increases at times of systemic risk. 2) Increase in autocorrelation, the memory of the system increases , the **state of the system** at any given moment becomes **more and more like its past state**
4	SKEWNESS OF FLUCTUATIONS	The **asymmetry of fluctuations** may increase. Rates of recovery are lower. As a result, **the system will tend to stay in the vicinity of the unstable point relatively longer** than it would on the opposite side of the stable equilibrium. Vicinity to 200 days MA may qualify.
5	FLICKERING / Bi-Modality	**In the vicinity of a catastrophic bifurcation, the system goes back and forth between the basins of attraction of two alternative attractors**. Such behavior is also considered an early warning. **rapid alternations between a cold mode and a warm mode are typical in climate changes over history. In epileptic seizures, smaller transient excursions in the vicinity of an alternative state** precede the upcoming **major shift**. Call them 'EARLY TREMORS'. Violent rallies seen in bear market about to crash, may qualify.
6	POCKETS OF STRESS	**XIV was only the first ETF to go , many could follow (issues of 'fake diversification', 'fake liquidity')** Turkey, OIS-Llibor spread / DB, default events, HKD, EU Economic Surprise Index
7	SHIFTING FEEDBACK LOOPS from NEGATIVE to POSITIVE	**Critical Transitions Follow Shifts In Feedback Loops: they can be the final stressors** How does the system degrade? How is resilience lost? One such way is with a change in feedbacks. It happens when self-correcting negative feedback loops weaken, and self-amplifying positive feedback loops arise, and the system degrades. Positive loops correlate to an increase in system-level fragility. Now they flipped again to negative: saturation.
8	CLIFF IN NAKED EYE / it started raining	One **key stressor in clean sight**. To markets, it is **REAL RATES RISING**. Inflation made a comeback, but it is really real rates that are rising. So, bond bubble started deflating, just started. Decade-long technical trend-lines are now broken. We will see below how further it can go, across the credit spectrum (HY, Lev Loans, Subordinated)

FEEDBACK LOOPS ACT IN REVERSE

THE AUTOLYTIC REACTION IS NOW JUMPSTARTED, AND UNFOLDING ACROSS PASSIVE AND QUASI-PASSIVE INVESTORS

Clock moves backward: It is what propelled markets here that could take them back in time: Trend, Volatility, Correlation act in reverse



Please refer to Markets Poised At Criticality, 12th Feb 2018

‘CRITICAL SLOWING DOWN’ IN EQUITIES

LOWER RATE OF RECOVERY AFTER (SMALL) DISTURBANCE

’MEANINGFUL COINCIDENCE’ ?

Slower than Oct14, Aug15, Jan16, Trump, Brexit, Italian Referendum.. In itself just a minor correction which takes longer to digest. But given synchronicity of saturation points, given structure of the market designed to buy-the-dip, is there anything more to it?

LIKE A BALL BOUNCING OFF A PAVEMENT

Equity markets in the US are 7% from all-time-highs, staring down the abyss from the edge of the cliff, as they bounced off the 200-days moving average and trend-line **10 times in just two months, neatly**, like a ball bounces off a floor. However, the moving average is no floor, and a long list of vulnerabilities may remind them of just that.

Source: Fasanara Capital ltd, Bloomberg

1. EXCESS VALUATIONS

HISTORY TEACHES, BUT SHE HAS NO STUDENTS
Gramsci

TWIN BUBBLES

FASANARA CAPITAL

SECULAR STAGNATION: Falling Productivity of Credit on Excess Indebtedness, Disruptive Technologies and Jobless Growth (the Amazon effect), Globalization & China, Demographics & ageing Baby Boomers. **THE STRUCTURAL DEFLATION THAT ENSUED PROVOKED A EXTRAORDINARY, NON-CONVENTIONAL MONETARY POLICY: QE, ZIRP, NIRP.**

10 YEARS OF MASSIVE PASSIVE PUBLIC FLOWS BY MAJOR CENTRAL BANKS (AND NIRP/ZIRP) LED TO FEW YEARS OF LARGE-SCALE PASSIVE FLOWS BY A PRIVATE SECTOR MADE OF ETFS, RISK PARITY FUNDS, VOL FUNDS, TREND-CHASING ALGOS

TWIN BUBBLES IN ASSET MARKETS

EQUITY BUBBLE
(Especially in the US)

- *Compared to economic growth, the S&P is more expensive than ever before*
- *Fasanara's "Peak Peg ratio" shows a level higher than the notorious tech bubble in year 2000*
- *Oftentimes, we are told that stocks are not so expensive when compared to bonds, and their minuscule yields*

BOND BUBBLE
(Especially in Europe)

- *Bonds are in a Bubble themselves*
- *Real rates are now more negative than at any point in modern financial history.*
- *Measured against trend growth, the expensiveness of govies is off-the-chart*
- *Fasanara's 'Real Rate to Growth' ratio' shows a major disequilibrium*

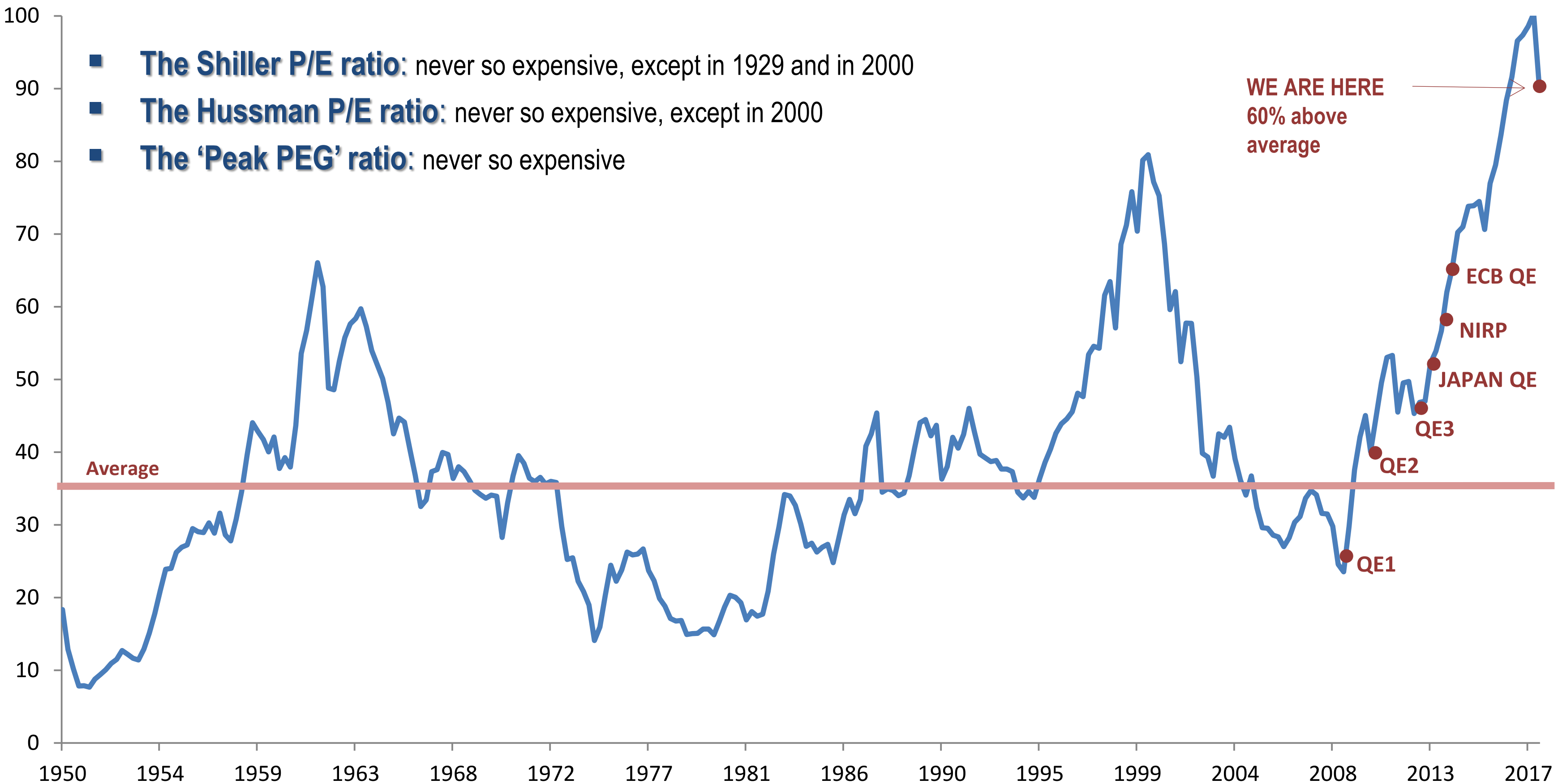
1. We have bubbles in major equities and major bonds at the same time, **AT A MOMENT WHEN EMERGENCY POLICYMAKING AND ULTRA-LOOSE MONETARY POLICY ARE BEING PHASED OUT** due to:
   - ✓ Capital destruction on core EU savers after inflation resurrected
   - ✓ Capacity constraints (no more bunds to buy past mid-2018)
   - ✓ Income inequality threatening to trigger regime change
2. The speed at which risk premia is re-built into the system will determine the **ODDS OF A DISORDERLY ADJUSTMENT** and one cannot just assume - as complacent markets do today - that it will be smooth sailing all the way through

S&P's PEAK PEG RATIO

FASANARA CAPITAL

PRICE TO PEAK EARNINGS, ADJUSTED FOR TREND GROWTH

- **The Shiller P/E ratio:** never so expensive, except in 1929 and in 2000
- **The Hussman P/E ratio:** never so expensive, except in 2000
- **The 'Peak PEG' ratio:** never so expensive



Source: Fasanara Capital ltd
Data Set:
S&P quarterly price data, source Bloomberg
Corporate Profits After-Tax, quarterly data, average of the two highest quarters over the previous 10 years, source FED St Louis
US Real GDP % Change, rolling 10-year average, quarterly data, source IMF

Please refer to Measuring the Equity Bubble, 19th Jan 2018

OTHER VALUATION METRICS

FASANARA CAPITAL

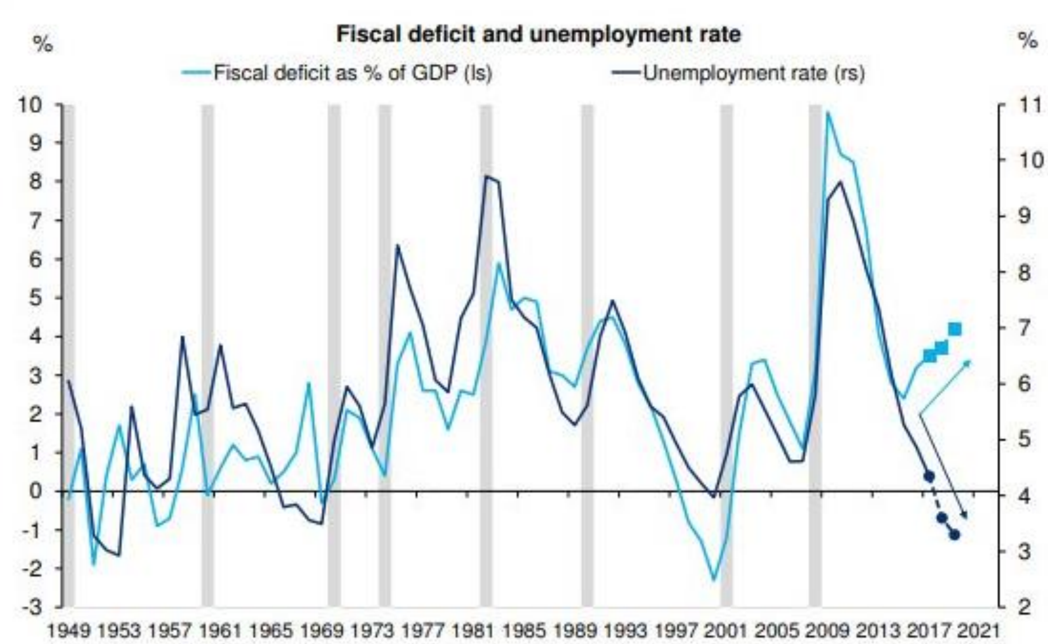
All Concur: More Extreme, Less Extreme, But Extreme

- **Market Cap on GVA (Corporate Gross Value Added)**: 1.79x (only ever higher in 2000) (source: *FED*)
- **Market Cap on GNP (Buffett indicator)**: 1.42x (source: AdvisorPerspectives)
- **Market Cap on GDP**: 1.19 vs 0.59x historical average (source: Bloomberg)
- **Market Cap on Gold**: 2x vs 1.55 historical average (source: Bloomberg)
- **Market Cap on Oil**: 38.5x vs 23x historical average (source: Bloomberg)
- **CAPE Shiller Adj P/E multiples**: > 30x (only ever higher in 1929 and 2000) (source: *Shiller*)
- **Price on Book Value**: 3.17 (only ever higher in 2000) (source: Bloomberg)
- **S&P 500 Price / EBITDA**: 11.40 - higher than in 2000 and 2007 (source: Bloomberg)
- **EV / EBIT small caps in Russell 2000**: > 30x (from average 15x in last 30 yrs) (source: Bloomberg)
- **Net Debt / EBITDA**: 1.49 (source: Bloomberg)
- **Median Price / Revenue Ratio for S&P components**: 2.4 (source: Hussman Strategic Advisors)
- **S&P relative to Velocity of M2 Money Supply**: x2.5 in respect with 2007 and 2000 levels (source: Bloomberg)
- **NYSE Margin Debt** at a 85 years high

SUGAR RUSH vs SUSTAINABLE GROWTH

FASANARA CAPITAL

WHY CYCLICALLY-ADJUSTED EARNINGS MATTER MORE THAN CURRENT EARNINGS



Source: OMB, BLS, Federal Reserve Board, Haver Analytics, Deutsche Bank Research

Not just mean reversion across the cycle

Aggressive tax cuts on QE environment, on already low tax rates (no VAT in the US), may count as financial doping

DB: ''Aggressive fiscal expansion at this point in the business cycle is highly unusual''

TODAY IS SIMILAR TO ALL 13 BUBBLES BEFORE..

FASANARA CAPITAL

THIS MAY NOT BE A MARKET BUBBLE, BUT IT SHOWS STARK SIMILARITIES TO ALL PREVIOUS 13 HISTORICAL PARALLELS OF PRICE COLLAPSES

- Robert Shiller: *"The US stock market today looks a lot like it did at the peak before all 13 previous price collapses. That doesn't mean that a bear market is imminent, but it does amount to a stark warning against complacency."*

WE HEAR THIS IS NO BUBBLE BECAUSE OF HIGH EARNINGS AND LOW VOLATILITY. PROF SHILLER NOTES THAT PAST MARKET PEAKS TEND TO SHOW HIGH EARNINGS GROWTH AND LOW MARKET VOLATILITY

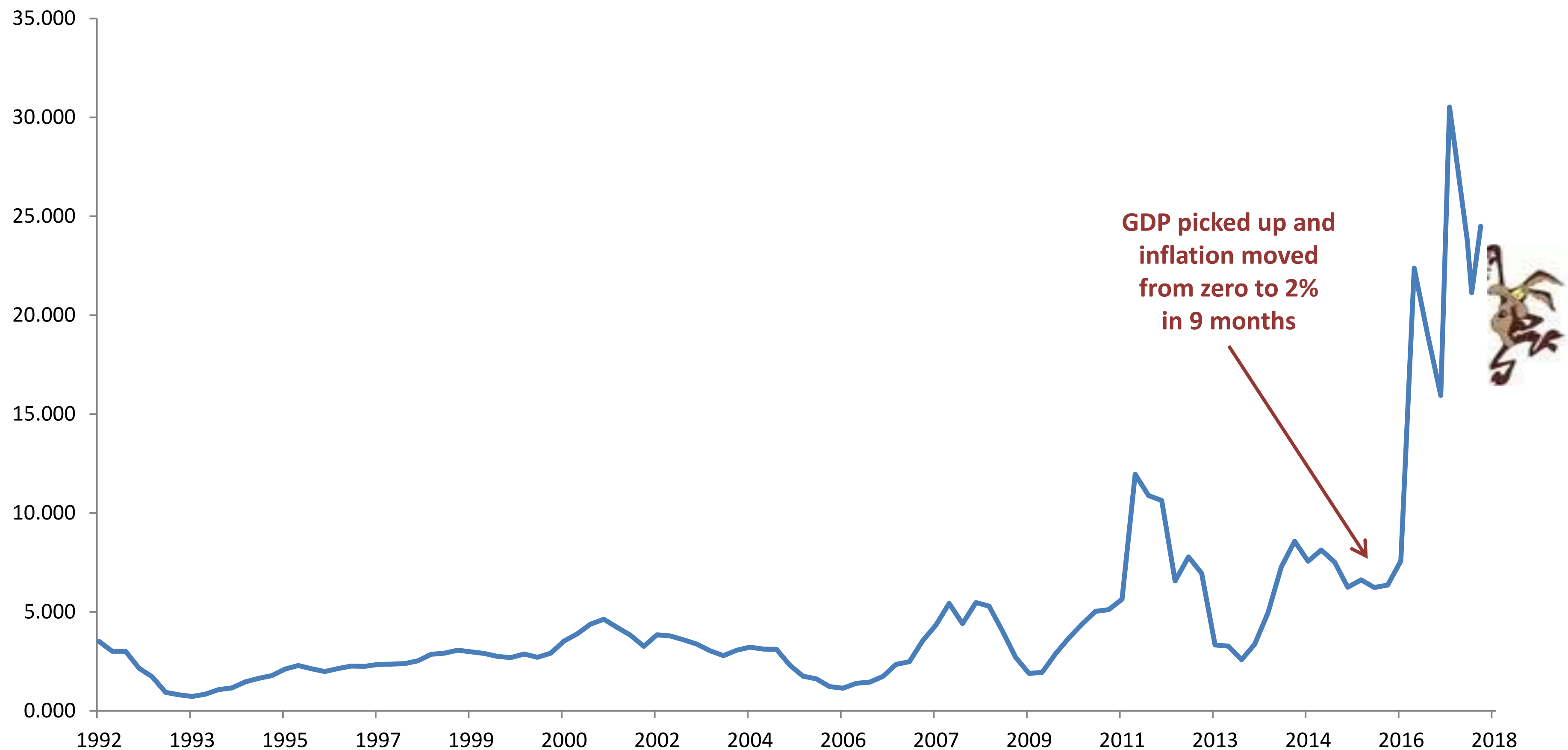
- Rising Earnings: *"peak months before past bear markets also tended to show high real earnings growth: 13.3% per year, on average, for all 13 episodes.* ***Moreover, at the market peak just before the biggest ever stock-market drop, in 1929-32, 12-month real earnings growth stood at 18.3%."***

- Lower volatility: ***"stock-price volatility was lower than average in the year leading up to the peak month preceding the 13 previous US bear markets****, though today's level is lower than the 3.1% average for those periods. At the peak month for the stock market before the 1929 crash, volatility was only 2.8%.*

MEASURING THE BOND BUBBLE

FASANARA CAPITAL

The REAL RATE to GROWTH ratio in Germany



Source: Fasanara Capital ltd

Data Set:

- German CPI YoY, quarterly data, source OECD
- German 2year government bond yield to maturity, quarterly data, source Bloomberg
- German GDP YoY %Change, rolling 5-year average, quarterly data, source IMF

Please refer to Measuring the Bond Bubble, 19th Jan 2018

MEASURING THE BOND BUBBLE

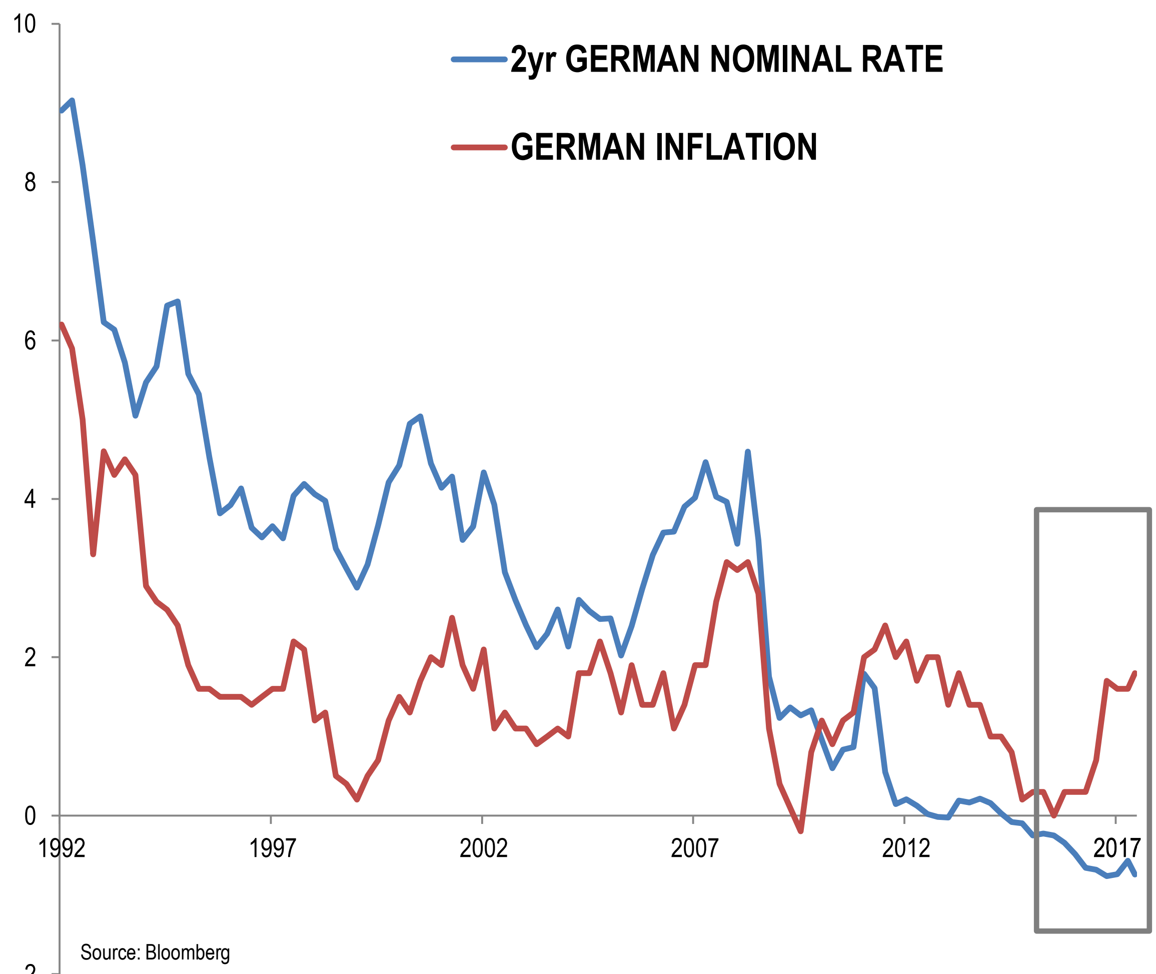
FASANARA CAPITAL

REAL RATES DIPPED DOWN RECENTLY AS INFLATION RESURRECTED FROM ZERO, WHILE NOMINAL RATES HELD STEADY

2-Year Yields

Country	*2-year Yields*	*CPI*	*Real Yields*
SWEDEN	-0.683%	2.20%	-2.880%
UK	0.164%	2.60%	-2.436%
GERMANY	-0.749%	1.67%	-2.422%
BELGIUM	-0.549%	1.78%	-2.330%
DENMARK	-0.646%	1.49%	-2.139%
NETHERLANDS	-0.691%	1.33%	-2.021%
SPAIN	-0.356%	1.55%	-1.904%
FRANCE	-0.589%	0.72%	-1.307%
FINLAND	-0.699%	0.53%	-1.227%
ITALY	-0.073%	1.10%	-1.172%
SWITZERLAND	-0.815%	0.30%	-1.115%
NORWAY	0.596%	1.53%	-0.935%
USA	1.138%	1.73%	-0.590%
JAPAN	-0.148%	0.40%	-0.548%
IRLAND	-0.512%	-0.20%	-0.314%
POLAND	1.697%	1.80%	-0.108%
CANADA	1.237%	1.16%	0.073%
CHINA	3.573%	1.40%	2.173%
GREECE	3.174%	1.00%	2.175%
RUSSIA	7.820%	3.86%	3.955%
BRAZIL	8.265%	2.71%	5.553%

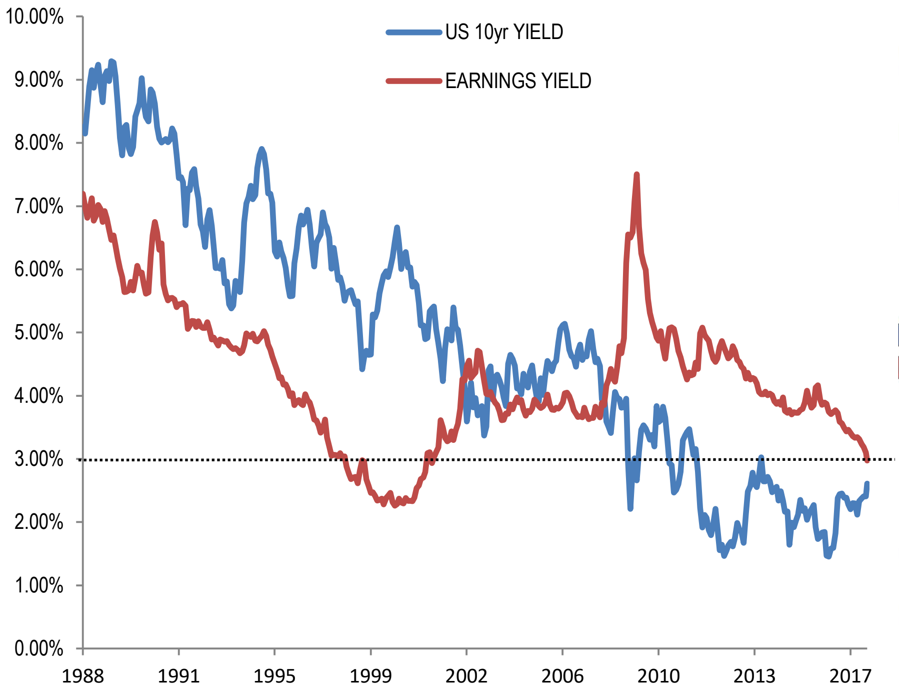
As of: 29-08-2017 Source: OECD Data - ©Fasanara

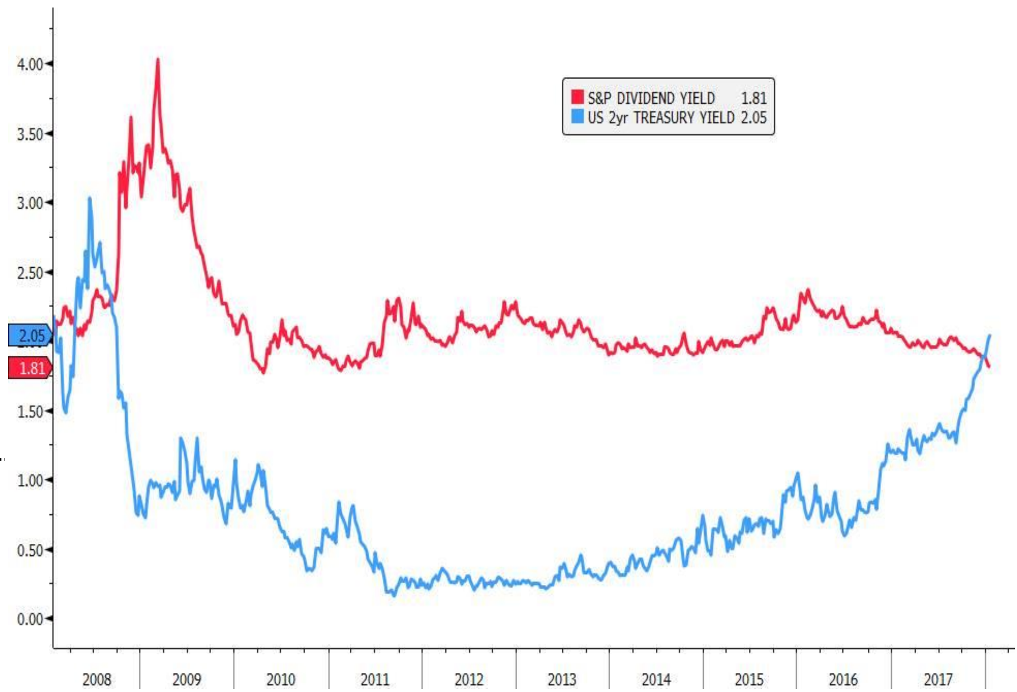


EQUITIES-TO-BONDS RATIO AT CRITICAL JUNCTURE

FASANARA CAPITAL

BOND YIELDS OVERTAKING BOTH DIVIDEND YIELDS AND CAPE EARNINGS YIELDS





Source: Fasanara Capital ltd
Data Set:

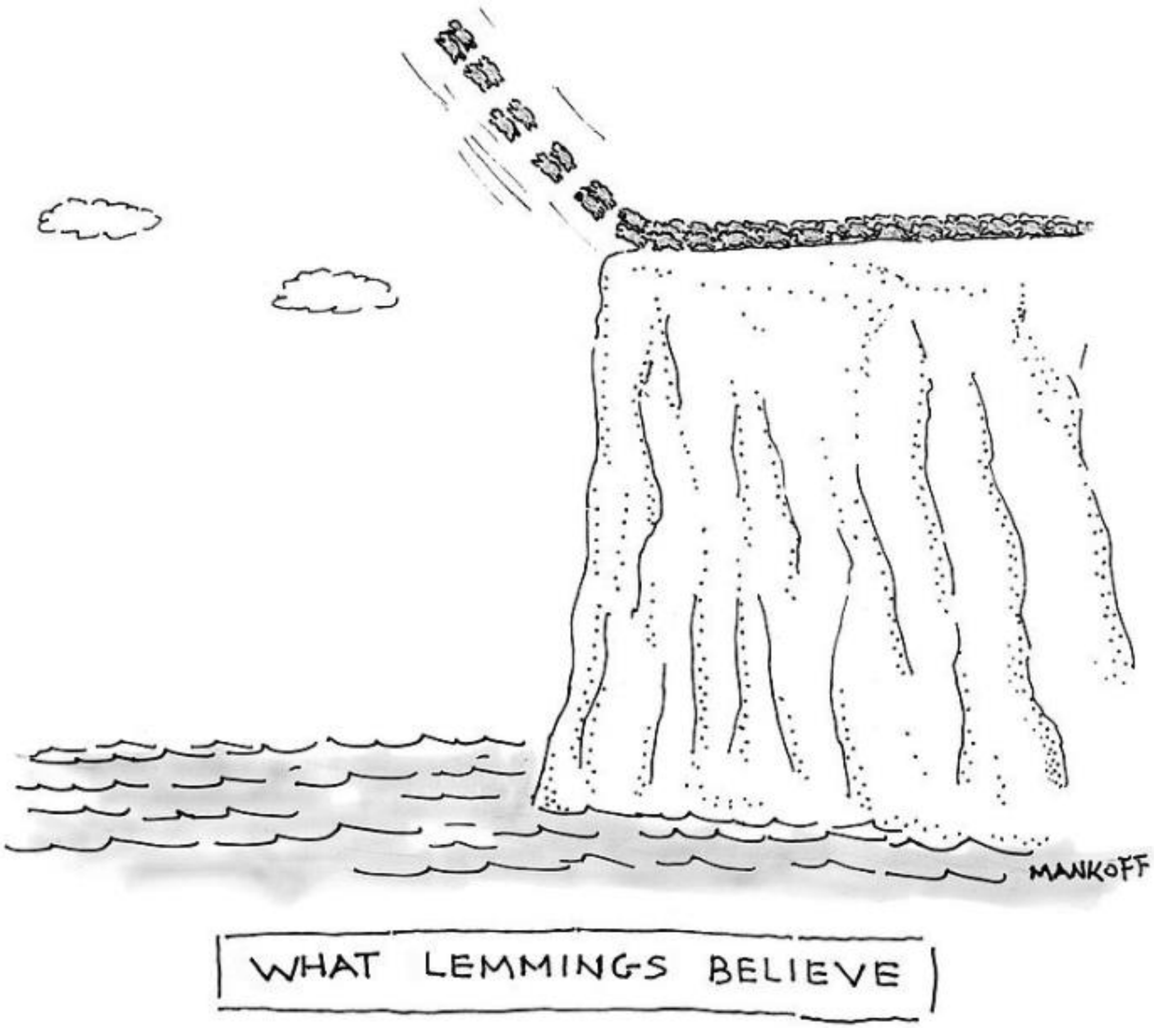
- US 10yr Treasury yield, source Bloomberg
- Earnings yield= inverse of Shiller CAPE, source Yale University

Source: Fasanara Capital ltd
Data Set:

- US 2yr Treasury yield, source Bloomberg
- S&P Dividend Yield, source Bloomberg

A HUNDRED THOUSAND LEMMINGS CAN'T BE WRONG!

FASANARA CAPITAL



Source: What Lemmings Believe is a drawing by Robert Mankoff, 28th March 2017

2. EXCESS DEBT, EXCESS LEVERAGE

THE SUM OF ALL THE COINCIDENCES EQUALS CERTAINTY

Aristotle

CREDIT SUPERCYCLE IS NOT FOREVER

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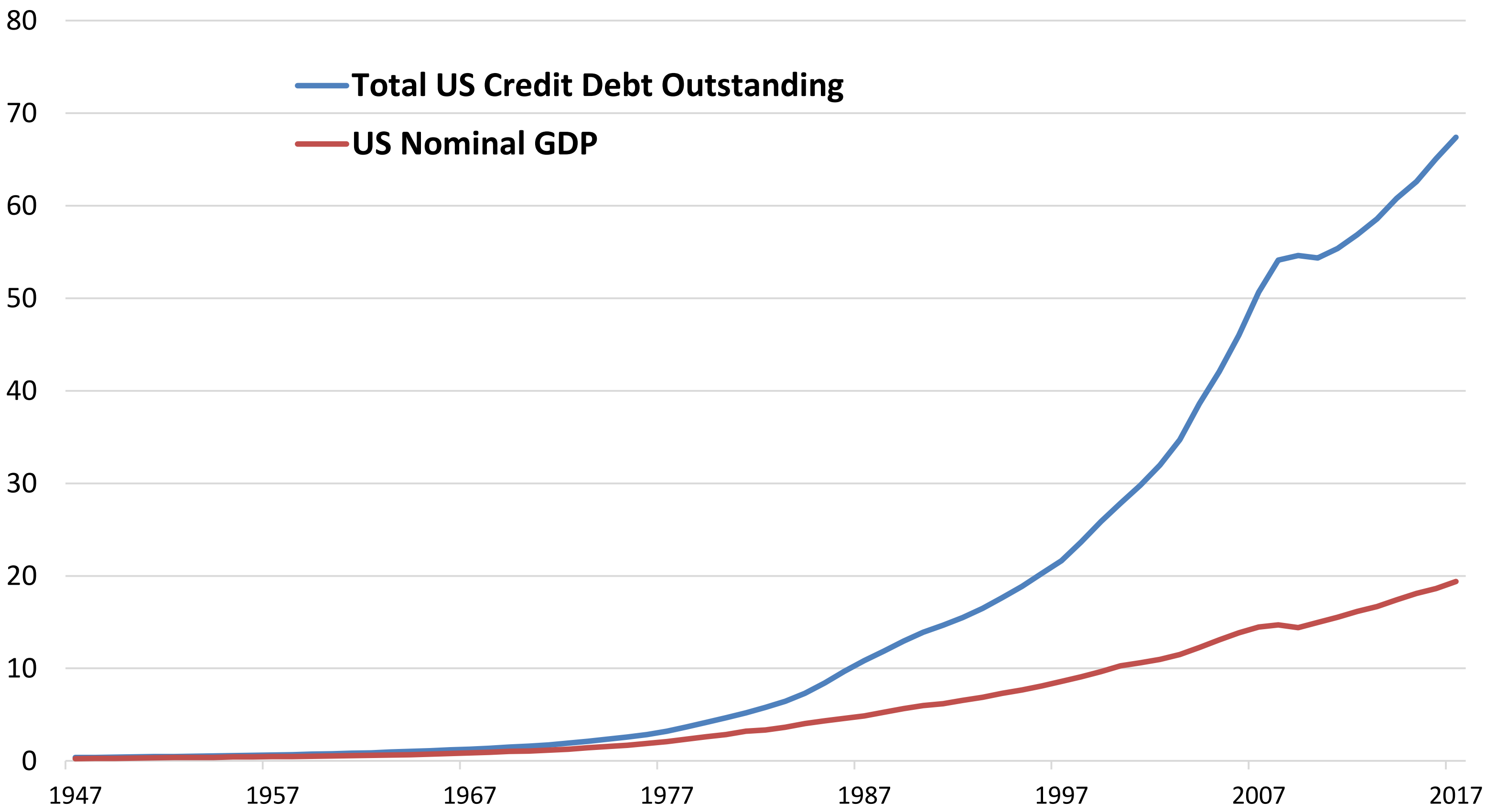
FALLING PRODUCTIVITY OF CREDIT: EVER SINCE IT BEGAN



Source: Fasanara Capital ltd
Data Set:

- US Gross Domestic Product, Fred, FED St. Louis
- Credit Market Debt Outstanding, all sectors debt securities and loans, Fred, FED St. Louis

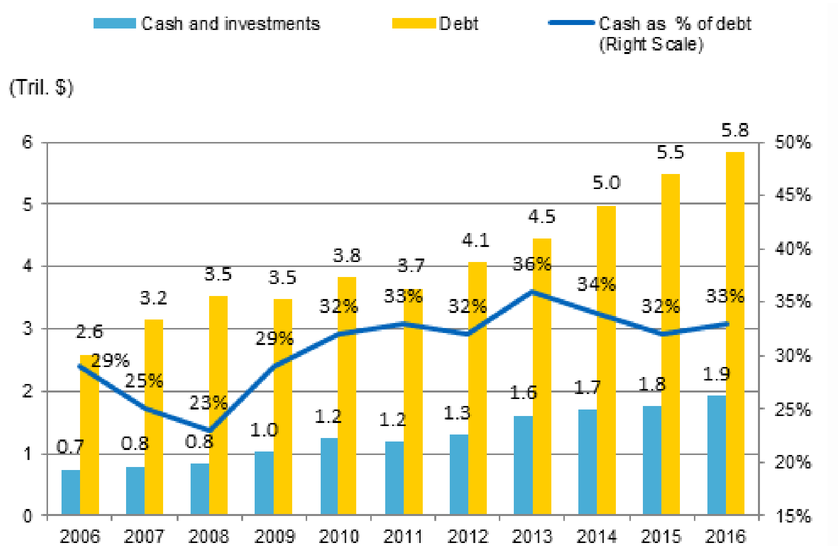
HIGHER LEVERAGE, YET LOWER CREDIT PROTECTION

FASANARA CAPITAL

NOT PAID FOR THE RISK YOU ARE TAKING

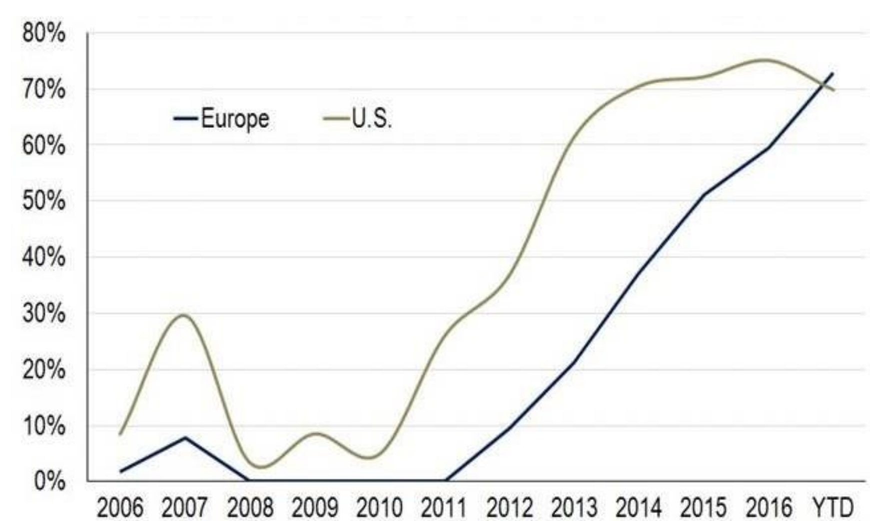
- **DEBT RISES MORE THAN PROFITS:** total debt outstanding continues to rise faster than cash on corporate balance sheets, resulting in rising net debt
- **COV-LITE LEVERAGED LOAN ISSUANCE AT ALL-TIME HIGH:** cov-lite loans in both EU and the US reached a staggering 70% of all loan supply in 2017.In 2018, YTD stands at 80%. In 2007 in the US, before the credit bubble bust, it was 30%

HIGHER LEVERAGE FOR US CORPORATES



Source: Standard & Poor's Financial Services LLC.

% OF COV-LITE LOANS SUPPLY IN EU AND US



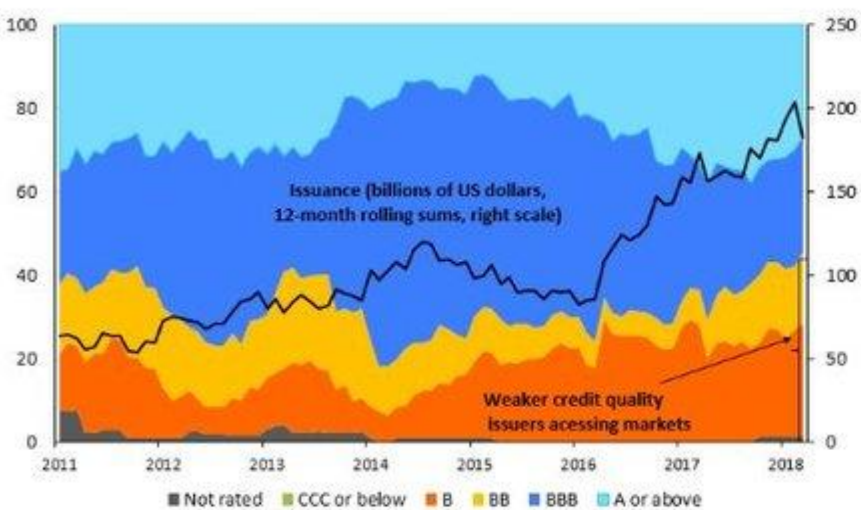
Source: LCD, an offering of S&P Global Market Intelligence

LOANS: Higher Volumes, Higher Leverage, Lower Quality

IMF's latest Financial Stability Monitor highlights interesting data points

Changing credit mix

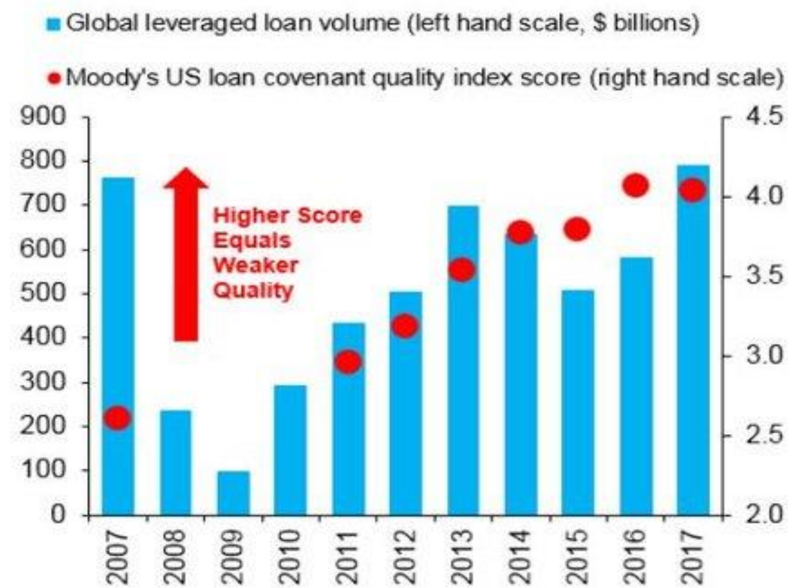
Low interest rates have given weaker issuers access to international credit markets.



Sources: Bloomberg Finance L.P., Bond Radar, and IMF staff estimates.

Leveraged lending

Global leveraged loan issuance is at record highs, and investor protections, known as covenants, are weakening.

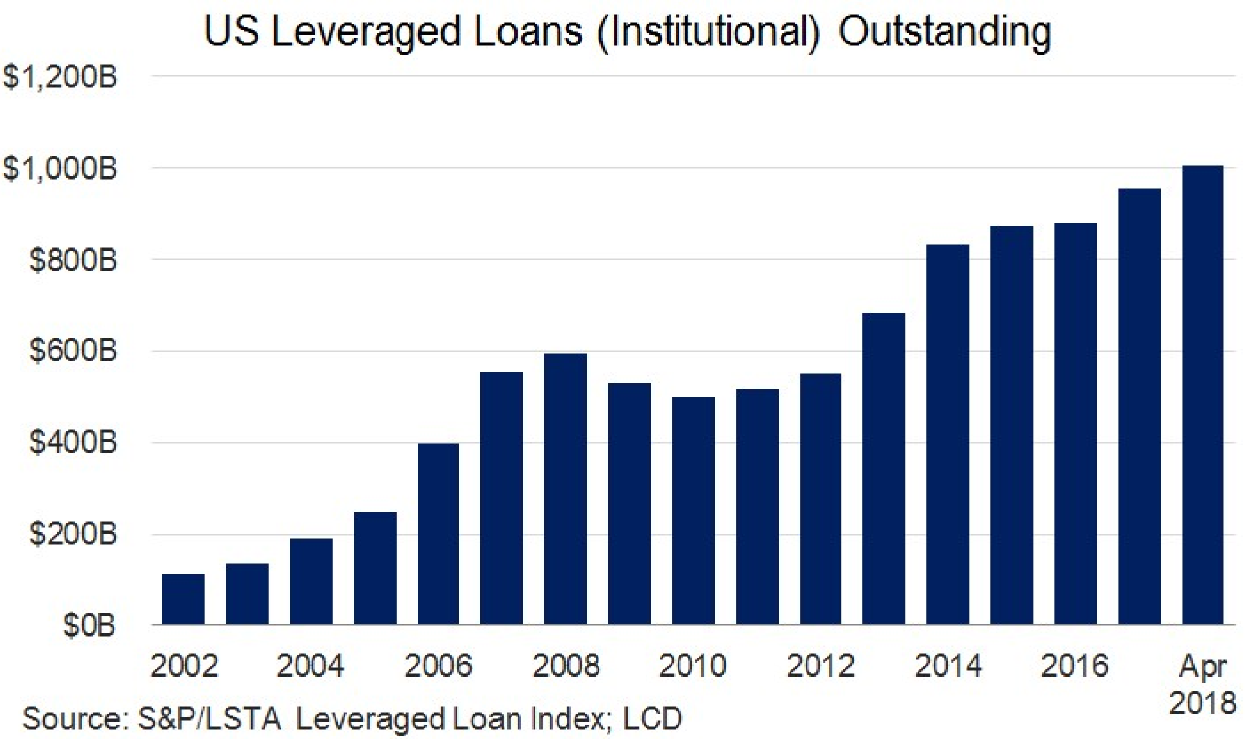


Sources: Moody's, Standard & Poor's Leveraged Commentary and Data, and IMF staff estimates

LOANS: highest on record

2007 Great Credit Crisis is a distant memory, and half the size

According to S&P LCD, thanks to retail investors and CLOs, the US leveraged loan market is now a $1 trillion asset class.



LOANS: High Leverage, Low Yields, Low Recoveries, Low Covenants

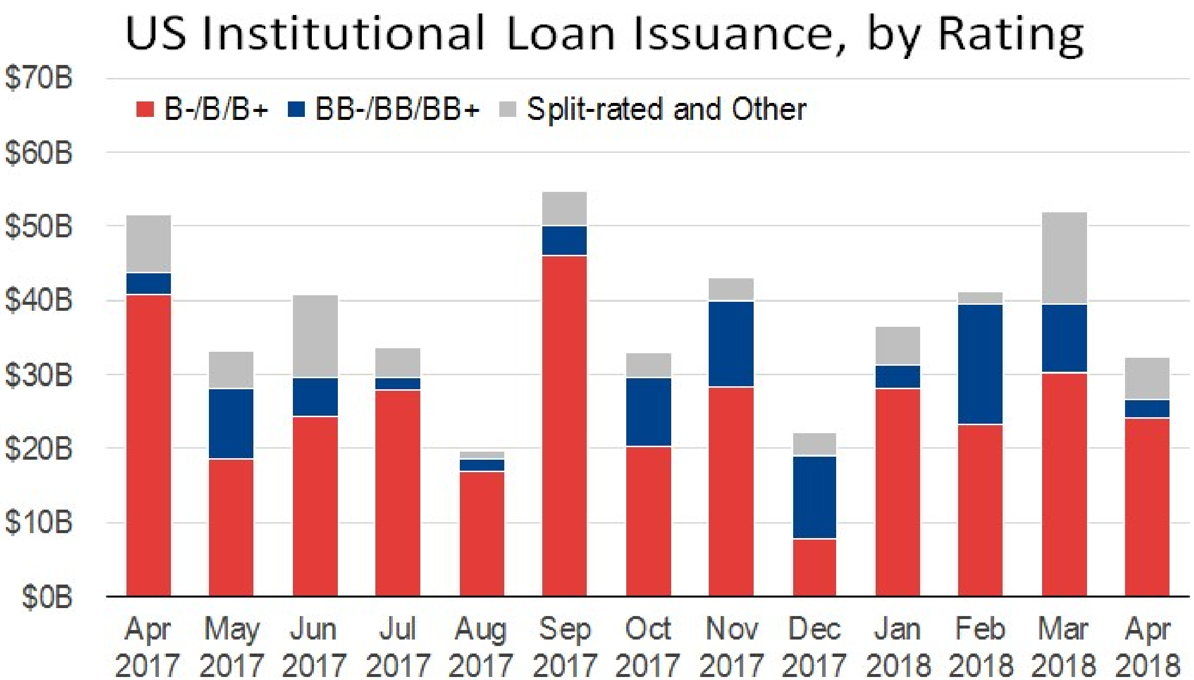
FASANARA CAPITAL

.. while DEFAULT RATES are lagging behind leverage ratios

Single-B borrowers accounted for 74% of all institutional activity, continuing a trend seen throughout 2018.

Covenant-lite accounted for $25.6 billion of the institutional issuance last month—that's **79%**—in line with YTD activity.

"Junk Bonds getting junkier. One thing junk bondholders were sure of: when a borrower defaults, they will get a ***veto on cash going to shareholders****, junior debtors or into new deals. Not any more."* WSJ

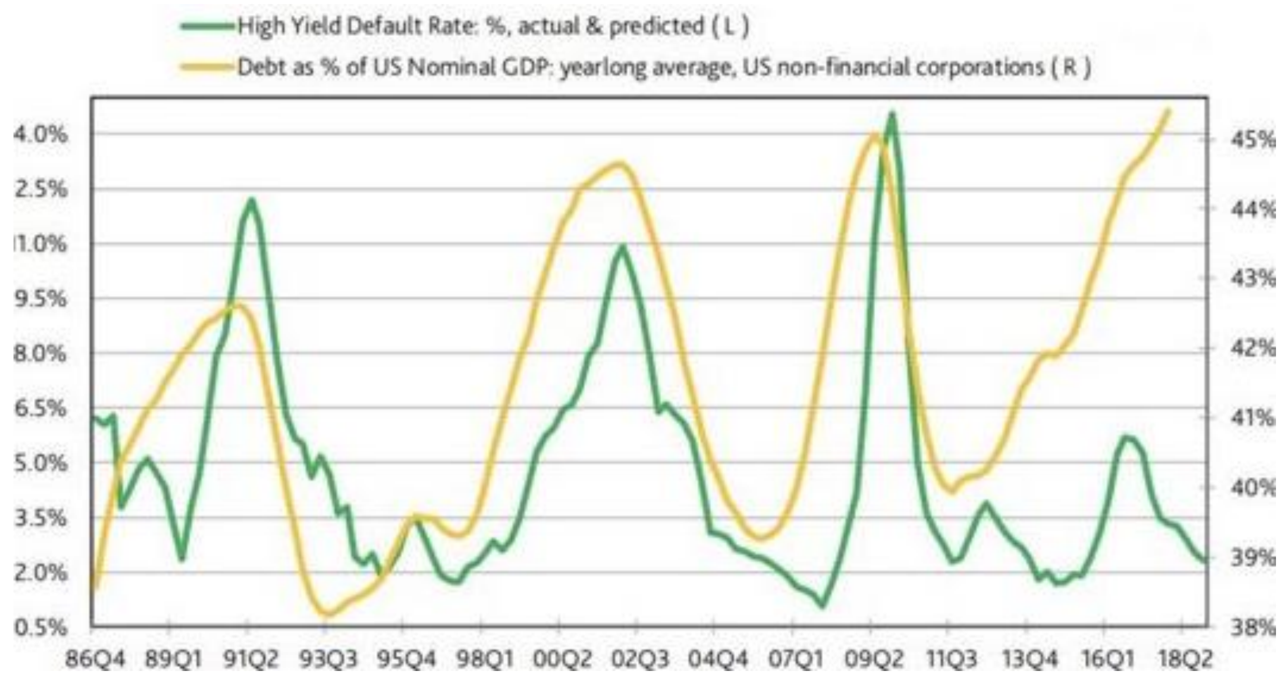


Source: LCD, an offering of S&P Global Market Intelligence

DEFAULTS LAGGING BEHIND LEVERAGE AND RATES

FASANARA CAPITAL

- **The first cycle ever with rising debt and no defaults**
- Default rates decoupled from leverage ratios for US corporates. Largest gap in decades.
- Because of historically record-low rates? You will be excused for thinking so.
- Then it matters what is happening to US Libor.. rising like a rocket, and the percentage of floating rate debt on companies exposed to rising rates (i.e. 35% on the S&P)



Source: Moody's Analytics, Federal Reserve

SMOKING IN A GAS STATION

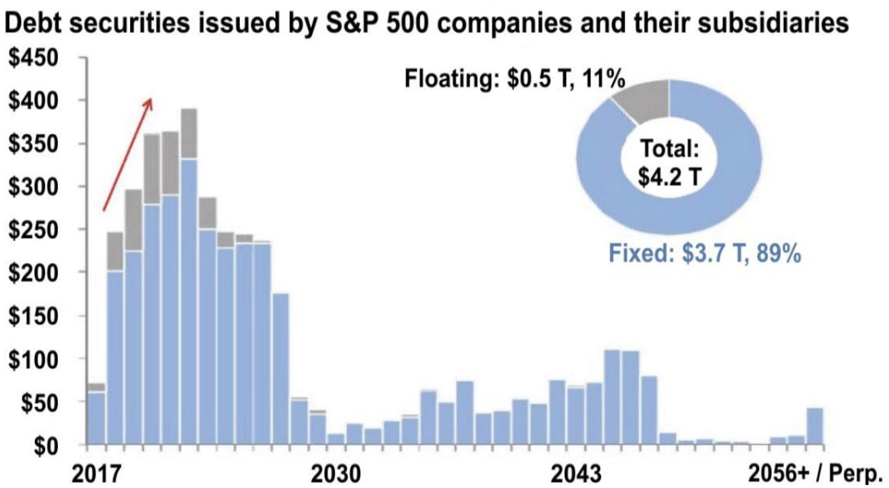
FASANARA CAPITAL

ASKING FOR TRUBLE

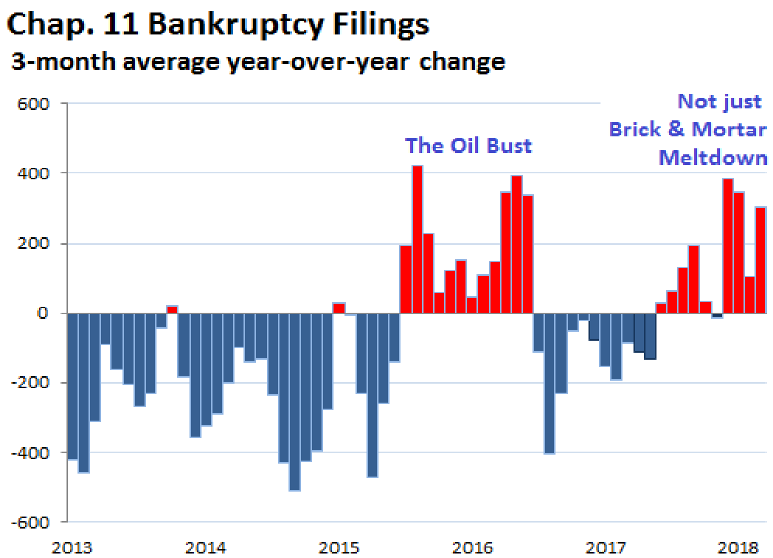
So, to recap:

As default rates lagged behind debt /gdp metrics to which they are tightly correlated historically (slide)
As spreads lagged behind default rates
As covenant lite are as lite as ever, bondholders protection the tiniest on records
As 35% is either floating or refinancing within 2 years

- Rates rise
- OIS-Libor widens
- QT progresses



Source: JP Morgan, Bloomberg, DoubleLine



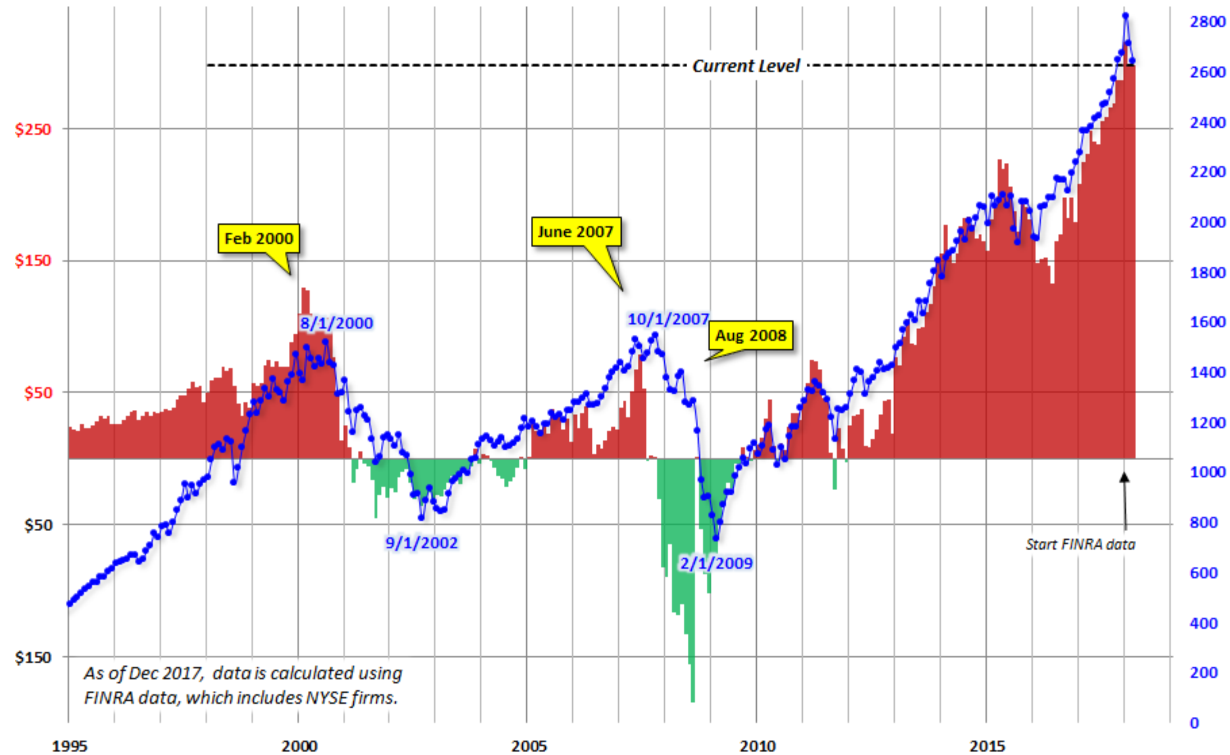
Source: ZeroHedge, American Bankruptcy Institute, WOLFSTREET.com

FINANCIAL LEVERAGE

FASANARA CAPITAL

A RALLY CHASED BY LEVERAGE. THE COLLATERAL TO RECORD MARGIN LOANS IS A RECORD S&P.

Margin Debt on NYSE at historical highs (in % of market cap). It grew in tandem with the equity market.



Source: Advisor Perspectives, dshort.com , link

Data Set:

Credit Balance as the sum of *Free Credit Cash Accounts* and *Credit Balances in Margin Accounts* minus *Margin Debt*.

3. THIN CASH, THIN SAVINGS

I WOULD NOT HAVE SEEN IT
IF I HAD NOT BELIEVED IT

Marshall McLuhan

EQUITY INVESTORS NEAR MAX ALLOCATIONS

FASANARA CAPITAL

AS LOW AS IN 2007

"Equity investors are already near maximal allocations.'' There is only so much the market can rally if **equity investors are already near maximal allocations**. The table summarizes equity positioning of various types of institutional, as well as retail investors. These allocations are near historical highs, not leaving much room for further increases. Numbers are shown as historical '**percentiles**'. Starting with retail investors one can notice that margin debt (measured as percentage of market capitalization) is at its highest point ever, which includes the 2000 tech bubble episode. The percentage of US household wealth in equities is in its 94th percentile and above its 2007 peak, but slightly below 2000 levels. Sovereign wealth funds and US mutual funds are also near record levels. Pension Fund allocations appear to be in the 88% percentile, although there is some uncertainty around this number in adjusting for private asset and HF holdings. Global Hedge Funds' allocation (as measured by equity beta) are also near record highs, and Equity Hedge funds' allocation in their 93rd percentile (since 2005).''

Marko Kolanovic, J.P. Morgan, 22 November 2017

Investor Type	Equity %-tile
Margin Debt / Mkt Cap.	100%
US Households	94%
US Mutual Funds	98%
Pensions	88%
Sov. Walth Funds	100%
Systematic Strategies	100%
All Hedge Funds	98%
Equity Hedge Funds	93%

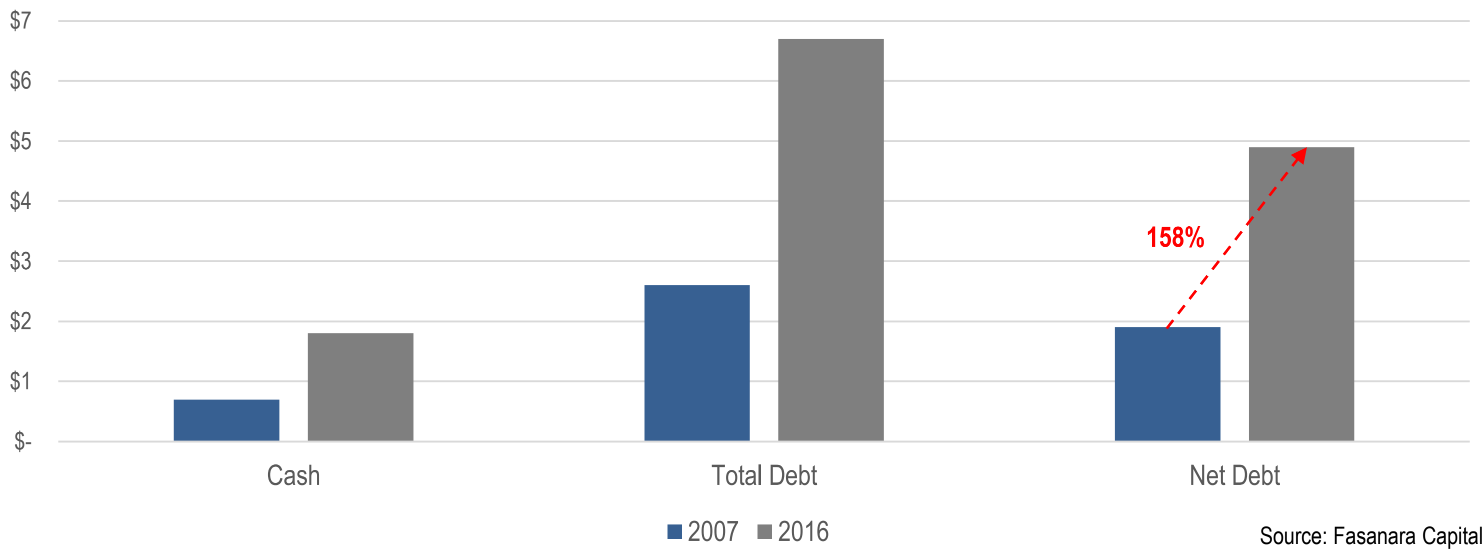
Source: ZeroHedge, JPMorgan

CORPORATES: CASH ON THE SIDELINES

FASANARA CAPITAL

SMOKE AND MIRRORS: CASH OR DEBT ?

- In Corporate land, there is not as much unencumbered liquidity as it is often portrayed. Take the case of US Corporates, for example:
    - **Cash** on their balance sheets increased from **$0.7 trillion in 2007 to $1.8 trillion in 2016**
    - However, **Total Debt** increased too, and way faster so, **from $2.6 trillion in 2007 to $6.7 trillion in 2016**
    - The result is that **Net Debt** substantially increased over the same time span, **from $1.9 trillion to $4.9 trillion**



Source: Fasanara Capital

- Also worth noting that the 5 richest corporates (Apple, Microsoft, Google, Cisco, Oracle) control over 30% of such cash balance
- **Most worryingly, the $4.9 trillion debt bomb now meets rising interest rates**

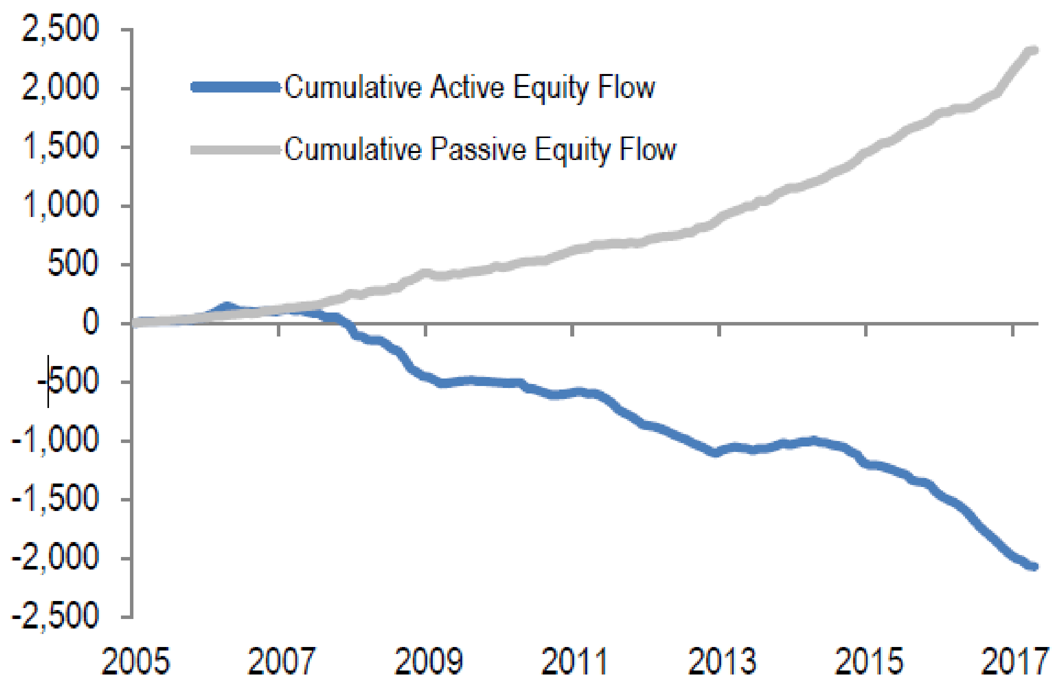
PASSIVE INVESTORS HAVE NO CASH BUFFERS

FASANARA CAPITAL

UNDER-PERFORMANCE VS OVER-WEIGHT

- What is the invariant difference between an active investor an a passive investor?

CUMULATIVE FLOWS INTO PASSIVE AND ACTIVE EQUITY ETFs AND MUTUAL FUND ($BN)



Source: J.P. Morgan Quantitative and Derivatives Strategy, EPFR Global

PRIVATE CLIENTS

FASANARA CAPITAL

NOT A LOT OF DRYPOWDER LEFT

Merrill Lynch's clients allocation to cash as % of AuM is lowest in over a decade.

Source: BofAML Global Investment Strategy, BAC Data

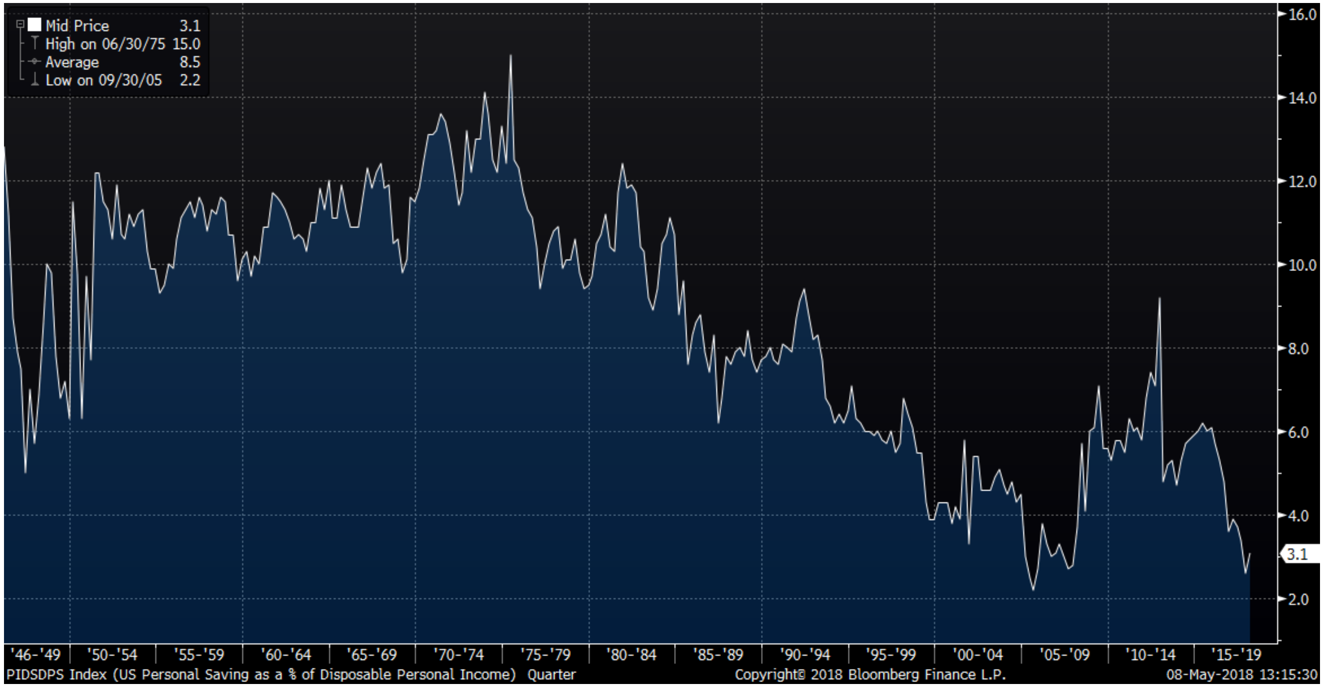
SAVINGS RATES

FASANARA CAPITAL

AS LOW AS IN 2007

The US personal saving (as % of disposable income) rate dipped below levels last seen in 2007, before the GFC started. Direct impact on real PCE.

Not a lot of room for further compression, and it may have already bottomed out and started ascending.



Source: Bloomberg

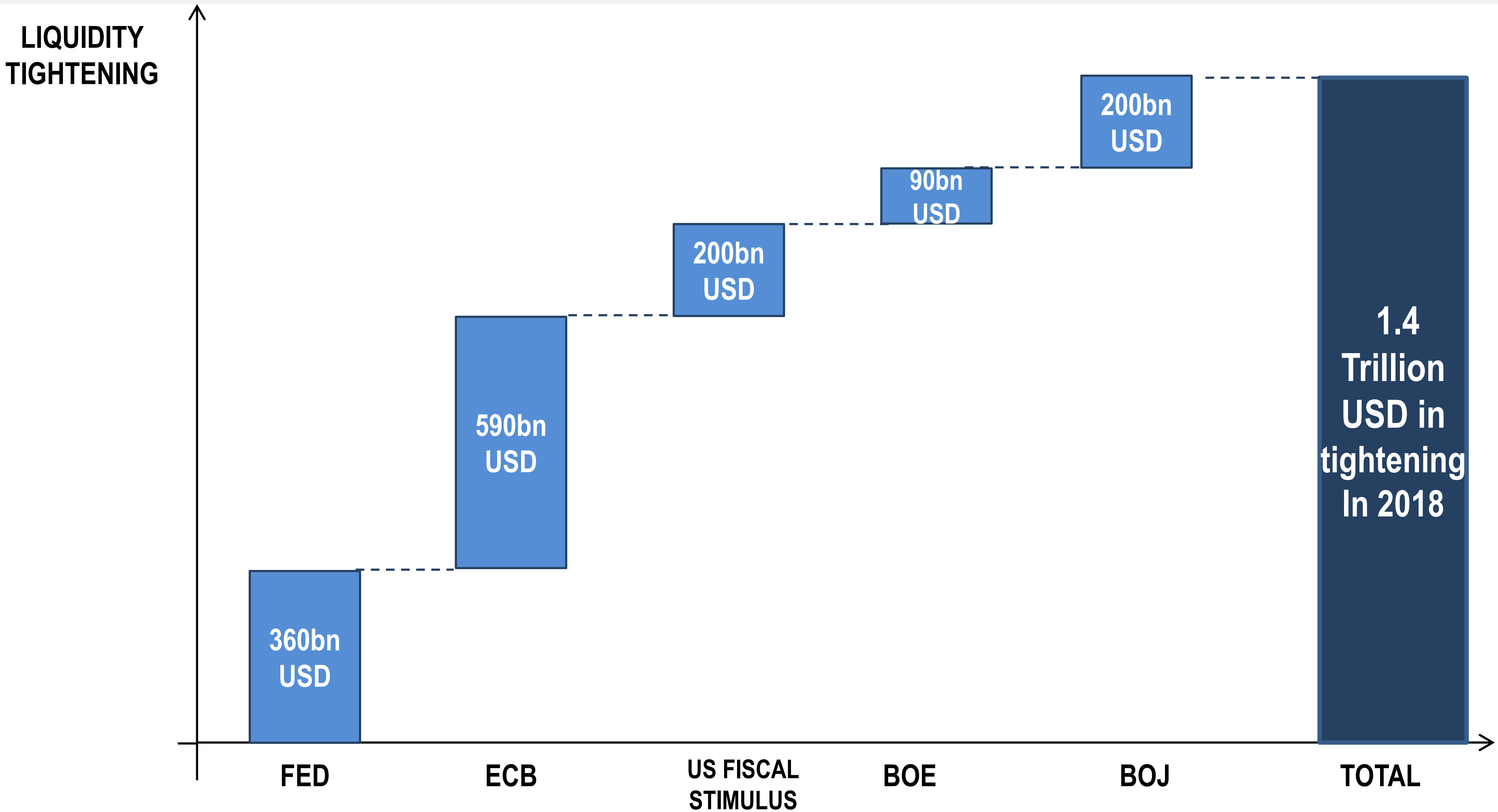
4. QE IN REVERSE

ONLY WHEN THE TIDE GOES OUT DO YOU DISCOVER WHO'S BEEN SWIMMING NAKED

Warren Buffett

FLOWS IN REVERSE *(updated)*

THE LIQUIDITY TIDE GOES OUT.. LET'S SEE WHO HAS BEEN SWIMMING NAKED



Source: Fasanara Capital ltd

Notes: Includes FED offloading ca. \$350bn of Try and MBS, US fiscal stimulus of \$200bn, ECB tapering for \$600bn, BoJ tapering of \$200bn, BoE tapering \$90bn

For 2019, the liquidity tightening is estimated at **\$1.7trn**

TRIGGERS: ELEPHANTS, NOT BUTTERFLIES

THINGS ALWAYS BECOME OBVIOUS AFTER THE FACT. TO PREVAIL IN AN UNCERTAIN WORLD, GET CONVEX.

Nassim Nicolas Taleb

TRIGGERS

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POPPING TWIN BUBBLES. TIPPING THE BALANCE OF UNSTABLE EQUILIBRIUM

1 **ENDOGENOUS: STRUCTURE OF THE MARKET. Over-concentrated, across strategies and investors.** The autolytic effect already triggered by volatility (chain effect across major market players (Risk Parity funds, Short Vol ETFs, Low Vol ETF, momentum strategies). The rebalancing/deleveraging effect triggered by UP-TREND breaking down. The 200-days moving average is a Maginot Line (same fate).

2 **EXOGENOUS TRIGGERS: LIQUIDITY TIDE PETERING OUT**

The global liquidity tide from Central Banks is withdrawing. Flows work in reverse, for the first time in 10 years. First real crash test for momentum / volatility.

3 **RATES RISING. THE CLIFF IS NOW IN SIGHT.** It started raining. Over-indebtedness may may be closing in onto its Minsky point. Inflation or Real rates does not matter !

4 **(IL)LIQUIDITY EVENT.** The liquidity in markets is deceptive and ephemeral, likely to dissipate as markets move lower. XIV is no isolated case ! Other much larger ETFs exhibit 'fake diversification', 'fake liquidity'.

5 **GEOPOLITICS / POLITICS.** From populism in developed countries (Germany, Catalonia, Italy, Brexit, Trump) to confrontations in North Korea / Middle East (end of Pax Americana).

6 **HOT SPOTS: TURKEY, ITALY, CHINA.** Smoking in a gas station. What are weaker FX and geopolitical tensions to Turkey, what are rising rates to Italy, what are trade wars to China?

ELEPHANTS IN THE CHINA SHOPS

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CAN WE REALLY STILL CALL IT A 'TAIL' SCENARIO ?

**ELEPHANTS,
NOT
BUTTERFLIES**

**A CHINA SHOP,
NOT A ROOM**

CHINA's THUCYDIDES TRAP

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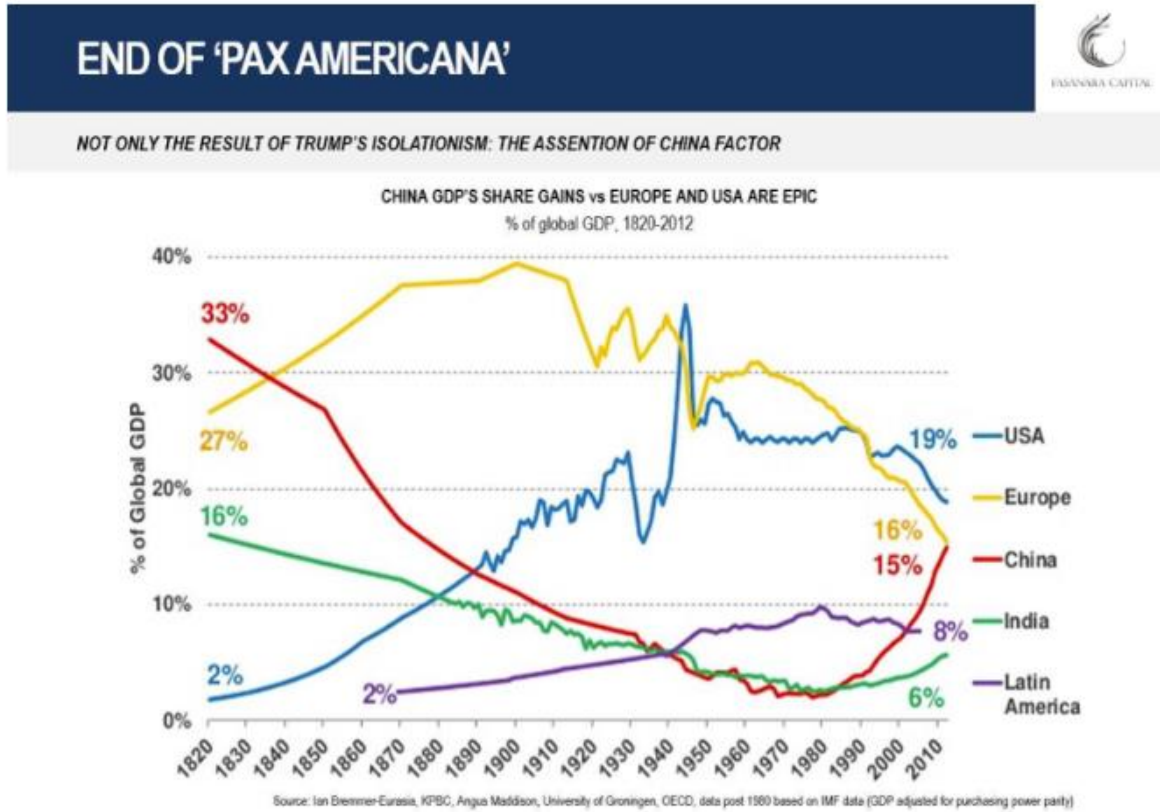
IF THERE WAS A CHANCE ..

TRADE WARS OR JUST LEVERAGE IN NEGOTIATIONS.

Low probability of escalation is anybody's baseline. However, if there is one administration that may ever attempt at arresting an otherwise inevitable historical trend, that is the alpha-policy type of President Trump.

China, lets' not forget, has accumulated $1trn of total debt per quarter in recent times, in what looks like a historical test of the theories positing the existence of a ''Minsky Moment'' and subsequent financial failure.

- total on- and off-balance sheet bank credit of $40trn, at almost 4 times GDP,
- credit expansion well above trend (danger zone in BIS credit-to-GDP gap metrics),
- Corporate China > 250% debt/GDP, in only few years,
- budget deficit 13% of GDP (including local govt)



Please refer to our Note, January 2017

TURKEY's FOREIGN DEBT

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POCKETS OF STRESS ARE EARLY WARNING SIGNALS, PIECES OF THE PUZZLE

TRY is crumbling: 9% this year, 40% in 2 years, 124% in 5 years. It matters because:

- **53% of total external debt on GDP,** at $400bn (Reinhart &Rogoff's critical threshold for debt intolerance at 35%)
- **Foreign banks exposed for over $330bn**, of which $170bn is in hard currency. **$100bn of exposure for EU banks**
- **Current account deficit of 5.5% of GDP**

It matters all the most as inflation is reborn, QE is fading and rates are on the rise. When a lot of debt denominated in hard-currency meet rising rates and a fast-weakening currency, the probability of a default rises. The US Dollar may be rising too.

Defaults/restructuring reflect the stress: **Dogus Holding** for $5.81bn last month, **Otas** for $4.75bn loan last year.

Turkey defaulted/restructured 6 times in the last two centuries: 1876, 1915, 1931, 1940, 1978, 1982. FX moves just accelerates a ***LONG OVERDUE RECKONING***

Turkey is not alone: similar issues in Venezuela obviously, but also in Argentina, Brazil, Chile, Colombia, Egypt, Mexico, Philippines, Italy, Portugal, Greece. All have foreign currency debt to GDP ratio above 35%

Things can change fast, and it does not take much. Daily Grant reminds us that ''Three weeks ago, Baa2-rated (two notches above junk) Indonesia issued 7yr EUR notes at a coupon of just 1.75%. Today, the country shelved plans to issue more debt amid multi-year lows in the Indonesian rupiah and a pair of sovereign bond auctions that fell short of their targets.''

Please refer to our Turkey Fails, 11th April 2018

ITALY's PUBLIC DEBT

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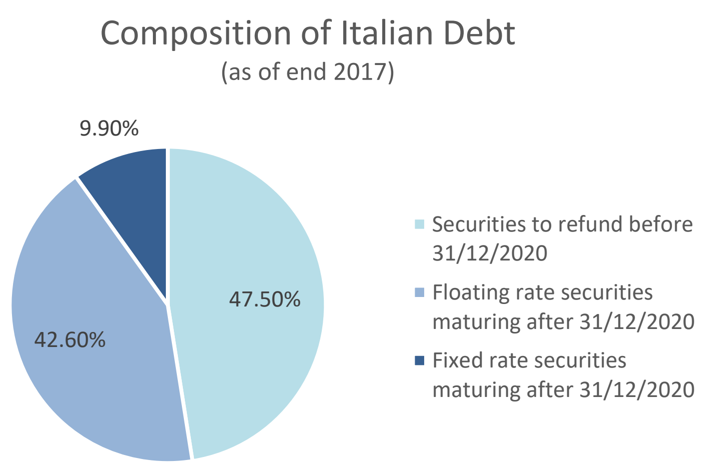
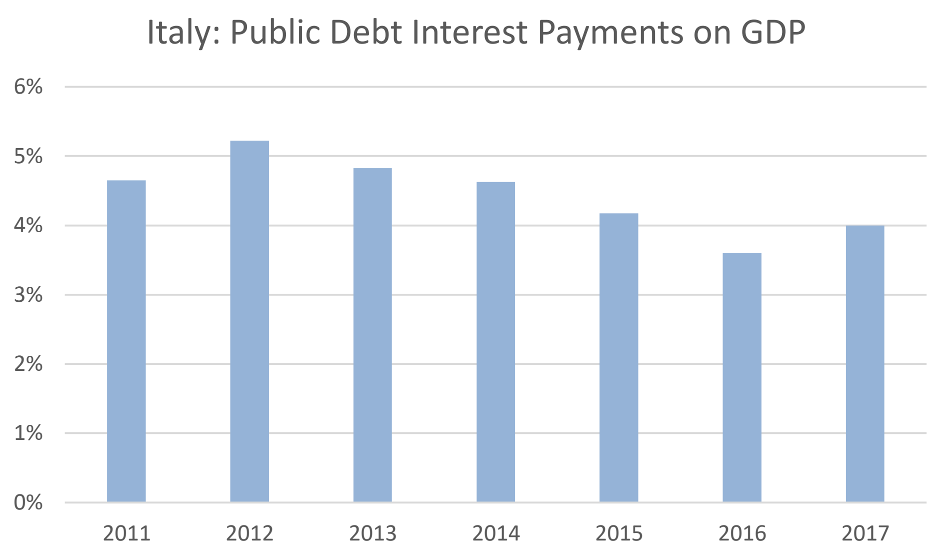
INTEREST COVERAGE RATIOS now that rates rise, QE ends, political uncertainty perpetuates

- Italian public debt is $2.5trn, for 132% of GDP
- **Italy spent 4% of GDP on interest costs alone in 2017 (same estimated for 2018), despite record-low interest rates (2yr BTP at -0.25% !)**
- Italy spent 3.6% in 2016 thanks to ECB, but 5% of GDP on interest payments alone in 2011/2012/2013, when rates/spreads were higher. It was 11% in mid-90s.
- **42.6% of Italian government bonds mature within 3 years, therefore soon exposed to rising interest rates. Over $1trn.**
- **Assuming BTP yields move up 1%, Italy will spend Eur15bn/20bn more per year** (plus deficit funding 3% of GDP).



Source: Ufficio Parlamentare di Bilancio



Source: Fasanara Capital ltd, Bloomberg, BoI

From our July 2017 presentation. XIV is no isolated case !

THE TRAP OF SHORT VOL ETFs

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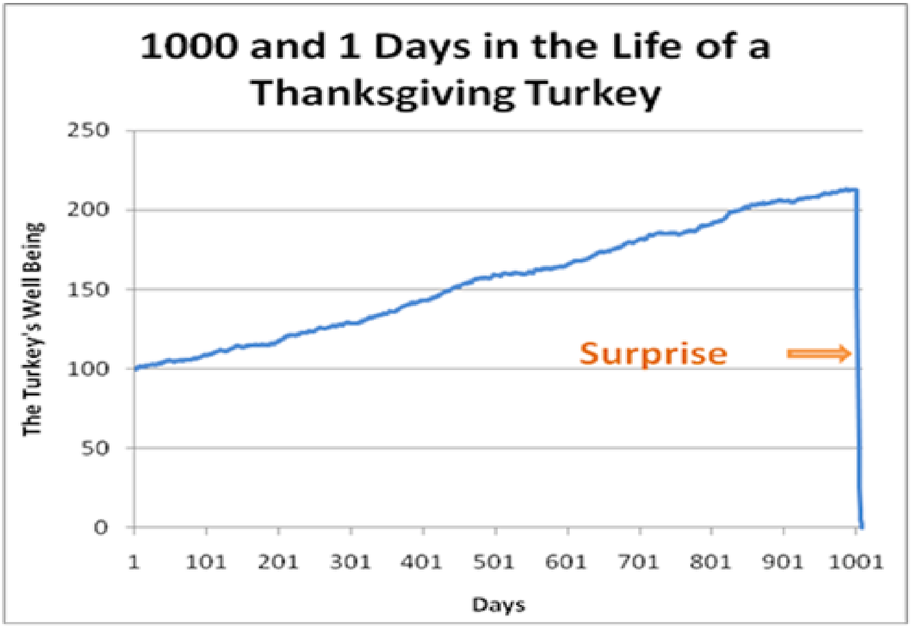
HOW CLOSE CAN YOU GET TO A WIPEOUT RISK?

- There is a potential value trap right in today's most fashionable investment products, which risks deflating fast: Short Vol Exchange-Traded Notes and, more broadly, volatility-driven investment vehicles.
- Small moves in volatility are now enough to trigger wipe-out event on some of the short Vol ETFs
- Our Analysis shows that **IF VIX GOES FROM 9.30 TO 20** in absolute values (it was approx. 40 as recently as Aug2015), and stays there for 8 / 10 days, **VIX-BASED ETPs MAY STAND TO LOSE ANYWHERE FROM 50% TO 70%.** For further moves, short positions on long-vol ETF can then lose up to 700% of capital**.** Losses are higher in case of backwardation of the term structure of the VIX (i.e. front contracts trading higher than back contracts), or the longer VIX stays elevated, or clearly the higher it goes.
- Additional risks arise as '**LIQUIDITY GATES**' and '**TERMINATION EVENTS**'

This could well be a real-life modern example of the famous Bertrand Russell analogy: as they get fed day in day out, chickens start inducting that life is good and humans are kind and caring beings – until the one day when they suddenly get slaughtered



Source: from the book 'The Black Swan', by Nassim Taleb

CONCLUDING REMARKS

TODAY'S MARKETS EXHIBIT THE SIGNATURE CHARACTERISTICS OF CRITICALITY, LACK OF RESILIENCE, FLIPPING FEEDBACK LOOPS AND LIKELY PROXIMITY TO CRITICAL TIPPING POINTS.

F.C.

HISTORICAL OPPORTUNITY

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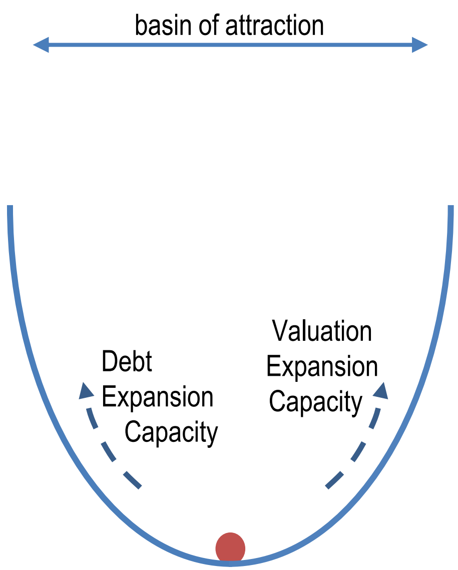
IT HAPPENS TO SEE IMBALANCES SUCH AS THESE. BUT, NOT OFTEN IN A LIFETIME.

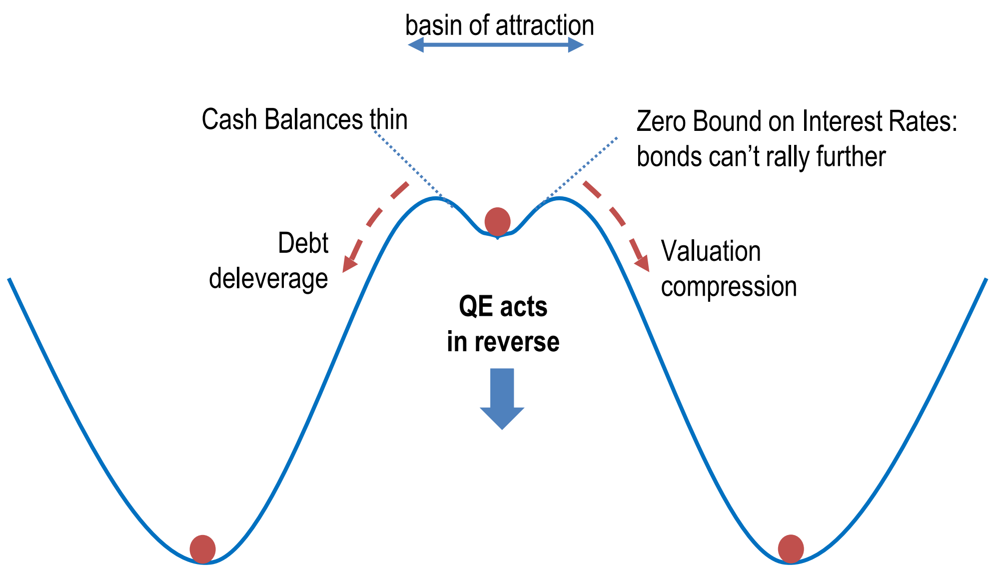
BEFORE



QE tsunami
+ positive feedback loops
with passive investor

DISTURBANCES

NOW



- Endogenous →QE and trend / vol feedback loops in reverse
- Exogenous → Real Rates/ Inflation, Cryptos, Politics, USD shortage, or just a butterfly

HIGH RESILIENCE
low risk of critical transition

LOW RESILIENCE
high risk of critical transition

BE READY, BE PATIENT, BE SHORT

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1. As Tail Risk disseminated across the financial system, no asset class provides value these days. Relatively better than ugly is still ugly.

2. There is no bull market left out there (Jim Cramer-type), no anti-bubbles to spot (Rob Arnott-type). Be fearful, not greedy.

3. ‘’There Is No Alternative” and ‘’There Is No Place To Hide” should read ‘’from systemic risk”. Unless you are paid to stay invested regardless, stay out or go short.

4. ‘’It is impossible to spot a bubble” and ‘a bubble can be known only in retrospect’, is jargon for ‘I am not paid to spot a bubble’ or ‘bubble has even better odds of building up’.

   Human nature is the real driver of crises, invariantly over history.

5. As Tail risk has easily a probability of 25% in 2018/2019, it hardly qualifies as a Tail risk anymore (Fat yes, a Tail no). One which is thus worthwhile positioning for, with the right instrument election. It has been so for 2 years now, despite sugar rush of tax cuts / late stage monetary stimulus / investors positive hysteresis. An opportunity hidden in plain sight.

6. As imbalances have grown to historical peaks, this may be a generational investment opportunity.

   BE READY, BE PATIENT, BE SHORT. Vol is still low, nothing much happened yet. BE CONVEX.

INVESTMENT PHILOSOPHY

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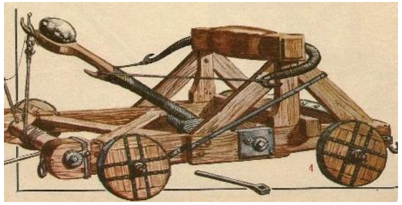
FASANARA MANIFESTO

DEFINING ELEMENTS OF TODAY' S MARKETS

LOW VOLATILITY	HIGH CROSS-ASSET CORRELATION	SEISMIC ACTIVITY
Owing to Central Banks' Activism	*Especially to the downside*	*Calm above the storm*
ASYMMETRIC PROFILES AVAILABLE	***OPPORTUNISTIC BEHAVIOUR A MUST***	***ASYMMETRIC PROFILES NEEDED***
Markets offer access to non-linear payoffs	*Roaming across asset classes in pursuing cheapest way to implement the view*	*Monetary Policy Experimentation means uncharted territory, need for convexity / long gamma*

WHERE DOES IT LEAD TO IN TERMS OF PORTFOLIO CONSTRUCTION

VALUE BOOK Long-Term holdings *Infantry*	HEDGING BOOK Treasury of optionality *Catapult*	TACTICAL BOOK Intra-day trading *Cavalry*



A HUNDRED THOUSAND LEMMINGS CAN'T BE WRONG!

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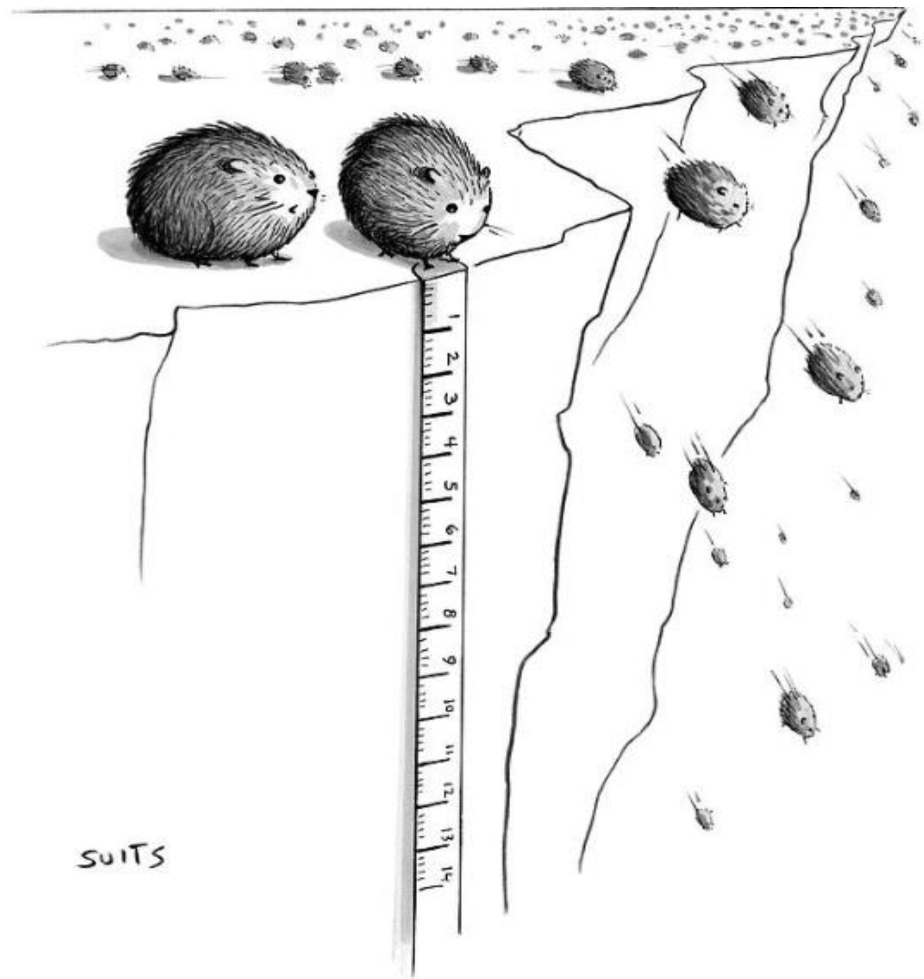

"You're overthinking this."

Source: Lemming Measures The Drop Off Of A Cliff is a drawing by Julia Suits, 10th August 2016.

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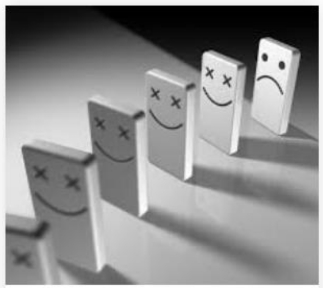
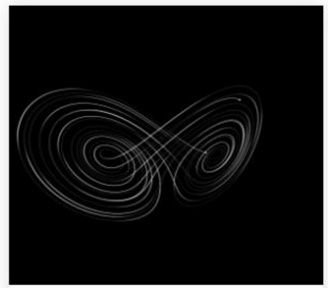
Insights from the team

Our Outlooks, Cookies and Scenarios on the market

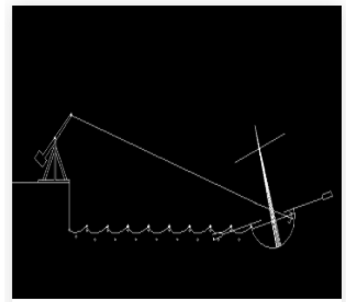
Outlooks
July 2017
Twin Bubbles meet Quantitative Tightening



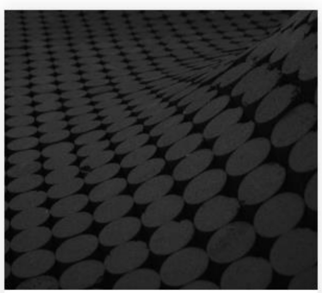
Cookies
February 2018
Markets Poised At Criticality



Scenarios
January 2018
Fragile Markets on the 'Edge of Chaos'

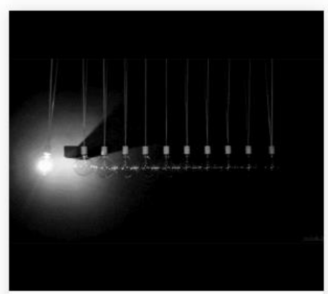


Cookies
July 2017
How Bad a Damage If Volatility Rises: The Bear Trap of Short Vol ETFs



Outlooks
May 2017
Fake Markets

Cookies
January 2018
Measuring the Equity Bubble: an update of the 'Peak PEG' Ratio



Scenarios
November 2017
Positive Feedback Loops and Financial Instability: The Blind Spot of Policymakers

Chartbooks
February 2018
The Market System Is Tight In All Directions

For most recent research, videos, interviews and market commentaries:

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