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"Learn how to see. Realize that everything connects to everything else."

— Leonardo da Vinci

November 20th 2017

FASANARA CAPITAL | SCENARIOS

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 Levels

Macro-prudential regulations follow financial crises, rarely do they precede one. Even when evidence is abundant of **systemic risks building up**, as is today, regulators and policymakers have a marked tendency to turn an institutional blind eye, hoping for imbalances to fizzle out on their own – at least beyond the duration of their mandates. It does not work differently in economics than it does for politics, where short-termism drives the agenda, oftentimes at the expenses of either the next government, the broader population or the next generation.

It does not work differently in the business world either, where corporate actions are chosen from based on the immediate gratification of shareholders, which means pleasing them at the next round of earnings, often at the expenses of long-term planning and at times exposing the company itself to disruption threats from up-and-comers.

Long-term vision does not pay; it barely shows up in the incentive schemes laid out for most professions. Economics is no exception. Orthodoxy and stillness preserve the status quo, and the advantages hard earned by the few who rose from the ranks of the establishment beforehand.

Yet, when it comes to Central Banking, and more in general policymaking, financial stability should top the priority list. It honorably shows up in the utility function, together with price stability and employment, but is not pursued nearly as actively as them. Central planning and interventionism is no anathema when it comes to target the decimals of unemployment or consumer prices, yet is residual when it comes to master systemic risks, relegated to the camp of ex-post macro-prudential regulation. This is all the more surprising as we know all too well how badly a deep unsettlement of financial markets can reverberate across the real economy, possibly leading into recessions, unemployment, un-anchoring of inflation expectations and durable disruption to consumer patterns. There is no shortage of reminders for that in the history books, looking at the fallout of deep dives in markets in 1929, 2000 and 2007, amongst others.

Intriguingly, the other way round is accepted and even theorized. Manipulating bond and stock prices, directly or indirectly, is mainstream policy theory today. From Ben Bernanke's 'portfolio

balance channel theory', to the relentless pursuit of the 'wealth effect' via financial repression under Janet Yellen and Haruhiko Kuroda, to Mario Draghi tackling the fragmentation of credit markets across the EU via direct asset purchases, the practice has become commonplace. To some, like us, the 'wealth effect' may be proving to be more of an 'inequality effect' than much, leading to populism and constantly threatening regime change, but that is beyond the scope of this note today.

What we want to focus on instead is the direct impact that monetary interventionism like Quantitative Easing ('QE') and Negative or Zero Interest Rate Policies ('NIRP' or 'ZIRP') have on the structure of the market itself, how they help create a one-sided investment community, oftentimes long-only, fully invested when not levered up, relying on record-highs for bonds and stocks to perpetuate themselves endlessly - despite a striking disconnect from fundamentals, life-dependent on the lowest levels of volatility ever seen in history. The market structure morphed under the eyes of policymakers over the last few years, to become a pressure cooker at risk of blowing-up, with a small but steadily growing probability as times goes by and the bubble inflates. The [positive feedback loops](#) between monetary flooding and the private investment community are culpable for transforming an ever present market risk into a systemic risk, and for masking as peaceful what is instead an [unstable equilibrium](#) and [market fragility](#).

Positive Feedback Loops create divergence from general equilibrium, and Systemic Risks

Positive feedback loops, in finance like in biology, chemistry, cybernetics, breed system instability, as they orchestrate a **further divergence from equilibrium**. An **unstable equilibrium** is defined as one where a small disturbance is sufficient to trigger a large adjustment.

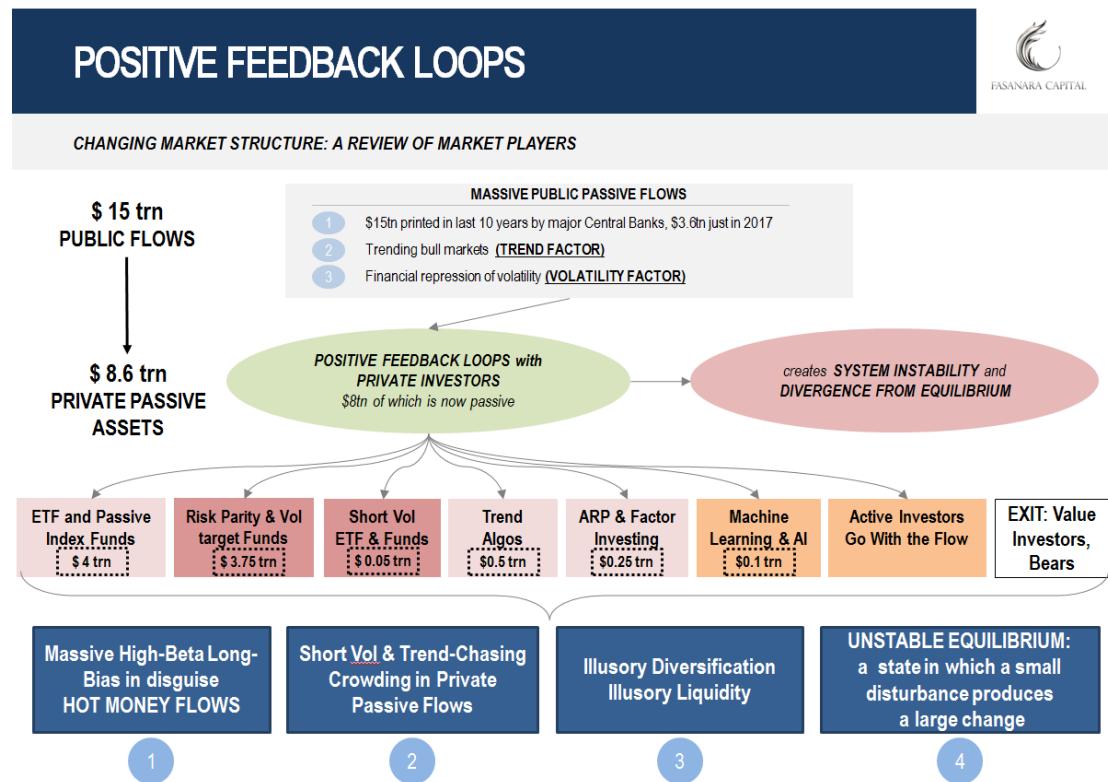
QE and NIRP have two predominant effects on markets: (i) **relentless up-trend in stocks and bonds (the 'Trend Factor')**, dominated by the buy-the-dip mentality, which encapsulates the 'moral hazard' of investors knowing Central Banks are prompt to come to their rescue (otherwise known as 'Bernanke/Yellen/Kuroda/Draghi put'), and (ii) the **relentless down-trend in volatility (the 'Volatility Factor')**.

Two Factors Explain All: Trend and Volatility

The most fashionable investment strategies these days are directly impacted by either one or both of these drivers. Such strategies make the bulk of the overall market, after leverage or turnover is taken into account: we will refer to them in the following as '**passive**' or '**quasi-passive**'. The trend impacts the long-only community, crowning it as a sure winner, making the case for low-cost passive investing. The low volatility permeates everything else, making the case for full-investment and leverage.

The vast majority of investors these days are not independent from the QE environment they

operate within: ETFs and index funds, Risk Parity funds and Target Volatility vehicles, Low Volatility / Short Volatility vehicles, trend-chasing algos, Machine Learning-inspired funds, behavioral Alternative Risk Premia funds. They are the poster children of the QE world. **We estimate combined assets under management of in excess of \$8trn across the spectrum. They form a broad category of 'passive' or 'quasi-passive' investors, as are being mechanically driven by two main factors: trend and volatility.**



Source: [Fasanara Presentations](#) | Market Fragility - How to Position for Twin Bubbles Bust, 16th October 2017. The slide is described in details in this [video recording](#).

Extraordinary monetary policies have feedback loops with the asset management industry as a whole, reinforcing the effects on markets of such policies in a vicious – or virtuous - cycle. QE and NIRP help a large number of investment strategies to flourish, validating their success and supporting their asset gathering in the process, and are in return helped in boosting bond and stock markets by their flows joining the already monumental public flows.

Private flows so reach singularity with public flows, and the whole market economy morphs into a one big common bet on ever-rising prices, in shallow volatility. Here is the story of how \$15trn of money printing by major Central Banks in the last ten years, of which \$3.7trn in 2017 alone, is joined by total assets of \$8trn managed into buying the same safe and risk assets across, with leverage, indiscriminately.

How Market Risk became Systemic Risk

Let's give a cursory look at the main players involved (a recent presentation we did is recorded [here](#)). As markets trend higher, no matter what happens (ever against the shocked disbelief of Brexit, Trump, an Italian failed referendum and nuclear threats in North Korea), investors understand the outperformance that comes from pricing risks out of their portfolios entirely and going long-only and fully-invested. Whoever under-weights positions in an attempt to be prudent ends up underperforming its benchmarks and is then penalized with redemptions. Passive investors who are long-only and fully invested are the winners, as they are designed to be bold and insensitive to risks. As Central Banks policies reduce the level of interest rates to zero or whereabouts, fees become ever more relevant, making the case for passive investing most compelling. The **rise of ETF and passive index funds** is then inevitable.

According to JP Morgan, in the last 10 years, \$2tn left active managers in equities and \$2tn entered passive managers (pag.39 [here](#)). We may be excused for thinking they are the same \$ 2tn of underlying investors progressively pricing risk provisions out of books, *de facto*, while chasing outperformance and lower fees.

To be sure, ETFs are a great financial innovation, helping reducing costs in an expensive industry and giving entry to markets previously un-accessible to most investors. Yet, what matters here is their impact on systemic risks, via positive feedback loops. In circular reference, beyond Central Banks flows, markets are helped rise by such classes of valuations-insensitive passive investors, which are then rewarded with further inflows, with which they can then buy more. The more expensive valuations get, the more they disconnect from fundamentals, the more divergence from equilibrium occurs, the larger fat-tail risks become.

In ever-rising markets, 'buy-and-hold' strategies may only possibly be outsmarted by 'buy-the-dip' strategies. Whatever the outcome of risk events, be ready to buy the dip quickly and blindly. As more investors design themselves up to do so, the dips are shallower over time, leading to an S&P500 that never lost 3% in 2017, an historical milestone. **Machine learning** is another beautiful market innovation, but what is there to learn from the time series of the last several years, if not that buy-the-dip works, irrespective of what caused the dip. Big Data is yet another great concept, shaping the future of us all. Yet, most data ever generated in humankind dates back three years only, in and by itself a striking limitation. The quality of the deduction cannot exceed the quality of the time series upon which the data science was applied. If the time series is untrustworthy, as is heavily influenced by monumental public flows (\$300bn per months), what trust can we put on any model output originating from it? What pattern recognition can we really be hopeful of getting, in the first place? May some of it just be a commercial disguise for going long, selling volatility and leveraging up in various shapes or forms? What is hype and what is real? A short and compromised data series makes it hard, if not possible, to really know. Once public flows abate and price discovery is let free again, then and only then will we be in a position to know the difference.

Low volatility does what trending markets alone cannot. A state of low volatility presents the appearance of [stuporous, innocuous, narcotized markets](#), thus enticing new swathes of unfitting investors in, mostly retail-type ‘weak hands’. Weak hands are investors who are brought to like investments by certain characteristics which are uncommon to the specific investment itself, such as featuring a low volatility. It is in this form that we see bond-like investors looking at the stock market for yield pick-up purposes, magnetized by levels of realized volatility similar to what fixed income used to provide with during the Great Moderation. It is in this form that Tech companies out of the US have started filling the coffers of not just Growth ETF, where they should rightfully reside, but also Momentum ETF, and even, incredibly, Low-Volatility ETF.

Low volatility is also a dominant input for **Risk Parity funds** and **Target Volatility vehicles**. The lower the volatility, the higher the leverage allowed in such players, mechanically. All of which are long-only players, joining public flows, again helping the market rise to record levels in the process, in circular reference. Rewarded by new inflows, the buying spree gathers momentum, in a virtuous circle. Valuations are no real inputs in the process, volatility is what matters the most. Volatility is not risk, except for them it is.

It goes further than that. It is not only the level of volatility that count, but its direction too. As volatility implodes, relentlessly, into historical lows never seen before in history, a plethora of investment strategies is launched to capitalize on just that, directly: **Short Volatility vehicles**. They are the best performing strategy of the last decade, by and large. The problem here is that, due to construction, as volatility got to single-digit territory, relatively small spikes are now enough to trigger wipe-out events on several of these instruments. Our analysis shows that if equity volatility doubles up from current levels (while still being half of what it was as recently as in August 2015), certain Short Vol ETFs may stand to lose up to 75% or more. Moreover, short positions on long-vol ETFs can lose up to 250% of capital. For some, ‘termination events’ are built into contracts for sudden losses of this magnitude, meaning that the notes would be prematurely withdrawn. It is one thing to expect a spike in volatility to cause losses, it is quite another to know that a minor move is all it takes to trigger a default event.

On such spikes in volatility, Morgan Stanley Quant Derivatives Strategy desk warns further that market makers may be forced to rebalance their exposure non-linearly on a spike in volatility. **A drop in the S&P 500 of 5% in one day may trigger approximately \$ 400mn of Vega notional of rebalancing** (pag.48 [here](#)). We estimate that **half a trillion dollars of additional selling on S&P stocks may occur following a correction of between 5% and 10%**. That is a lot of selling, pre-set in markets, waiting to strike. Unless you expect the market to not have another 5% sell-off, ever again.

For more details, we describe the role of these different players in a [recent video presentation](#) and in our [June Investment Outlook](#) and [January Investment Outlook](#).

It's All One Big Position

What do ETFs, Risk Parity and Target Vol vehicles, Low Vol / Short Vol vehicles, trend-chasing algos, Machine Learning, behavioral Alternative Risk Premia, factor investing have in common? Except, of course, being the 'winners take all' of QE-driven markets. They all share one or more of the following risk factors: **long-only, fully invested when not leveraged-up, short volatility, short correlation, short gamma.** Thanks to QE and NIRP, the whole market is becoming one single big position.

The 'Trend Factor' and the 'Volatility Factor' are over-whelming, making it inevitable for a high-beta, long-bias, short-vol proxy to disseminate across. Almost inescapably so, given the time series the asset management industry has to deal with, and derive its signals from.

Several classes of investors may move to sell in lock-steps if and when markets turn. The boost to asset prices and the zero-volatility environment created the conditions for systemic risks in the form of an over-compensation to the downside. Record-low volatility breeds market fragility, it precedes system instability.

Flows Matter, Both Ways!

We will know soon if the fragility of markets is that bad. The undoing of loose monetary policies (NIRP, ZIRP) will create a liquidity withdrawal of over \$1 trillion in 2018 alone (pag.61-62 [here](#)). The reaction of the passive and quasi-passive communities will determine the speed of the adjustment in the pricing for both safe and risk assets, and how quickly risk provisions will re-enter portfolios. Such liquidity withdrawal will represent the first real crash-test for markets in 10 years.

As public spending on Wall Street abates, the risk is evident of seeing the whole market turning with it. The shocks of Trump and Brexit did not manage to derail markets for long, as public flows were overwhelming. Flows is what mattered, above all elusive, over-fitting economic narratives justifying price action at the margin. **Flows may matter again now as they fade.**

Systemic Risk is Not Just About Banks: Look at Funds

The **role of trending markets** is known when it comes to systemic risks: a not sufficient but necessary condition. Most trends do not necessarily lead to systemic risks, but hardly systemic risks ever build up without a prolonged period of uptrend beforehand. Prolonged uptrends in any asset class hold the potential to instill the perception that such asset class will grow forever, irrespective of the fundamentals, and may thus lead to excessive risk taking, excess leverage, the formation of a bubble and, ultimately, systemic risks. The mind goes to the asset class of real estate, its undeterred uptrend into 2006/2007, its perception of perpetuity ("we have never had a decline in house prices on a nationwide basis" [Ben Bernanke](#)), the credit bubble built on banks hazardous activities on subprime

mortgages as a result, and the systemic risks which emanated, with damages spanning well beyond the borders of real estate.

The **role of volatility** is also well-researched, especially low volatility. Hayman Minsky, in his "[Financial Instability Hypothesis](#)" in 1977, analyses the behavioral changes induced by a reduction of volatility, postulating that economic agents observing a low risk are induced to increase risk taking, which may in turn lead to a crisis: "stability is destabilizing". In a recent [study](#), Jon Danielsson, Director of the Systemic Risk Centre at the LSE, finds unambiguous support for the 'low volatility channel', insofar as **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.

Both a persistent trend and prolonged low-volatility can lead banks to take excessive risks. But what about their impact on the asset management industry?

Thinking at the hard economic impact of the Great Depression (1929-1932) and the Great Recession (2007-2009), and the eminent role played by banks in both, it comes as little surprise that the banking sector captures all the attention. However, what remains to be looked into, and **perhaps more worrying in today's environment, is the role of prolonged periods of uptrend and low-vol on the asset management industry**.

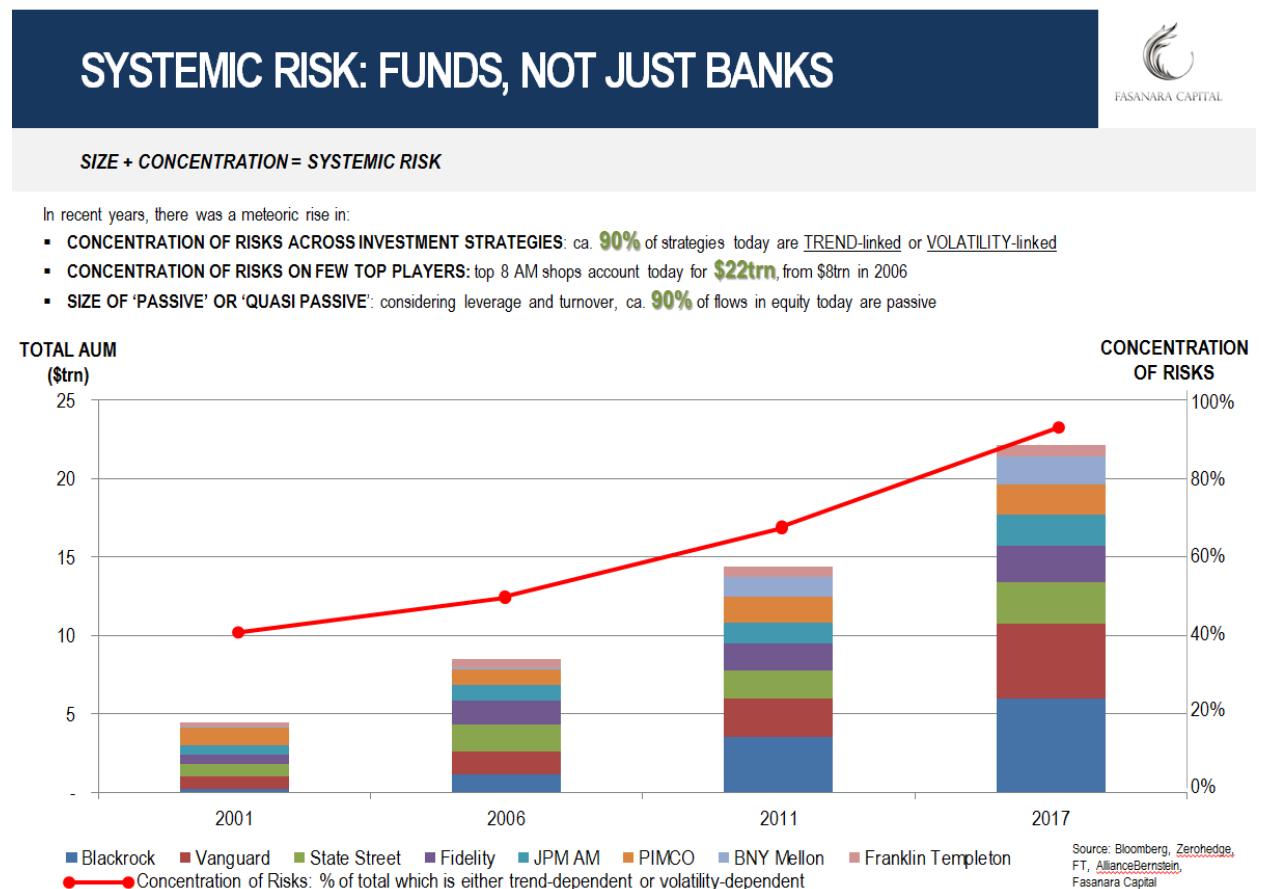
In 2014, the Financial Stability Board (FSB), an international body that makes recommendations to G20 nations on financial risks, published a consultation paper asking whether fund managers might need to be designated as "**global systemically important financial institution**" or G-SIFI, a step that 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 [15trnXX] for just the top 5 US players!, (ii) funds have partially **substituted banks** in certain market-making activities, as banks dialed 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. Today more than ever, they morph market risks in systemic risks.

Volatility will not forever be low, the trend will not forever go: how bad a damage when it stops? As macro prudential policy is not the art of "whether or not it will happen" but of "what happens if", it is hard not to see this as a blind spot for policymakers nowadays.



The addiction that could not be let go

In conclusion, we believe that markets are being brought into an **unstable equilibrium, at risk of snapping violently**. The stability of markets resembles the one of a **pendulum held in vertical position**: a small disturbance is able to create large swings. The swing can be so violent as to send tremors across the real economy, thus jeopardizing the hard earned progress on recovery in growth rates and unemployment of recent years. 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.

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