

# EXPECTING THE UNEXPECTED

A middle-aged man with a receding hairline, wearing a light blue button-down shirt and a grey tie, is talking on a black corded telephone. He is sitting at a desk in an office, looking slightly to the right of the camera with a thoughtful expression. The background shows a blurred office environment with computer monitors and desks.

**INVESTING IN A WORLD OF ECONOMIC TURMOIL**

**BY VINEER BHANSALI**



VINEER BHANSALI

Expecting the Unexpected

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*For Beka*



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# Preface

I write to think. And strange as it may seem, I run to write. And both these activities give me a path toward understanding the world around me.

Ever since I can remember, I felt that these two activities made it easier for me to organize my thoughts. Somehow writing slows down the process of thinking to the point where ideas have a chance of forming themselves into coherent patterns and logical hierarchies. Long runs have the same effect by calming my brain. The act of making the body repeat the same activity for many hours quiets my mind so that I can “shuffle” thoughts and organize them properly.

No wonder then that most of the articles in this collection were “written”, while running. If I look back at my total mileage on the trails, including about 25 or so “ultra-marathons” that I have finished over the time these articles span, I averaged about 40-50 miles a week, or between 1500-2000 miles a year. Since trail-running is a mostly solo activity for me, and much of it involves hiking, especially when on steep vertical sections, I would say that every hour I covered about 5 miles on average. So, in an average week I was running about 10-12 hours a week, and most of this time was wonderful time to “write” in my mind. Since I try to get about 200 feet of vertical per

mile of trail running, each year this means about 50 miles of cumulative vertical gain, or the equivalent of about 10 Mount Everest climbs! Over the six year span these short pieces were written, about 300 miles of cumulative vertical distance were covered.

The cumulative result of these articles is similar. Even though I was writing once or twice a month on average, when I look back at the cumulative result in this collection, I see three major themes that worked themselves out into a logical set of conclusions that were implementable and practical. The results were on the whole quite good for my own investing, since I primarily wrote these pieces for myself.

But before I get into the details, a short autobiographical review of how I got here.

I grew up in India until the age of 18 in a number of small towns, because my father was an employee of the Indian Railways. I came to the US to study physics. I was very lucky to get into Caltech with essentially full financial aid as long as I could purchase a plane ticket to the US. My maternal great-uncle had put the bug in my mind that I should go and study under Richard Feynman. I was a foreign student so I could only work on-campus, and though being a vegetarian at the time, did my share by working flipping burgers at the Red Door café, waiting tables at the Caltech Athenaeum, and adding numbers for the accounting department by hand (this was before the time of PCs!). After finishing both my BS and MS in Physics and Engineering and Applied Science in three years, taking extra courses, I ended with one of the highest GPAs at the University,

and my destiny seemed to be set – I was going to Harvard for my PhD to study Theoretical Physics, and then would become a Professor of Physics and solve BIG open problems of physics. I was obviously not expecting the unexpected, which over the years played a key role in my career.

I did get to Harvard in a select class of theoretical physics graduate students, and because I did not have to take any official courses (I had already taken all of the required ones at Caltech), I spent time studying other things I had not yet learned; e.g. drinking beer, throwing darts etc. I took the credits I was allocated for graduate physics courses and spent them on photography classes, Italian language, anthropology, religion... I was literally in a candy store of learning, and my curious mind just exploded with wonderful new things to absorb, new systems to understand.

While I was in the process of graduating with my PhD, I got an unexpected call from a headhunter who was working for Goldman Sachs to hire Physics graduate students to do financial research in derivatives. I met with the headhunter, with my shoulder length hair and a graduate student beard and all, and was asked to fly to New York for interviews. I had zero idea of what Goldman Sachs was, and even less about derivatives. The only reason I accepted the trip was because it was being paid for by someone else, and it was a good excuse to go and check out the big city for free. At Goldman Sachs, I met a bunch of young traders, as well as many partners, and some researchers. One of the senior researchers interviewed me and I could see what he was writing. He was elderly, and his notes, which I could read upside down, basically said that I knew no finance,



but was very good at math.

Of course, math has always been a passion ever since my father played math games with us when we were little kids. Math has been the great equalizer of modern civilizations, and I was lucky to learn the tools of math and symbolic logic and make them my own from the very beginning. And yes, even now when I am on a long flight I geek out by playing around with math. I got the job offer in research from Goldman to work for this researcher. When I got back to Cambridge, I relayed the name of the interviewer to my roommate, who was an economist. Fischer Black. I had no idea the man I had met was the legendary inventor of the option pricing formula that bears his name and who was as legendary in finance as Richard Feynman was in Physics. I wrote off the trip as an interesting day on Wall Street, and carried on with my physics research.

As fate would have it, my hopes of getting a great postdoc fellowship were not going to happen. I had one postdoc fellowship lined up in France, and another one at a university in Texas, but the Superconducting Supercollider had just been canceled (1990-92 recession), so there was not much in terms of great physics jobs at one of the Ivy league schools. As a freshly minted PhD, the thought of doing something fun for a year that I knew nothing about seemed like a great sabbatical to take. So I deferred my postdoc for a year, and decided that since I knew less than zero about finance, I should take the other job offer that had materialized from Wall Street, trading derivatives at Citibank. To be very clear, I had never seen a bond or bond futures contract before I started on the rat-infested floor of Citi's exposure management desk on Water Street in

Manhattan. But the team of traders who took me under their wing were survivors who had made a reputation for being savvy. I learned the ropes, including by, as they say on Wall Street, “getting my face ripped off” by standing in the way of the bond market meltdown of 1994. Some of those experiences clearly led to my approach to “doing finance” that you will read in the articles.

My short sabbatical turned into a leave of absence from my impending physics postdocs – part of me still feels that I am still on that leave of absence, and might very well end up going back to physics at some point, that is if I don’t get distracted by yet another thing to try out. I do occasionally pick up old research papers and textbooks in physics, and there are days when I feel I actually understand the material better now than I did when I was just trying to get to the results.

On Wall Street, I realized that I was a one eyed man in the land of the blind when it came to pricing and managing exotic and hybrid options (which is the name of my book that was published in 1992). I could do numerical integrations on Mathematica, and I could invert covariance matrices and obtain eigensystems in seconds to run factor models before factor models became popular on Wall Street. And of course I could write multi-asset Monte-Carlo simulations to price exotic and hybrid options in seconds. These tools are the ones that any physicist learns as part of their breakfast. So very quickly I went from know-nothing PhD to know-nothing head of exotics and hybrids at Citi. But somehow working as a market maker seemed less fun than taking risk. If I was going to do finance, might as well try to do it with the best.

I moved to the Salomon Brothers fixed income arbitrage group when one of the traders I had met at Goldman, who was now at Salomon suggested that I should speak with the “Solly Arb” team. This was the team that was left after the original founders of the group, of “Liar’s Poker” fame, left to start LTCM. At Salomon, I felt like I was home. A group of super fun, super-smart young “Quants” who were not afraid of not knowing anything, not afraid of figuring things out, and who played the game of trading as well as the game of LP (Liar’s Poker) religiously. I was tasked with building models for foreign currency option trading given I had done this in my previous job. After market close there was the multi-hour LP game (using LP sheets of numbers), and one year I won the overall pot. The settlement included cash, and a bonus of a 21 foot Pro-Line fishing boat that my boss was replacing. I had never ever “driven” a boat before, and my first experience of trying to park it in a slip did not go very well. Within a year, I was asked to start trading the municipal bond arb book under the guidance of the team’s co-heads. Unexpected, but it led to the next job not very soon thereafter.

In 1998 Salomon was acquired by Travelers group. When the insurance giant saw the volatility of the arb group (which was part of the approach to making huge profits), they freaked out. And one day we were told that the whole prop trading operation was being shut down. Given the choice between working on the market-making desk, or taking a small severance and spending the summer on my boat with my three-year old son, obviously the second option was more palatable. The unwind of the huge arb positions, along with the Asian crisis, resulted in a complete meltdown of the markets, and LTCM went under that year. A

number of firms had reached out to hire most of my old team, including me, while I was on my small boat on the Hudson, but all those job offers evaporated as Wall Street prop trading evaporated.

At this time, some foreign banks had made a decision to enter the US trading zoo, and I was headhunted, yet again, to join a nascent prop trading team at CSFB. On purely mercenary terms, with no other choices, I took the job, and immediately regretted it. The culture was nothing like Solly. With bond markets melting down, there was only one thing to do – buy money-good municipal bonds trading at distressed prices, hedge them and then flip them. The strategy worked well, but I was already on the lookout for something else to do.

In the world of bonds, Salomon used to be the trader, and PIMCO, lead by Bill Gross, known as the “Beach”, was widely known as the smarter investor. With Solly arb gone, I reached out to Bill, who I had heard talk a few years ago when he was promoting his first book. I flew out to Newport Beach, and as fate would again have it, PIMCO had just been acquired by Allianz, and they were looking to build out the firm’s risk management and analytics. I was offered the job of portfolio manager and head of analytics and risk, never actually having done that job. Unexpected. And yes, the day after I started I was told that I would also be co-PM with Bill on a about 30 or so bond portfolios! I took home a binder with a few thousand positions of bonds, including hundreds of mortgage pools, and wondered what I had gotten myself into.

Within a year, one of the partners at PIMCO decided to enter

the wild world of hedge funds. The thinking was that if somehow PIMCO could translate the alpha of its long-only bond funds to levered absolute hedge fund type investing, there would be lots of money to be made for clients, and thus for the firm. I was recruited as the second PM for the Global Relative Value Fund, PIMCO's first hedge fund, and very quickly became the lead decision maker for the fund and its risk management process. Having been in the derivatives business now for about eight years, I knew one way to survive market implosions, especially when highly levered, was to "always cover your tail"; i.e., leave some money on the table to buy hedges against the unexpected. So as part of the hedge fund portfolio design, I created "sleeve 26" as the hedging strategy (26 since we had A-Z as the 26 sub-strategy sleeves).

The hedge fund got off to a great start, growing to about \$2 billion within a couple of years, with double-digit performance. Speaking to one very large prospect, a European pension fund, who was very sharp, we were asked if the tail hedge sleeve could be one that they could buy on a standalone basis to hedge their own portfolio. This became the first institutional "tail-hedge" fund at PIMCO. Given the "bonds and burgers" philosophy of Bill Gross and the rest of the team, where "selling options" — not buying them — was the secret to making alpha, this new strategy was a bastard child, a long-vol fund in a family of short-vol funds, and did not get any respect.

Of course, unexpectedly 2008 happened shortly thereafter. And tail hedging paid off — BIG! By this time Mohamed El-Erian had returned from Harvard Management Company to PIMCO as CO-CIO and CEO, and he and I had compared notes on

hedging while he was still at Harvard. Mohamed's very first new investment fund was PIMCO's first asset allocation fund, called Global Multi Asset Fund (GMAF), and his design elements consisted of three pieces: "beta, alpha and tail hedging". I was tasked with running the tail hedges for this fund. The fund got off to a great start both in terms of performance and asset gathering, and gave credence to both hedging and systematic trading as an essential part of the future PIMCO.

Much has been written about the years that followed at PIMCO, so I will spare the details. But in short, conflicts started to arise, and what used to be an entrepreneurial, go-get-it shop turned into a bureaucracy with multiple layers, back-door deals, and an oversupply of management types whose life and career depended on controlling others, rather than delivering performance. As a partner (I became a partner in 2008), it became harder to get things done. I had been running "trend-following" as a strategy at PIMCO with internal money, including my own and another partner's capital, with impressive results to show proof of concept of systematic strategies, but there was no buy-in to promote it for clients' use. It took years of meetings, jumping impossible hurdles, and appeasement of many feudal lords of the management class to finally prove the validity and ultimately the launch of the PIMCO Trends fund. I had many other plans for diversification strategies in mind that I had sequenced on my runs – now that Tail Risk Hedging was already a success and had graduated from a trade to a portfolio product. I focused on hiring a great team of young quantitative PhDs for this new "quant portfolios" team – not afraid to write code, build models and trade logically and systematically. The team thrives to this day. But other

unexpected things were in store.

In 2014 and 2015, both Mohamed and Bill Gross unexpectedly left the firm as a result of escalating conflicts. Self-imposed disaster. What was left was a talented group of young traders and the management class who saw power thrust upon them, and a massive pool of fees and revenue to fight over, with no parents at home to keep the rowdy kids under control. The outside world had also sped up due to massive central bank intervention in markets. Volatility had been compressed, primed for an explosion. Given the confluence of a PIMCO where it became impossible for me to continue on my path and which required serving masters from whom I had no respect, and an opportunity to set up for fat-tails in the markets, on my own terms, the right choice for me was to walk away from the handcuffs of guaranteed wealth. Following the mantra that guaranteed success is so boring, the challenge was whether I could build a firm that would be the best blend of the places I had worked, and which would not be scared to do the right thing, and work for its clients, first, last and always. Failure was always an option.

On December 22, 2015, at 9:59 am in the morning I resigned from PIMCO and at 10 am LongTail Alpha was born. The name of the new firm was chosen to remind me of what it was about – benefiting from the unexpected by expecting it. Since the unexpected had been so powerful in shaping my life, I would set up to expect it!

Finally, back to this compilation.

My current investment ideas reflect the state of the financial markets that I have witnessed since 1992 (31 years) first hand, as a trader and quant. The articles in this collection were written for Forbes.com between 2016 and 2022. Many other, more “academic” and mathematical articles and four finance books are available online.

There are three common themes in this book, which seem to have come to a logical punctuation point in 2022 as bond markets have cratered, central bank credibility is under attack, and inflation has made a major comeback. I, and many others, were expecting these outcomes this time.

The first theme is that central banks, as a collection of human decision makers with their own dogma, are prone to making major analytical and decision errors, and this can have consequences for investment portfolios.

The second theme that follows from the first theme is that it is impossible to rely on traditional models for valuing assets when the world is undergoing an unprecedented transformation.

The third theme is that in a world of unexpected, unprecedented transformation, risk measurement and risk management cannot be passive, but has to be very active and deliberate. Expecting the unexpected requires one to do something about it as an active decision.

We have gone through a logical cycle of time over the last six years, which is why it seemed a good time to collect these pieces into one, unedited, chronological compendium. I think the



world at large, including the financial markets, in the next two or three decades will be very different than the ones we have experienced for the last three decades. Maybe I will get to write a different set of pieces for the next five or six years.

Forecasting the future is always tough. But, on balance, I personally feel that my framework of being prepared for the unexpected has been more right than wrong, and when wrong, it allows me to process the errors by “running them off” and by implementing the right ideas quickly. For me, so far the results have been better than expected.

Vineer Bhansali  
Newport Beach, CA  
March 2023



I

Part One

*Central Bank Errors Create Investment  
Consequences and Opportunities*



## Part 1: Central Bank Errors Create Investment Consequences and Opportunities

I have organized this collection into three general themes:  
Part 1: “Central Bank Errors Create Investment  
Consequences and Opportunities”;

Part 2: “Regime Shifts: New Regimes Require New Analytical  
Frameworks”;

Part 3: “The Potential for Unexpected Outcomes Require Active  
and Deliberate Portfolio Management”.

In this first collection of essays in the following chapters, I focus  
on the central banks.

If one were to read the history of central banking going back  
to the formation of the Bank of England in the 1700s, and

traced the history through countries, decades and centuries, one would find that central banks, at the end of the day, are an agency of their respective governments. They have helped support wars and other adventures when their governments had no resources to do so.

The notion of central bank independence is rather new, and in many ways is just a construct to separate the politics from the economics of a nation. What is also quite new is the influence of “rational” academic economics on the design of policies, procedures and responses. More recently, as the fiscal and monetary elements of running a country have converged, a new type of central bank policy maker has emerged – the “lawyer central banker”, who can show flexibility and tolerance to conflicting objectives.

It is only a little bit surprising that the current heads of the three major central banks are lawyers: Powell at the Fed, Lagarde at the ECB, and Kuroda at the BOJ. This is a sign of the times. Lawyers are, by training and professional need, more astute at arguing for and against opinions, where facts can be used as tools to serve the purpose of winning an argument. A good lawyer is able to argue both pro and con in favor of and against, any point of view. In an environment where global economies have become very complex, and forecasting is almost impossible, the importance of such lawyer policy makers cannot be overemphasized. Monetary policy making today, whether or not we like it, is driven by the need to simultaneously satisfy many overlords, among which are the public, banks, congress etc. Thus central banking has suffered an inevitable mission creep, and increasingly become the handmaiden of elected

political entities.

Since central bankers are not elected in the usual way by popular vote, they are also immune to the demands of the public the way a head of state or a local representative would be. The combination of all these elements enables central bankers to form opinions based on whatever approach they choose, decide to act on their opinions, whether correct or not, and then justify the results, whether positive or negative. Since there is little or no direct accountability to the public, this sequence results in a highly path-dependent set of outcomes where new responses can depend, and are frequently conditional on, the most recent decisions rather than what would be unconditionally optimal.

This path dependency creates market opportunities for investors. Since the patterns of behavior of policy makers who are charged to make consequential decisions for their public are largely predictable, it is possible to expect outcomes that might not have happened in the past in the same form. The ability to probabilistically predict, and position for, allows asymmetrical positioning of investment portfolios.

## Three Tails Today: Fed, Fiscal And Frexit

March 14, 2017

**I**f we look for macroeconomic and political conditions today that have the potential to result in large moves in the markets, three interrelated events immediately come to the forefront.

The first is the Fed. Looking out to next year, will the monetary policy path end up being too hawkish, or will it in retrospect have been too dovish? Second, will the massive fiscal promises made by the new administration in the U.S. be delivered “on schedule”, or will there be disappointment? Finally, will 2017 see a continuation of global political change in the form of “Frexit” or will the EU stabilize?

For our perspective, the questions that need to be answered are



these: What will be the precursory indicators that investors can follow to track the changing probabilities of these tails? What would be the impact of these tails on the markets? How can investors position their portfolios today in light of these events for potential asymmetric rewards?

Starting with the Fed, our view is that the risks at the moment are currently balanced between a too hawkish stance and a too dovish stance. Signs of increasing hawkishness are market probabilities that begin to reflect more than three tightenings in 2017, signals of potential inter-meeting rate rises, or a rate rise exceeding 25 basis points at one of the meetings. On the flip side, signs of increasingly easy policy are markets discounting less than three tightenings, the invocation of external factors on monetary policy to make sudden dovish pauses, or a change in the makeup of the policy making body.

Looking at the probabilities as implied by Fed Funds futures markets and options on Eurodollar futures contracts, these left and right tail probabilities at the moment seem to be roughly balanced. But keep a close eye on the expected probability of the Fed Funds rates being above 1.5% by next January. If this probability — which is around 20% today — starts to rise sharply, the bond markets could be in for a surprise.

The new administration came in with the promise of massive fiscal stimulus. As echoed in the President's speech to Congress, this stimulus could arise from infrastructure spending and tax cuts, as well as cross-border tariffs and a reduction in regulations. Given the makeup of Congress, and this administration's willingness to make decisions, one would have to

grant that the likelihood of some of this stimulus actually taking place is reasonably high. The signs to watch that the market's expectations are too optimistic are reversals in some sectors that have been outsized beneficiaries since the election. Banking, biotech, small caps, and domestically focused sectors stand out as providing the best indicators from the markets.

Finally, and possibly packing the most punch, is the risk of Frexit and its impact primarily on the Euro currency. Instead of forecasting probabilities, let us do a pre-mortem exercise. If we were to move the clock forward and look back, what would have been the proximate signs of the Euro trading below parity in six months from now? The polls today show a 20%-30% chance of the far-right party winning the French elections. Survey markets show a tail probability of the Euro currency trading below parity of the same rough magnitude. Putting in unconditional likelihoods of a slightly more hawkish Fed and as-expected fiscal stimulus, our computations suggest that a very small increase in the probability of a Le Pen victory is all that is needed to send the Euro below parity. However, this seems to be the consensus, and markets rarely follow the consensus in a straight line.

These three events are obviously related through their impact on interest rates, equity market response, and currency market reaction. Given the extremely favorable volatility, skew and correlation markets, all of these views on tails can be expressed today in asymmetric form in the options markets.

## Is The ‘Shadow Insurance’ Business As Dangerous As The ‘Shadow Bank’ Of The Financial Crisis?

September 17, 2017

**T**here are a number of striking similarities between financial markets before the 2008 financial crisis and today. The most obvious is the low level of volatility. While everyone’s favorite indicator of risk taking is the VIX, other metrics of risk and uncertainty are even lower today than they were in 2007. For instance, the metrics of interest rate volatility today are much lower than in 2007, and could probably be the lowest ever on record.

But there are many other parallels. In 2007, the prevalence of “Structured Investment Vehicles,” or SIVs, are ascribed some degree of blame for the ultimate unwinding of credit leverage.

In quite simple terms, an SIV is a shadow bank, which borrowed short and lent long, not unlike what a bank does, or borrowed at lower-risk interest rates and lent out at higher rates. By doing so, SIVs operated under the radar of bank regulators, and captured both the “term” spread and the “credit spread”. Since this maturity and credit transformation was so attractive for the initial participants, it attracted others looking for the same “free” money, until the size of the market became so large that it eventually imploded from within. Of course as we now know the underlying assumption that drove this excess was that the collateral, i.e. the housing market, would never go down too much. Given the financial engineering of the times, one could operate a levered vehicle, such as a shadow bank, out of the proverbial “garage” as long as there was a provider of funds that could be loaned out or invested.



Today, regulators have essentially put a stop to such shadow banks. But shadow banks have been replaced with what I will loosely call “shadow financial insurance companies”. When an investor sells an option, whether it is through the

explicit sale of put options or call options, or through products that pre-package such insurance, the investor is essentially selling insurance against large market moves. The underlying assumption is that over time, the seller of insurance always gets to keep a risk premium over the true value of the insurance. And in a world where one cannot see volatility rising, just as one could not see housing prices ever going down, it is perfectly rational to operate such an insurance selling operation since it is a positive expected return strategy over time.

As a matter of fact, it makes sense to diversify the business by operating like a multi-line insurer, selling insurance across all asset classes and maturities. Just as an investor can use the derivatives markets to operate a virtual refinery out of his bedroom (for example, by selling gasoline futures and buying crude oil futures), an investor is now able to operate a virtual insurance company by buying an inverse volatility ETF like XIV or SVXY. Indeed, an investor who buys one of these products listed on the exchanges, is getting into a contract whereby the provider of the security goes out as an agent and sells VIX futures in an amount exactly matched to produce the payoff pattern from selling volatility. Just as the SIV was a sophisticated bit of financial engineering to bring credit and term structure arbitrage to the masses, volatility ETFs and ETNs bring volatility selling, until now an institutional activity, to the masses.

In the case of the SIV, there are multiple layers of financial engineering which are worth dissecting. In the first step, there is a loan that finances the home purchase. In the second step, the loans are pooled together into a security. In the third step,

derivatives (i.e. credit default swaps) are built on the pooled loan security. Finally the derivatives are sliced, or “tranching”, and put into the SIVs that finance the purchase through borrowing. In the four-step process, the risks of the ultimate underlying asset, the price of the house, is levered multiple times and each rung on the ladder becomes increasingly sensitive to housing price fluctuations. As housing prices rose, the mathematical expectation of the tranches not being able to pay off diminished, thereby creating more interest and demand. On the other hand, as housing prices fell, the inverse happened, and the tranches fell, in many cases to zero, thereby wiping out demand.

Now let us track the financial engineering steps involved with an inverse volatility ETF, which in many ways is similar (including the uncanny similarity in name). First, there is an underlying security, which is the stock of a large cap company. In the second step, many such stocks are pooled together into an index, e.g. the S&P 500 index. In the third step, derivatives are designed and traded on the index, i.e. call and put options on the index. In the fourth step, an index of all the put and call options is constructed, e.g. the VIX index, based on a theoretical formula. Since the VIX itself is not tradable, in the fifth step a new derivative is constructed on the VIX index, i.e. the VIX futures contract, which is tradable. In the final step, a security is constructed on the VIX futures contract itself, i.e. the VXX, XIV, SVXY, etc. which all trade on the stock exchanges and can be bought and sold as a stocks.

As should be clear at this stage, financial engineering technology has taken a plain vanilla security, and by slicing, dicing and re-packaging it multiple times, created another security that is

a levered version of the first generation security, which also trades on the exchanges under the same rules, even though it is an extremely levered version of the initial security. There is actually a further round of financial engineering, i.e. call and put options on the ETF or ETN itself, but we will ignore that for now. Like the CDOs of CDOs of yesteryear, there is really no natural stopping point for how far financial engineering can go. Only the lack of demand limits the supply.

The risk to this house of cards of course is that one of the links in the financial engineering turns out to be a weak one. The most obvious culprit, one would think, is a severe down move in the stock market as a whole. I think the situation is a bit more complicated than that.

Again, while it is true that even a small move in the price of housing could have brought the SIV and indeed the credit markets to a crash in 2008, the real risk was not a sustained housing market downturn, but indeed the forced selling of the securities built at the top of the financial engineering pyramid. As these top level securities were sold at fire sale prices (e.g. during the liquidation of the Bear Stearns hedge funds), each rung in the ladder weakened, and one could argue that as the spigot of easy credit was turned off, the housing market suffocated and prices started to fall. Whether the housing market crash created the financial crisis or the failure of levered securities created the housing market crisis is largely a technical detail, since either one fluctuating would eventually have resulted in the events that happened.

In my view, the real risk today is not a sharp fall in the equity

markets, though it very well could be. The real risk is that for some unforecastable reason, volatility and fear rises and creates a set of cascading shocks that ultimately results in the equity markets falling as they readjust. Let us trace out the links on how this might happen.

Let us say we come in one day and there is an event that creates a large amount of uncertainty. This could be on either side of the market. On the negative side, we have geopolitical and political uncertainty which continues to rise. On the positive side, we have a potential large tax deal, or perhaps a new, positive regulatory change. As we walk in one day, an unexpected negative or positive event could result in a large shock to, say, the VIX, or to the volatility of interest rates. This results in some of the systematic volatility selling strategies (“shadow insurance companies”), to back off from selling insurance, or maybe even buying back their insurance contracts at a higher price for safety. Tracing the financial engineering described above backwards, the provider of the packaged insurance security then buys back the VIX futures or the short volatility derivatives. As the expectation of VIX rises, arbitrageurs bid up the prices of the options, i.e. the actual value of the VIX goes up.

At this stage, a number of mechanical strategies that use the VIX as a major input parameter, such as volatility targeting, trend following, risk-parity and others that are in many institutional portfolios, are triggered to reduce their exposure as per their design specification. The way many of these strategies work is that they sell equity futures, as volatility rises. If many of these strategies trigger selling at the same time, or even in a sequential manner, this puts pressure on the equity index



futures markets, which then by the mechanism of arbitrage forces actual selling of index stocks. As the stocks sell off, other markets, such as high yield, corporate credit etc. start to feel the impact, with their spreads widening, and force liquidations from holders of credit. As credit becomes less available, further liquidation happens. In the worst case scenario, this shock cascades across markets and regions, and the rising liquidation and risk aversion spreads like it did in the last crisis. In the best case scenario, a lender of last resort steps in and stops the liquidation as soon as it threatens systemic instability.

This is a scary event, and clearly a very low probability event. But can it happen? Of course history suggests that it can, only it won't be obvious whether it has already commenced until it is too late. Two questions remain unanswered, however: What causes the uncertainty to rise in the first place, and what can one do to manage the risks? While the list of events that could cause uncertainty to rise is too long to list here, it could be as simple as interest rates rising or a major geopolitical event, or as opaque as the unwinding of leverage by a large market participant as a precautionary measure. Knowing that the system is increasingly susceptible to events is cause enough for any market observer or market participant to exercise caution today.

On the topic of managing the risks, the answer is much simpler. One can become a little more careful in allocation to risk assets, especially those that smack of selling volatility, keep lots of cash, or if able and willing, intelligently accumulate protection strategies by being a buyer of insurance rather than by operating as a "shadow insurance company".

## The Hidden Fountain Of Youth Driving The Markets

December 21, 2017

**A**s we reach the end of 2017, it is impossible not to reflect back on the fantastic rally in risk markets.

Yet again, risk markets defied expert opinions and delivered to investors a massive gift of capital appreciation. If there has been one mantra that has worked this year, it was “buy the dip”, though more recently it could be alternately characterized as “fear of missing out”. Equity markets still look and feel young, even though danger signs abound following the 10-year rebound from the depths of the financial crisis which is almost forgotten.



So where is the hidden fountain of youth that is driving the spectacular performance of markets in the face of political and geopolitical turmoil, high asset valuations, and a tightening Fed?

Will it keep flowing in 2018? What signs should we watch for whether we're looking at more of the same or if we're looking for an about face?

To answer these questions, one has to only look at the German government yield curve, especially the very short end as represented by the German two-year maturity "Bund". A recent two-year Bund was issued in November of this year at an issue price of 101.489 and a coupon of 0%. In other words, the Bund will pay a holder no interest if held to maturity, and in addition, the holder will receive only par value (100 Euros) for paying 101.489 Euros. This corresponded to a yield of approximately -0.75%. If held to maturity, this negative yield would correspond to a guaranteed loss. And I think a guaranteed negative return on the bonds of possibly the most creditworthy country in the world today has something to do with the performance of all assets, not just risk assets. When volatility across all assets is as low as it is today, and equity markets are delivering 20% a year, it really feels cowardly to hide out in negatively yielding assets, unless, of course one has to. The guarantee of certain wealth destruction in holding European (and Japanese) fixed income instruments is the source of many other asset price distortions and hence the indicator to watch for when the time for reversal is close.

In the face of negative European yields, the US bond market looks like a high yield investment opportunity to capture spread, with no credit risk, for investors in the rest of the developed world. Note that many European high yield markets are actually yielding below US treasuries. Unless you are forced to choose credit risk over currency risk, which one would you choose? If

you can borrow at low to negative rates in Europe, and invest, for example, in the US two year note at 1.75%, there is an almost 2% cushion in terms of the movement in exchange rates before the carry advantage goes away. 2% yield in a negative yield environment is enormous indeed. This type of cross-currency yield arbitrage has the risk that currencies move against you. So if you borrow money in Europe and buy treasuries in the US, and the dollar depreciates, it could mean losses. But today hedges against currencies moving are so cheap that you can essentially protect much of the carry with cheap currency options.

In the equity markets, the low yield environment creates incentives for corporations to issue lots and lots of debt, and use the proceeds to buy back stock. The incentives are clear for issuers: issue debt to buy stock and for investors to capture any spread they can in a world awash with liquidity from the negative yield spigot, and both investors and corporate treasurers respond to incentives. Thus a low yield environment seems to put a floor on every pullback in the equity market. If one can borrow at zero and harvest a 2% dividend yield from the equity markets, it is hard to argue against doing so with an implicit promise of easier financial conditions and monetary policy if equity markets sell off.

Which brings us to the question of why this almost “free-lunch” exists in the first place, i.e. how can you capture cross currency yield and still hedge out much of the currency risk using options? The short answer again leads us back to the fountain of youth, the low yields on short-term bond investments. When yields are low, the simplest way to enhance yield is to become a

“shadow financial insurer”, i.e. by selling financial options and earning the insurance premium, including currency options. And as I have written before, when everyone is doing it in every market, implied volatilities collapse across all assets. Even without having to resort to fancy financial engineering, the path to profits in the minds of investors is likely to be lined with cheap money that funnels itself into the liquid risk markets in the US.

So the next time we are confounded by why markets keep going up in the face of geopolitics and expensive asset prices just look at the German bond market and the need for yield, and we should have a clue. It’s a gift that keeps on giving, for now, though the last few days have started to see yields beginning to grind higher. Ultimately all good things have to come to an end, and when it comes there will be little warning. For the time being, the negative yield distortion is going to continue to provide a bid to asset prices.

So what should an investor do to position for 2018? While there is no shortage of differing schools of thought, there are some general themes to keep in mind. First, investors should be wary of putting too much of their money in cash, especially where there is a significant real and nominal yield penalty to doing so. This theme extends to investing in bonds of countries where yields are at all-time lows. Second, investors should not be too scared to take risk. While equities are at all-time highs in terms of valuation, there is no reason why investors cannot take equity risk and protect their downside, since option premia on the downside are so low. It’s certainly better than monetizing gains and missing upside opportunity costs and paying a hefty

capital gains tax bill. Finally, the pricing of dollar assets, and the dollar itself does not reflect the fact that the dollar does well when markets move a lot, i.e. when there is either a crisis or a “melt-up”. With positive carry and the yet unpriced value of the generational tax reform in the markets, being long dollar denominated assets is likely to be the beneficiary of the fountain of youth of negative yields in Europe.

## Default, Devaluation Or Debt Deflation — Time To Exit Longer Maturity Treasuries?

January 25, 2018

I have to admit that the accelerating fall of the unloved U.S. dollar along with recent pronouncements from the administration have taken away any remaining support from even the most die hard of dollar bulls such as yours truly. On the one hand, very large positive carry is embedded in long dollar positions. As an example, two-year treasuries currently yield in excess of 2%, while both two-year German Bunds and two-year Japanese government bonds (JGBs) yield minus 0.60% and minus 0.15% respectively. On the other hand, the signal by the treasury secretary that a weak dollar is in the best interest of the United States due to increased trade benefits makes explicit what currency speculators have been anticipating since the



Trump victory – that a weak dollar is desirable in an “America First” policy environment. We are all mercantilists now, I suppose.

For market participants, this raises the bigger question of how large debts and deficits are dealt with, and hence has significant ramifications for not only the currency, but also the bond markets and by extrapolation the equity markets, credit and housing.

The United States has trillions of dollars of debt held by creditor countries and the dollar discussion brings to the fore how this debt will be settled when it comes due.

A debtor has four ways of settling what he owes a creditor. First, the debtor can “grow” out of the debt. The hope is that economic stimulus from exports that follow a short-term weaker dollar will be sufficient to generate revenues to pay the coupons and principal over time. Whether the U.S. can grow quickly enough in the medium-term to become a net creditor seems very unlikely given that new deficits will result from the recent tax cuts.

A second way of settling what is owed a creditor is by defaulting on the debt. Given the right of the sovereign to print more dollars, we can safely assume that the United States will not take this route and will pay off the face value of the debt as it comes due.

Devaluation of the dollar is the third option. If the dollar is devalued, then the real value of the debt declines.

Finally, and related to the devaluation “option,” is deflation of the debt by creating inflation. Rising inflation reduces the terminal value of the obligations, i.e. it “deflates” the real value of the payables. Deflating the debt by creating inflation thus “kills softly”, but for all practical purposes is also a default on obligations that is spread out over many years. Devaluation thus reduces the value of the obligations not by outright refusal to pay, but rather by payment in a future currency that is worth much less than its value today.

This brings us to the question of what all this means for financial markets.

First, since most of the fixed income obligations that will suffer due to the pernicious devaluation sit in the coffers of foreign central banks, they are likely to feel more immediate pain than US investors, who will likely see pain only gradually through rising interest rates and yields, and decreased purchasing power as the bonds mature. It is anyone’s guess whether foreign investors would continue to hold instruments whose real value can easily and quickly erase the “carry”. It would be a fair bet that they would want to wait and see if the weak dollar rhetoric is temporary, rather than a permanent change. But waiting is expensive, since new debt will need to be issued and bought, presumably at higher yields and lower prices. Indeed, while it would be rational to wait and see, the risks are large enough that they are likely to be less patient.

So from this perspective, we would expect the weak dollar to allow for an acceleration of the bond bear market. In our view, holding long bonds with yields less than 3% in an environment

of rapid dollar devaluation simply does not make sense unless one needs these bonds for immunization of long term liabilities, or unless one hedges the risk through currency options. And as we have discussed in previous posts, given the very low levels of currency option volatility, some investors may indeed be able to hedge the currency risk while keeping their treasury holdings. But even as large as it is, the currency options market is not large enough to hedge every holder of treasuries. There is enough evidence to suggest that the negatives simply keep piling up against US bond duration, so we would not be surprised to see investors and market participants who choose to go neutral or underweight the intermediate to long end of the US bond market.

Second, if yields rise rapidly on the back of a falling dollar, equity markets are likely to come under pressure. The last decade has seen a correlated rise in the value of all assets as yields have fallen, and the effect of cheap money has raised discount factors, which has boosted the value of all investment assets. As this story runs in reverse, an already high equity market could be exposed to sharp corrections that are correlated with the bond market. In other words, diversification may not work as well as investors expect. If the bond market selloff is a bond market crash, one should expect bond market volatility to spike, which would filter into rising volatility for all other markets. In the worst case scenario, this could trigger a coordinated risk reduction across markets as correlation assumptions come to the fore.

Finally, rising yields will likely result in credit markets competing with sovereign bond markets for the marginal investment

dollar which will be offering a higher risk-free yield. Hence, credit spreads would be expected to widen, which in turn, would exacerbate and amplify the negative feedback effect on equity markets. The weakest credits would eventually feel the effect of high financing costs and the quiet devaluation could ultimately lead to actual defaults increasing.

The story is likely to be more positive for real assets like housing and land. A weaker dollar, if not accompanied with capital controls, would lead to an inflow of money into this country to buy such assets at a discount.

Having observed policymakers jawboning a “strong dollar” for over 20 years, the recent preference for a weaker dollar is a significant and consequential change for markets. As global investors parse the implication of this potentially major policy change, wise investors who don’t absolutely need these long maturity bonds will probably not wait for the exit door to get too crowded.

## Buying Stocks Now Is Betting On Buybacks

March 13, 2018

**I**t is no secret that a large portion of the rally in equities over the last few years, and especially the rebound from the lows of early February, has been bolstered by the record amounts of capital sitting in the coffers of American corporations which, has naturally found its way into the stock market. This cash had three main sources. First, corporations built a large precautionary hoard of cash in the aftermath of the financial crisis to prevent being buffeted by credit markets, choosing to recycle their income into savings rather than spending. Some of this cash is now being unleashed. Second, the extremely low level of yields and spreads in the corporate bond markets allows the issuance of longer term bonds to willing yield-starved bond buyers and take in even more cash.

And finally, the tax reform unlocked foreign cash that came flowing back into the U.S. – a good fraction of which has gone into the stock market. This trifecta of positives (for the stock market) has created a systematic bid whenever markets correct downwards. The big question for investors is whether we can count on the buybacks to continue to provide the support on dips as the economic cycle matures. The question really is whether “Buying the Dip” is the same as “Buying the Buyback.”

Just like the yield of a bond is the income that an investor receives from cash, the most important component of the yield on a stock is the dividend that the investor receives as the company pays out cash dividends. The total yield from holding a stock is the sum of the dividend yield and the “buyback” yield. The buyback yield is simply the capital returned to investors divided by the market value of the stock. To compare the relative yield value of stocks and bonds, then, we should compare the yield on bonds and the total yield on stocks.

What has been a direct consequence of the large buying of bonds by central banks until recently is that investors have been buying stocks for their total yield since this yield has been much higher than the comparable bond yields. One could also argue that investors have been buying bonds for capital appreciation, not yield. Otherwise why would one hold negatively yielding securities in Europe? Bonds for capital gains, equities for yield – very interesting!

Tech companies notoriously do not give back much in terms of dividends, recycling their earnings into either more investment or, recently, buying back more of their stock. Going back to the

beginning of 2000, information technology sector has delivered a total yield of 3.27%. Today, the total yield is 1.72%. The dividend yield is close to its average of 1% for this sector, which just confirms that tech is returning money to its investors via a higher price, but not necessarily more cash. In fact investors buy tech for growth, not income, so this is perfectly rational behavior on the part of both corporations and investors.

Hence the Tech “yield” is mostly of the buyback kind. If we take a close look at the eleven sectors of the S&P 500, we find that buybacks, and the anticipation of these buybacks, has been the engine behind the rapid rally in Tech. Both have created euphoria, and a happy contagion has spilled over into other sectors as well. In a classic George Soros-style reflexivity, the phenomenon of rising stock prices created more market and economic optimism, better access to funds since the collateral is priced richly, M&A dollars, more buyback ammunition. This resulted in a virtuous cycle of rising asset prices and optimism.

The chatter in the market place is that the volume of buybacks in 2018 is likely to exceed \$800 billion, which is significantly higher than the \$500 billion or so in 2017. Much of this (\$200 billion) might possibly be related to the tax repatriation. By our estimates, the early February hiccup in the equity markets resulted in \$500-\$750 billion of equity selling from various systematic strategies. A “buy the dip” from buybacks and other bargain hunters can then clearly be seen as a possible reason for the sharp bounce back that retraced half of the markets losses. The systematic selling from volatility contingent strategies was almost absorbed by the systematic buying of corporations of the market.

If a buy-and-hold investor receives anything higher than the yield on the corporate bonds of the same issuing authority and duration, theoretically he should opt for the equity. Similarly, if a corporation can issue debt and buy back its stock with a net positive carry, it should also do so, locking in its financing. The wrinkle here is that equity holders are more at risk if there is a catastrophic selloff in the markets, or if total uncertainty or volatility rises, since they are the first to lose their capital.

By my guess, anything below a 1.5% spread on equities vs. the equivalent credit is a fair tradeoff, or in other words, the equity risk premium relative to corporate bonds of 1.5% is about as close as one typically should get. We are within spitting distance of that spread. If the equity risk premium is about 3% vs. risk free assets, and as a whole corporate bonds across every economic sector yield about 1% more than treasuries over the long horizon, we are left with about 2% spread of equity “yield” to the corporate bond yield. Add another 0.5% for various risk premiums (equities are more risky), and we are right around that 1.5% level of “fair” carry from equities, unless there is no risk over the very long horizon.

In other words, we need to receive a total yield of at least 1.5% more than what we receive on the underlying bond of the same company to take the trade between equities and bonds. Given that almost 30% of the buybacks over the last three years have been funded by debt, clearly corporations “get” this arbitrage and are stepping up their issuance to buy back their equity before it’s too late. The risk, of course, is that yields on the corporate bond market rise too quickly from here on, either because of treasury yields rising, corporate spreads widening



or both. In which case investors would likely find the bond markets more attractive, and issuers would probably not issue bonds to buy back more stock. The likelihood of another large pile of windfall cash like the one received from repatriation also seems unlikely in the short run.

So now what? What is an investor supposed to do? When a corporation is telling you that given the opportunities and current market pricing they would rather buy the stock back than spend it, invest it or save it in cash, the investor should take this signal and the gift, and take some of the money to the bank. In other words, they should sell the stock to the company and not buy it back until the company says it sees better opportunities. In the long run, owning stocks are really owning companies that build stuff, rather than a factory that produces financial alchemy. Other than dedicated financial sectors where the arbitrage on funding rates is actually the investment, betting on capital structure arbitrage in the broader stock market today is primarily a bet on the buybacks continuing beyond what is priced in.

## How To Avoid Getting Burned In The Bond Market If The Fed Is Ready To Inflate

July 11, 2019

**L**istening to the testimony of the Fed Chair today, I could not avoid researching the parallels to the period between 1970 and 1978, when Arthur Burns was Fed Chairman, and which coincided with Richard Nixon as the President of the United States. Then, not unlike today, the White House sought to influence the Federal Reserve both directly and indirectly to keep interest rates low. Then, as today, it seemed that the Fed eventually capitulated. We might look back and count 2019 as the year where Fed independence was lessened substantially. If true, for market participants this could prove to be substantial and consequential.

Some comparisons before we dig in further. Between 1970 and 1978 the stock market had essentially ended unchanged. However, it rose for three years between 1970 and 1972 (about 25%), fell almost 40% between 1973 to the end of 1974, rose almost 40% in 1975, 18% in 1976 and then fell 17% in 1977. Inflation (as measured by the CPI), was relatively benign by historical standards (averaging about 5% between 1970 and 1973), but then spiked 12% in 1974, began to drift higher between 1975 and 1978, and then exploded 13% in 1979 and 12% in 1980. Correspondingly, the funds rate, after averaging in the mid to high single digits till 1977, jumped up to over 18% in 1980. Over the same period, the dollar lost almost 30% of its value as the gold standard was abandoned (Source: Bloomberg).

Before we start to push further on the comparisons, note that inflation today, as traditionally measured, is much lower than the 1970s. However, market participants know that the traditional goods and services inflation is usually the last data point to show the effect of financial conditions. Asset prices rationally react first to policy. To wit, the equity markets have rallied a lot this year as they correctly anticipated that the combination of no inflation and politics would push this Fed to ease. During crises, and when all else fails, as Ray Dalio observes in his recent book [“Principles For Navigating Big Debt Crises”](#), they “print money”. The difference this time is that asset prices and prosperity are at all-time highs by most metrics.

One other important event that occurred in the 1970s was the closure of the gold window. Once this happened, currencies started to float, and as mentioned above, the dollar started a precipitous decline. Today there is no gold window to suspend,

but the de-facto reserve currency is the dollar, and further, these dollars are held in Treasuries. In a sense, this is worse for the US, since Treasuries pay interest. We are in an era where “unthinkables” have become all too commonplace. Who would have thought that sovereign governments and even companies could “confiscate” money via negative nominal interest rates, as is true for over ten trillion dollars worth of global sovereign bonds, and as recently reported, for a number of junk bonds? Could we be in for a correlated exit out of dollar assets and Treasuries and the need to refinance the debt at higher interest rates?

The bond market’s reaction over the last couple of days seems to say as much. Long-end yields rose globally, even as short-end yields fell on the back of renewed dovishness from the Fed. At current prices, a thirty year government bond in the US would lose almost 18% of its value if long term yields go up by one percent. A thirty year German Bund would lose almost 22% of its value. And just for fun, the almost hundred year Austrian bond which as of this writing is at 1.19 percent yield would lose over 30% of its value if the yield went up to the desired inflation rate of 2% of global central banks.

The history of bond markets suggests two things: (1) Don’t fight the Fed, (2) if the Fed is ready to inflate, don’t buy bonds that might lose a large portion of their principal (and especially negatively yielding bonds which don’t even provide any income and guarantee a sure loss of principal). Until recently, the Fed has been on a tightening path even as other Central Banks were easing. After this week, it’s “game on” towards lower short term rates. Currency markets could be in for a wild ride as

could be the long maturity global bonds. If the Fed and global central banks succeed in hitting their inflation targets, the bond markets could be in for some serious pain. Buying long bonds in an environment of aggressive easing seems like a bet that the world's central banks will fail in their objectives.

As a result of the foregoing, market participants may seek to allocate some of their risk capital in an effort to protect against inflation even though it has been pronounced dead. Half a century after Arthur Burns, we could be setting up for economic, financial and political conditions that have been unfamiliar and and unimaginable to investors for the last 25 years.

## Tech Crash Echo: It's Beginning To Feel A Bit Like 2000

November 26, 2018

**E**veryone in the market remembers the Global Financial Crisis. Very few on trading desks remember the Tech crash of 2000. I remember it all too well after the partying of 1999: it was exhilarating (or painful if you were short) to watch the exponential rally in Tech and dotcom stocks in the last part of the 1990s.

Then sentiment switched from “buy everything”, to “sell everything” almost overnight. In a span of a few weeks in 2000 the Tech sector came crashing down, hard. From the peak in the NASDAQ in the middle of March 2000 to the low in December 2000 the sector lost 50% in a brutal selloff.

Some of today's Tech champions were around then as well.

Amazon.com (then and now one of my favorite companies in the world for making shopping easy for those of us who hate to go to the store) reached a peak of over \$100 at the end of December 1999, and by December 2001 was trading right around \$10, a 90% “correction”! Today’s darling, Apple (and another one of my favorite companies in the world in terms of their absolutely wonderful products), reached a peak of \$4.50 in April of 2000, and by the end of the year was trading below the buck. Caveat Emptor: Great products don’t imply that the stock is always cheap.

While it might be laughable to call for a correction of the same magnitude today, a few grey souls in the Tech industry who were around in 2000 and lost 80% of their net worth on paper have the following advice: don’t be greedy and take some gains off the table. So with an eye towards preserving capital let us look at some parallels between 2000 and today and see what rhymes and what doesn’t.

The Fed: Between June of 1999 and June of 2000 the Fed Funds target rate was raised from 4.75% to 6.5%. So far in the recent cycle the rate has gone up from 0.25% in December of 2015 to 2.25% as of the last tightening (Source: Bloomberg). Does a 200 basis point rate increase create enough headwind for Tech? Possibly, if the starting point of valuations are high. Low rates encouraged risk taking, whose best representation has been the “Buy the Dip” (BTD) mentality of the last few years. The last time the BTD mentality changed quickly to “Sell the Rip” was in 2000. It seems to be changing again.

Economic Data: On the macro front, the similarities are

striking. Inflation rates have started to turn up moderately (similar to 2000), which puts the Fed in a bind: not tightening might overheat the economy, and over-tightening might kill growth. This uncertainty might result in a policy mistake, and the markets tend to anticipate this. Both in 2000 and today the unemployment rate fell below 4% right around the peak of the tech rally, bringing out the animal spirits. Nominal GDP in both cases was higher than the ten year yield, which leads to upward pressure on long term interest rates even as growth starts to moderate. This combination makes any rise in risk premium doubly negative for levered stocks that pay no dividends. Also, given the attention to trade and tariffs, note that in 1999 the US current account deficit as a percent of GDP had already started its decline from about -2% to the bottom in 2006 that reached almost -6%. Today the deficit is right around -2% of GDP and has not rolled over (yet). Could persistent dollar strength make this happen (see below)?

The Yield Curve: Not surprisingly, the tightening of monetary policy was accompanied by a sharp flattening of the yield curve. Coming into March 2000, the spread between two-year and ten-year Treasuries was minus 0.50% (“Twos” higher than “Tens”). Today the yield curve has not yet inverted, but it is the flattest it has been since the 2007 financial crisis. When short yields are high and long yields are lower, two important things happen. First, long duration assets fall out of favor, and what’s longer duration than a growth stock that pays no dividend? Second, short term yields look more enticing since they provide both return and protection, so they compete with long duration assets for investment dollars.



**The Dollar:** As mentioned above, both in 2000 and today, the trade weighted dollar rallied for at least five years prior to the deep selloff in equities, rallying by over 30% in the period years. A high dollar creates implicit tightening of economic and financial conditions and also creates a debt payback problem for emerging markets debtors with dollar based obligations.

**Valuation:** While nowhere close to the stratospheric valuations of the dotcom bubble, the trailing price to earnings ratio of some sectors is high. On the basis of the Shiller PE (CAPE or Cyclically Adjusted PE Ratio), the market's PE is in the 90<sup>th</sup> percentile for the overall market, of which the large Tech companies are a substantial slice today. Today one of the highest CAPEs belongs to the consumer discretionary sector, of which almost 20% is composed of Amazon.com; which, depending on how we choose to look at it, is really a Tech giant. Market breadth measures, such as the relative performance of market cap weighted indices versus equal weighted indices also show that the most recent rally has been dominated by a small set of very large mega-caps. The S&P 500 internet and direct marketing retail sub-index of the consumer discretionary index trades at a forward PE of 45 (Source: S&P 500. I/B/E/S, Bloomberg).

Another important variable to watch is the level of corporate bond spreads relative to the expected "yield" on equities. Coming into 2000, average high grade corporate bond yields were higher than the forward earnings yields on the broad equity markets, creating a negative arbitrage in the sense that it did not make sense for corporations to issue debt to buy back their equity. In today's environment, due to the incredible

amount of central bank liquidity and repatriation flows from large corporations, corporate bond yields are still much lower than forward earnings yields, which has indirectly supported buybacks (see below). However, either because of re-calibration of earnings forecasts, or a rise in corporate bond yields, the yield differential can reverse. Due to the higher risk and volatility in growth equities, any time the difference between the earnings yield and spreads reaches less than a 100 basis points, I believe that the conditions start favoring a more defensive equity posture. Then, as now, energy and financials underperformed coming into the 2000 crash, but then in subsequent years did extremely well. Could the recent bear market in crude be setting up again for a bull market in the next few years in energy stocks?

Earnings: Part of the breathtaking rally in risk assets both in 2000 and the last couple of years has been due to constant upgrades of forward earnings, which tends to create a self-perpetuating virtuous cycle of asset price appreciation and further upgrades of earnings forecasts. Corporate profits as a percentage of GDP had already started their decline coming into 2000, similar to what seems to be happening today. Operating profit margins currently have not peaked, and have thus created a bedrock of optimism which could be shaken if earnings miss expectations. But as in previous recessions, downward earning revisions are at best coincident with, and in many cases follow large downturns in the markets. Note that in the current cycle, the large fiscal stimulus from tax cuts resulted in substantial upward revisions earlier this year, so any revisions downwards may loom much larger as the market recalibrates.

Perception of Risks: Both consumer confidence and consumer sentiment statistics (Source: as measured by the Conference Board and Michigan surveys) have reached highs that were last observed prior to the 2000 crash. With falling unemployment, a tight labor market, high equity prices and low inflation, this euphoria is not a surprise. Tech is where dreams were made in 2000 (before they crashed and burnt for many companies). It is not very different today. We don't have to list all the "Unicorns" that have come out of nowhere to be worth billions on day one. Many of them are bleeding cash, similar to 2000. Low levels of volatility today, as in 1999 brings out risk taking and animal spirits. These perceptions can change on the dime as price action scares speculators out of risky assets into safe assets. From my discussions with other market participants, the real froth this time is in the private markets, which are more levered to low rates and more exposed to illiquidity in periods of stress.

Yield Enhancement Strategies: Both in 1999 and in this cycle, volatility selling for income has been an important ingredient of the market fabric. Much has been written about the art of selling options to generate almost "free" money by both academics and "smart" money practitioners. Then, as now, these hidden catastrophic insurance strategies which appear "safe" may create large wipeouts as volatility spikes and sets off a cascade of risk management driven selling in a marketplace of transient and fleeting liquidity.

Flows: Even though much of the current rally in equities has been driven by historically high levels of share buybacks from corporations, buybacks in 2000 were not in aggregate as high as they were prior to the 2007 crisis (Source: S&P), which might

provide some comfort. What is similar in the Tech sector, however, is that stock price appreciation is the method by which companies are returning capital to shareholders. M&A activity has seen three major peaks in the last thirty or so years: in 1998, 2007 and most recently in 2016/2017. In each case the magnitude has reached approximately \$500BN - \$600BN per quarter (Source: Dealogic). Also interestingly the share buybacks from corporations has resulted in a net negative new issuance of corporate securities excluding ETFs, i.e. the total amount of outstanding stock has decreased. The last time the net issuance was negative by this magnitude was in the 2007-2008 period. Note, however, that if we add back the ETFs, which, as we know are a more recent phenomenon, the net issuance looks less negative. In other words, the demand from passive and ETF investors has been the dominant reason behind the growth in the public equity markets (Source: FRB), and most ETFs have not seen a persistent bear market. We should also pay attention to the fact that international flows into US equities have been material in this bull market. The level of low yields in most developed markets outside of the US has until recently made the US a destination for foreign money looking for return. With currency hedging costs rising for foreign investors, it is a fair guess that some of these foreign flows are likely to slow down. Domestically, the level of margin debit balances at broker dealers in the US has more than doubled since 2000 (Source: FINRA.org), pointing to increased leverage in the equity markets as well that can be exposed to rising borrowing costs.

Technical: No discussion of parallels can be complete without at least a brief mention of the technicals. Considering the large

number of systematic and trend following funds in the industry today who follow technicals, some simple, and widely watched momentum indicators are worth a quick look. Trend-following behavior can be roughly anticipated by looking at some simple filter rules, e.g. moving averages of historical prices. Note that in 2000 the Tech sector (using QQQ ETF as proxy) broke below its 50 day moving average first in end of March 2000, and then definitively broke below its widely watched 200 day moving average in the middle of May 2000. From May to September, it bounced around these averages, and then started a sustained selloff in the middle of September that resulted in a deep (over 70%) selloff over the next year. In 2018, the first break of the QQQ below its 50 day average was in early February, and the first definitive break below the 200 day moving average was in early October. Only time will tell if the market action of 2000 is repeated or not. It goes without saying that a 70% selloff would be devastating to the bull market mentality in Tech and risky assets in general. Emerging market assets were not a great place to hide out in 2000, falling over 50% from peak to trough in a span of a year and a half.

Factor returns: This part is admittedly a bit wonkish and for the quants reading this piece. By my calculations, 2000 (and 2008) were years in which the growth factor initially did very well relative to other factors. Typically momentum and trend do well when markets break out of local mean-reversion, and the value factor does less well. While trend has had a dismal 2018 so far, momentum has done ok, though not great. Value has performed dismally, and chances are that it continues to deteriorate marginally before starting a multi-year rebound not unlike early 2001.

So, what can one do if the next few years unfold like the tech bust and boom of 2000?

First, from a safety perspective consider reducing Tech exposure to a scale that can be held through a deep drawdown. This might take one out of a year-end boom, but could protect against significant capital loss in the medium term. The risk-reward today is simply not there. Second, consider moving some assets into short duration treasury bonds which give yield and principal protection. Finally, consider protecting one's portfolio with downside hedges. In a world of asset fire-sales, it takes time for diversification to work, but it cannot be relied on as a tool or a failsafe way to protect capital. Consider rotating from Tech into sectors that might be less exposed to drawdowns, e.g. energy, financials, utilities and large cap value sectors.

Just like at the turn of the millennium, this has been a great decade of wealth creation (so far). Protecting some of that wealth until the next bull market should be an important feature of portfolio construction today.

Having been an equity bull for the last few years, this brings me to the classic words of the singer Prince from two decades ago:

*I was dreamin' when I wrote this, so sue me if I go too fast*

*But life is just a party and parties weren't meant to last*

*Say say two thousand zero zero party over, oops, out of time*

*So tonight I'm gonna party like it's nineteen ninety-nine*

## The Fed 'Put' And The Return Of BTD (Buy The Dip)

January 17, 2019

**T**hree “rules” I learnt almost thirty years ago still hold true today: (1) Don’t fight the Fed, (2) The Fed targets asset prices even though they won’t admit it, (3) The market will test the Fed’s resolve.

I believe the truth of the first two statements has been verified yet again over the last month given the equity market volatility and the Fed’s reaction to it. When Fed Chairman Powell let his hawkishness slip out in early Fall 2018, the market tanked. After seeing an almost 15% selloff in the S&P 500 in December, the “strike” of the Fed’s put was uncovered. The Fed, almost on cue, started to talk back its hawkishness and appeared to adopt a new mantra of “data dependence” instead. Clearly this was exactly what the market wanted and expected, as it rallied almost 10%



off the lows in a matter of weeks (Source: Bloomberg).

As the market action forced the Fed to capitulate, the "Rookie Mistake" was corrected and apparent catastrophe was averted... Eurodollar Futures markets immediately took out almost fifty basis points of tightening expectations planned for the rest of this year.

Where do we go from here?

Note that the third "rule" is still pending. The market will need to test the will and ability of the Fed's tactics and guidance in the days and weeks to come.

If risk markets rally from here and policy makers do not start slipping back into hawkish talk, we could be off to the races, since the market will ride the virtuous cycle of easy financial conditions for a while (of course the usual increase in moral hazard and risks of excessive speculation and its possible aftermath will likely become relevant for risk managers).

For real-time diagnostics on this, consider watching how quickly the December Eurodollar rate futures contract reprices Fed tightening policy prospects. If market stabilization encourages the Fed to start regaining and re-asserting even mild hawkishness, I expect the market to test the December lows again to see if the "strike" is still there. Without much else to go on at the moment, I would venture that the put is indeed still there and Fed speakers will try to reassure markets of this fact.

To show how Fed tone relates to BTD, let me use a little bit of option math and pose a hypothetical. Instead of thinking of the Fed “Put” qualitatively, think of it as a real option, with all the characteristics that a real option has. Assume that the horizon of this put is about a year (to the end of 2019). Also let us take the “strike” to be at 2350 (the recent low in the S&P 500). The price of this option as of this writing is about 3.5% (Source: Bloomberg). So a seller of this option obtains a “yield” of about 3.5% if the option expires worthless. Coincidentally, it is just a bit more than what any maturity Treasury bond offers today.

To handicap the odds, note that the delta of this option is -0.25 (Source: LongTail Alpha), or there is only a one in four chance that the market will end the year below 2350 from here. By the way, implied volatility in the market for this option is about 20%, which is right at the average level of realized volatility in the S&P500 over a very long history. Everything appears normal and very average at the moment, though it does not feel so after the last three months!

Let us switch our perspective now to the investor. If the investor believes the Fed, then he has some assurance that the market will not fall below 2350 (it obviously could, since the put is only a construct, not *actually* there). So as soon as the market sells off, it makes rational sense to rebalance back by buying the equity market.

If we believe the first rule above about not fighting the Fed, then as with Pascal’s famous wager, we are better off acting as if we believe in the Fed’s powers. In other words, with this belief the

holder of a long "put option" should rationally buy the dip. So a "Fed Put" equates to "LTD" under these assumptions. QED.

If you agree with this line of reasoning, then the "Death of LTD has been greatly exaggerated". As long as the Fed is putting a floor on the equity markets, buying the dip is the rational strategy. This also effectively puts a ceiling on both implied volatility and realized volatility. This is because the act of buying the dip truncates possible fat tails. As the ultimate provider of liquidity, we simply have to accept the fact that the Fed has almost unlimited ability to sell volatility by providing "The Put". And taking its direction from the Fed, this dynamic has the potential to jump-start the currently dormant "short-volatility" complex: the ecosystem of varied investment strategies from risk-parity, to trend-following, to loans, to high yield, to uncovered option selling, to maybe even "short-volatility" ETFs. And yes, it may likely be taken again to excess and latecomers will suffer the consequences of the bust.

Now let us go back and see if we can poke some holes in our first two cardinal rules. Can we really believe the Fed? Does the Fed really target asset markets?

We can never really be sure that the future response function of the Fed will be the same as the past. Obviously this is why the third "testing" rule exists. This is also why bringing in new policy makers is usually accompanied with heightened market volatility. A changing and challenging political climate is also reason to believe that the way rules are followed this time could be different than in the past. Or it could be due to the interaction of a plethora of other issues: trade wars, negative

yields in Europe, market microstructure. Unfortunately we do not have access to any grand theoretical models, only anecdotes of past behavior and a relatively flat distribution of potential outcomes.

Frustrating as it may be, as real-world market participants, not knowing the future and not having a great model of the world is not all bad, because we can still manage the risks of our investment portfolios. As a player-referee, the Fed driven selling of volatility creates the liquidity and market pricing for investors to avail themselves of downside protection at attractive prices. Today, the receding volatility because of the Fed's new found dovishness is providing a window of opportunity "just in case" the Fed Put's strike turns out not to be where the consensus thinks it is.

## Peak Buyback and Peak Balance Sheet: Thinking Beyond The Great Asset Price Squeeze

March 14, 2019

**A**s the most recent equity bull market celebrates its tenth birthday (and almost quadrupling since the lows of 2009) this month, I looked back to see if I could identify one or two factors that might have driven the rally. One important conclusion: corporate treasurers got it right when it came to buybacks. They took advantage of cheap valuations, low interest rates, and an accommodative policy environment almost optimally. But as the buyback euphoria now breaks records, will it now become the proximate cause of a broader equity market euphoria, and what the consequences might be if, as in 2007 and 2008, an unforeseen shock hits the system from out of nowhere.

Easy money and financial conditions in the aftermath of the financial crisis created a perfect scenario for corporations to back up the proverbial truck and load it with their own stock. Even as corporations have bought back their own stock and central banks have bought back their own bonds, the net supply in both asset classes for ordinary investors does not seem to have increased: demand for stocks and bonds did not bring in much more excess free supply. When there is more demand than supply, prices go up, as they have done. Bond buying by central banks and stock buying by corporations have ratcheted off each other as there is too much money chasing too few assets.

And yes, there has been much political discussion on the pros and cons of buybacks for society and income (in)-equality. I will not address that debate in this forum except to note that stock repurchases are indeed a legitimate allocation of corporate cash. In any case, one of my points here is that discussion of stock buybacks cannot be had without a discussion of the ability of central banks to buy bonds.

Before the reader hurries to buy stocks of the corporations that have aggressively been buying back their own stock, or bonds of countries where central banks have cornered their own bond markets, note that the data shows little difference between the performance in the average return of companies that bought back their own stock to the overall stock market (similarly for bonds). In other words, even though the market has gone up due to buybacks, buybacks have benefited the whole market, not just the buyback stocks. Similarly bond buying by Central banks has benefited all bonds, as level of yields have

compressed everywhere. Finally, since rising equities generally reduce perceived default risk, and reduces implied volatility, bond spreads have compressed. We should thank the buyback companies and buyback central banks for raising the tide for all boats, even though I doubt they have explicitly coordinated to achieve one of the most profitable decades for owners of financial assets, ever. The biggest beneficiaries in the last decade from the buybacks have been large passive holders of equities (and corporate insiders with stock options), and passive holders of bonds, and what an awesome decade it has been as long as you were not short or in cash! A large component of equity beta is thus “buyback beta” and can be traced to easy financial conditions and various accounting benefits. Similarly a lot of the duration in the bond markets is captive duration due to Central Bank buying. If the two are linked, then a consequence for risk managers is that equities, especially in tech, which has seen the highest growth in authorized buybacks since the crisis, have a large amount of interest rate “duration” risk.

A year ago, in March 2018, I suggested in this column that buying the stock market was betting on buybacks (<https://www.forbes.com/sites/vineerbhansali/2018/03/13/buying-stocks-now-is-betting-on-buybacks/#7af3616c6fa6>):

*It is no secret that a large portion of the rally in equities over the last few years, and especially the rebound from the lows of early February, has been bolstered by the record amounts of capital sitting in the coffers of American corporations which, has naturally found its way into the stock market. This cash had three main sources. First, corporations built a large precautionary hoard of cash in the aftermath of the financial crisis to prevent being buffeted by*

*credit markets, choosing to recycle their income into savings rather than spending. Some of this cash is now being unleashed. Second, the extremely low level of yields and spreads in the corporate bond markets allows the issuance of longer term bonds to willing yield-starved bond buyers and take in even more cash. And finally, the tax reform unlocked foreign cash that came flowing back into the US – a good fraction of which has gone into the stock market. This trifecta of positives (for the stock market) has created a systematic bid whenever markets correct downwards. The big question for investors is whether we can count on the buybacks to continue to provide the support on dips as the economic cycle matures. The question really is whether “Buying the Dip” is the same as “Buying the Buyback”.*

Between 2009 and the first quarter of 2019, corporations bought back almost five trillion dollars of their own stock, with almost one fifth of it in the last year and a half (source: dealer research)! Bond yields rose globally in the middle of last year, but the Fed pivot and the continuation of quantitative easing in Europe and Japan brought yields down by 50 basis points in a matter of weeks (source: Bloomberg). By all estimates, corporates are the marginal price setters for the stock market as a whole, and central banks are the marginal price setters for the bond market. These two biggest sources of asset price appreciation are obviously correlated.

The stock market saw a significant and sharp (almost 20%) pull-back in the fourth quarter of 2018, but to the amazement of many investors, has bounced almost 20% from the lows, even as traditional asset holders including pensions, have reduced their equity exposures (source: Bloomberg). So we can hypothesize that: (1) corporate stock buybacks have been the proximate



cause of the rebound, (2) the Fed's astonishing 180 degree flip from their now ancient "two-tightenings in 2019" to "patience" has turbo-charged the buyback bid to both bonds and stocks (as corporate yield spreads and perceived risk have both receded) (3) these two events have mutually reinforced each other and reduced perception of risk, which is no wonder why the VIX has plummeted from 35 in December to below 14 now (source for all market data quoted: Bloomberg).

One of the key beneficiaries of stock buybacks are employees with exercisable stock options, which also explains why per share earnings have not exceeded total earnings (corporations buy back stock on the open market, retiring stock that is owed against stock options). If buybacks are a primary reason for the ongoing equity market rally, what is an investor supposed to do as we make new highs on buybacks? What are the risks if the mutually reinforcing cycle of central bank bond buying and corporate stock buying hits a big bump? For tech, which dominates most equity indices, this correlated risk from buyback liquidity dropping is possibly THE variable to watch, not unlike the sharp correction of December 2018 following a hawkish statement from the Fed chair.

First, let us understand the incentives of the participants. Since the purchase of stock behind the buybacks is in the open market, there is no disincentive, at least in the short run, for the corporation buying back stock to do so at increasingly higher prices, since in the short run the recipient of the proceeds receives a higher mark to market value. For most stock option plans, stock option based compensation also shifts the tax liability from the corporation (which can write off the value as

an expense), to the employee (who has to recognize the mark to market as a gain and is usually accompanied by a “lockup period” that restricts selling by the owner within a finite period of time. This creates a temporary shortage of stock, and as a consequence the stock price is higher with less risk of selling pressure).

The recent phenomenon of stock buybacks has happened, by coincidence, with the epochal surge in the switch from active equity management to passive equity management. Since most corporate pensions (and many public pensions) hold passive equity exposure, even as the value of the stock market rises, they are forced to buy stocks at higher and higher prices. Everyone is happy (except shorts!) as long as prices keep rising. This collective dynamic is virtuous as long as the market is going up; that is, until the stock market corrects and there are no buyers. We saw this type of dynamic during the dotcom bubble, where many employees found themselves holding loss-making equities received through option exercise and also massive tax liabilities against evaporating paper gains.

Compare and contrast the equity buyback phenomenon with the similarly massive purchase of fixed income assets by the global central banks. Between 2008 and 2019, more than ten trillion dollars of bonds have been bought by global central banks (Fed, ECB, BOJ, PBoC) at market prices (source: Haver). This, similar to the equity buybacks, has squeezed out the marginal investor of bonds who looks at yields to make their decisions whether or not to invest in a bond.

In Europe, as yields have gone and stayed in negative territory,

the ECB, already the largest public bond buyer in the market, has continued to buy these low yielding bonds at negative yields. They did their own 180 degree flip last week as a possible reduction in monetary stimulus was deferred even further out (source: ECB press conference, February 2019). Part of the money that is being pushed out into the system via low and negative yields finds its way into the equity market directly, and also pushes up the demand for stocks. Economic gains from the monetary stimulus have been moderate at best, but the belief in doing “more of what has not yet worked but might work in the future”, is so strong that we don’t see re-tightening of policy any time soon. There are unintended negative outcomes, such as the continued underperformance of banks who depend on the level and steepness of the yield curve for profits. But for now, low government bond yields have driven down corporate bond yields, and as I wrote in 2018, creates perfect conditions (and tax-advantages to boot), for more buybacks and higher prices.

So what, if anything, upsets this apple cart (no pun intended against Apple, despite their massive buybacks) where everyone who is long assets is winning?

A long term structural trend does not reverse in a year. Ultimately the arbitrage between stock returns and borrowing rates depends on three underlying factors: (1) level of yields, (2) earnings growth, (3) regulation.

It is not easy to see a short term spike in yields. As discussed, the ECB certainly has kept buying long term bonds in Euroland even as inflation has picked up somewhat, confirming that their

actions are less driven by market considerations and valuation levels, and more by the monetary channel transfer of wealth within the EU, which is a social benefit for that region. Unless there is a meaningful rise in inflation that drives buyers away from long term bonds, this dynamic will likely continue. All indications show that data dependence of central banks means that they will be willing to cut rates and expand balance sheets to keep markets afloat.

Earnings growth has moderated somewhat, but it remains moderately positive. It is hard to see an environment in which earnings fall off a cliff unless there is an economic recession or an unanticipated geo-political shock. But good earnings growth appears to be already baked into prices, which makes a purely earnings based case for equities neutral at best.

This leaves regulatory risk as possibly one of the largest risks facing buybacks and the upward march of the equity markets. As we enter the election cycle in the US, populist sentiment, indeed what is being termed “socialism”, is something to watch very closely. Editorials by candidates notwithstanding, any visitation of the tax treatment of option-based compensation, accounting of such compensation, or even the timing and disclosure of buybacks could easily provide corporate buyers of stock reason to pause and maybe even change their minds on how to best deploy capital. History teaches us that these regulatory inflection points repeat every generation, but are not visible until they have already caused significant impact on markets.

Unfortunately for investors, while yield spikes and perhaps

even earnings can be hedged with various derivative securities, hedging political risk is not quite so easy to achieve directly. Given the low levels of volatility on the back of the massive stock market rally, and return of “Buy The Dip”, “Fear of Missing Out”, and a resurgent faith in the “Fed Put”, downside risk-management strategies and hedging are attractive again, especially in the tech sector. Bond market volatility has also reached historic lows. If we have indeed reached peak buyback and peak balance sheet in the stock and bond markets, investors looking to be proactive in managing their risks may want to consider availing themselves of these opportunities to build some portfolio protection.

## Watch The Fed Walk-Back The Walk-Back

May 10, 2019

**F**or traders it has become something of a game to forecast how quickly Mr. Market can make the newly “data-dependent” Fed change its tone. In the fourth quarter as the Fed Chair became somewhat hawkish, the market sold off and discovered that the pain point and the strike of the Fed “Put” was right at 20% drawdown from the peak. On cue, the Fed took two tightenings for 2019 off the table and actually started to talk easing. Trial balloons were floated that effectively convinced the market before the February presser that financial conditions were going to now be easy and that the market could party back on, which it did. As soon as the market made new highs, the new game was betting how long it would take the Fed to start talking hawkish again. It took but a matter of weeks before the “re-pivot” happened, and the Fed Chair replaced the

easing bias with “transitory” in their outlook for why inflation was so low. This sounded to the market like the return of a hawkish tone.

Since the last press conference, trade war fears have resurfaced, and the equity markets have begun their fall from record highs. The new game now is betting on how long it will take for the Fed to start talking about economic weakness, trade war spillovers etc. to justify easing policy. We believe this talk is right around the corner, and could be accompanied with a 10% to 20% correction from the peak of the S&P 500, if we get there. Put that somewhere around 2500 to 2600 on the S&P 500.

None of this should be surprising. The Fed’s new mantra – “data dependence” means they will be more tactical in their approach. Since the market is probably THE key variable in determining consumer behavior and economic outcomes in the short run, the Fed is hitching its wagon to the market. If one believes that in this cycle easy monetary policy has resulted in inflation in asset prices rather than in the consumption basket, then it is not hard to see that any deflation in asset prices can result in a rapid deterioration of the economy via a loss of confidence. In other words, the only game in town for the Fed is to keep asset prices high, since it is now well established by the Japanese and European experiences that the transmission mechanism from monetary policy to the real economy is broken. The ECB keeps doing more of what is not working, and negative rates have simply resulted in money flowing into yieldy dollar assets or being hoarded by banks. In Japan easy policy and repeated quantitative easing has done nothing more than to create a bloated balance sheet with a circular flow of money between

government entities, and of course also some leakage into the US asset market. No developed Central Bank is close to hitting its inflation targets, because the market is wise and knows that current, high debt, leverage-enhancing policy is deflationary in the long run.

The equity markets have three salient characteristics that any data dependent authority should pay attention to. First, it is a market of confidence, i.e. if confidence is shattered it is very hard to get it back. If the market loses confidence that the Fed will have its back, watch out below! Second, the equity market is a discounting mechanism for future investment dreams, and these dreams can turn into nightmares in a flash. This requires the Central Banks to commit to “no-pivot from easy policy” for the “foreseeable future”, i.e. walk itself away from data dependence to a more strategic approach. And finally, the market will always take the shortest path to the point of maximal pain for the largest number of participants, and this includes a tactical, data-dependent Fed. In the game of tactical trading, market participants have way more experience than the Fed, and it will be tested.

For now, watch for the market to push the point of pain and for the Fed and other Central Banks to start walking back the neutral policy stance to an accommodating one. Given the long age of this bull market, tight spreads and increased geopolitical risk, this is probably the only way to keep the game on. Focusing on short-term Treasuries and taking advantage of low volatility may be a prudent ways to preserve capital until the market is done testing the Central Banks.



## Trading Sardines: The Case of Currency Hedged Negative Yielding Bonds

June 17, 2019

**Y**ou might have heard the story about the three traders who decided to go into the business of trading sardines. The first trader bought a can of sardines for \$5. He sold the same can of sardines to the second trader for \$10, doubling his money. The second trader again doubled his money by selling the can of sardines to the third trader for \$20. The third trader, knowing very well that he was overpaying for the sardines said to himself that “if the market for sardines crashed, at least I will be able to open the can of sardines and eat it”. The market did crash, and he opened the can to find that the sardines were rotten. He promptly went to the trader who had sold him the bad sardines and said “these sardines are no good!”

to which the second trader responded “of course they are no good for eating - they are trading sardines”!

Almost 10 trillion USD worth of the world’s government bond market is currently like these sardines. When a bond has negative yield, like a majority of the bond market in Germany and Japan today does, the bonds are being bought for trading, not for holding as investments, unless we undertake some financial alchemy to figuratively turn garbage to gold (and vice versa). When, and if yields rise, a ten year German Bund trading today at -0.25% nominal yield will almost certainly lose a good part of its principal, and for those who hold it to maturity, will also likely provide no income for their investment. In other words, unless the current holders of the bonds are able to trade them to someone else before they lose value, they will likely find that these bonds were neither a good long term investment nor a diversifier.



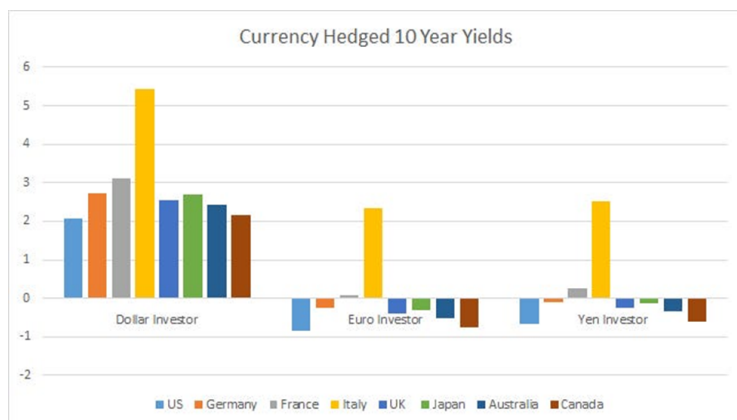
Now on to the financial alchemy that in the short run can potentially turn negative yields into positive yields. Readers know that due to interest rate parity, a currency with a lower interest rate trades at a higher exchange rate in the future. For instance, if we look at the exchange rate for the Euro vs. USD, the one-year implied forward exchange rate (which is very much tradable as a forward or as a swap), is about 3 cents per Euro higher than the spot exchange rate (Source: Bloomberg)

The implied forward exchange rates for any pair of currencies is determined by the spot exchange rate, the differential of the money market rates for that tenor and the cross-currency basis swap, which essentially measures the demand and supply mismatch for the two currencies. For the purpose of this discussion we don't need to understand the details of the basis swap. The only thing that the reader needs to know is that if he buys a German Bund at a negative yield of -0.25%, and then if he hedges the currency risk by selling the Euro currency forward to convert the proceeds over the hedge horizon into dollars, he is selling the forward exchange rate at a higher price than the spot exchange rate, so the difference between the forward exchange rate and the spot exchange rate can be considered additional "yield" coming from the hedge.

This forward currency hedging generates about 3%, so when we add 3% to -0.25%, we now have a negatively yielding ten year German Bund yielding +2.75% for a US investor! Similarly, a 3 month German Bund yielding -0.50% is about 2.5% hedged yield, and a two year German Bund yielding -0.67% is equivalent to a 2.30% hedged yield. On the other hand, for a Euro based investor, the act of hedging the currency risk

reduces the yield of a ten year maturity Treasury note to -0.83%! In other words it converts positive US dollar yields (for a US Dollar investor) to negative yields (for a Euro investor).

The chart below shows the currency hedged yields of the US, Euro and Japanese 10 year maturity government bonds from the perspective of investors in various countries. Even though every country in this list has a much lower un-hedged yield than the US treasury (the lone exception is Italy, which I will come to below), the hedged yield for every country's bonds is higher than the yield of the US 10 year Treasury. This is an example of the carry trade at its finest, and perhaps most dangerous. By taking a long term low yielding asset, and by using a derivative contract, the low yield is turned into a high yield, temporarily, and vice versa.



This state of affairs, where arguably the US 10 year treasury is lower hedged yield than any other country, is not completely an accident. Global Central Banks have been easing policy, while

the US has been tightening policy – and this might soon begin to change.

The lower policy rates in foreign countries result in carry benefit in the “internal” market and also in the “external” market. For example, in Europe, very negative short term yields (-0.65%) result in positive carry even for a 10 year Bund at -0.25% for internal European buyers, such as indexers, or Euroland banks. This is because if one buys a bond at -0.25%, with a fixed yield curve shape the bond rolls down towards the more negative shorter term yield, which results in positive total return. Indeed, the increasing Target 2 deficits of Italy and others are a symptom of the fact that money is being recycled from Italy back into German Bunds, presumably because despite negative yields, the carry and safety of being in Bunds is worth the risks to Italian holders of Euros and Italian bonds. In addition, by reducing short term interest rates and the consequent application of the covered interest rate parity relationship, the Central Banks are unknowingly encouraging the kind of speculation we discussed previously, i.e. external buying of the negative yielding assets and converting them to positive yielding assets through the exchange rate.

This state of affairs has a very classic life cycle and related to other form of carry trades. This currency carry trade is also very deeply related to the volatility in currencies and other asset classes. The fact that currency volatility has remained incredibly low over the last decade has mitigated, so far, forced unwinds of leverage in this carry strategy. Can it last indefinitely?

One scenario in which currency volatility can rise sharply is a hiccup in risk assets that results in a rush into US fixed income assets for protection or due to an aggressive rate cut by the Fed, which would result in the narrowing of the interest rate differential between US rates and foreign rates (assuming that negative European rates don't become more negative at the same speed) and a consequent fall in the forward exchange rate. This scenario would create a much lower yield pick-up when the currency hedges are rolled forward, resulting in possibly less demand for foreign bonds at their already low yields. The other scenario, which seems to be almost non-existent in the collective consciousness, is that European short term rates can rise a fair bit if there is a change in the ECBs philosophy towards quantitative easing and negative rates (note that Draghi is likely leaving in October), which would also possibly result in a collapse in the forward exchange rate and hence the yield pickup from hedging. Not a high probability forecast, but certainly a tail risk.

Let us apply the same analysis above first for a Japanese Yen based investor and then a Euro based investor. For a Yen based investor, the chart above shows that US treasuries are the worst yield of the bunch on a hedged basis (negative). One could argue that financial alchemy this time converts gold into dirt! But this leads to another question: should one prefer to buy US 10 year treasuries at a yield of 2.08% un-hedged, or Italy at 2.52% hedged?

In the first case if we prefer to buy the un-hedged US Treasury, we are taking currency risk, but no credit risk. In the second case, we are taking no currency risk, but taking lots of credit

risk (of Italy). In a late cycle environment, credit risk is often more dangerous than currency risk. For a Euro investor France provides almost no yield, and Italy provides the only other positive yield. The US is at the bottom again in terms of a negative hedged yield for a Euro investor across the whole yield curve. What is not shown in this chart but is a fact is that for a US investor, the longest duration German Bunds (actual yield of a measly 0.32% for 30 years) actually yield 3.33% currency hedged, and for a Euro investor, the 30 year US bond yields only -0.34% currency hedged. In other words, even as monetary policy remains easy, investors are being tempted by the yields in the longest, most duration sensitive part of the yield curve.

The point is this: Whenever there is a type of alchemy that (1) turns high into low and low into high, (2) uses a “yield curve” mismatch, (3) is exposed to shocks to volatility, (4) uses a derivative contract that needs to be rolled (5) depends on Central Bank policy for survival of its benefits, one should get cautious. In the case of the global government bond markets, the currency hedging tail is indeed wagging the bond dog. Just like yield curve inversions within one currency can cause mayhem to bond markets by upsetting the “carry” arbitrage between maturities, the sudden collapse in interest rate differentials, upward shocks to volatility or to forward exchange rates between two different currencies can create the same sort of chaos in currency markets.

It is said that “there are no bad bonds, only bad prices”, and the currency hedging markets are a good example of how “trading sardines” are being created in the global bond markets.

## Who In The World Is Buying All These (Low and Negative Yielding) Bonds?

August 9, 2019

**A** lot has been written recently about negatively yielding bonds in the press. In full disclosure, this author has been writing about negatively yielding bonds for almost five years, though what seemed like a conundrum in the beginning has become all too normal for professionals today. But now that this “anomaly” has caught the attention of the common public, we can be sure that there will be many arguments coming out on both sides of the debate, many of which will rationalize what others consider irrational. Indeed, just in the last day I have seen viewpoints on why negatively yielding bond markets mark the top of the bond bubble similar to the dotcom crash in tech stocks in 2000, and also arguments taking the other side, saying why negative yields may be normal in a world of excess savings, extended lifespans and excess



wealth. Regardless, I will say that the current level of negative yields in trillions of bonds is perhaps the biggest event of my financial career.

Here I will focus on one specific group buying these negatively yielding bonds and what that potentially means for investors. In a previous note in this forum I wrote how through currency hedging negatively yielding bonds can be turned into positively yielding ones, and how positive yielding bonds can be turned into negatively yielding ones. The argument is simple. For example, let's take a German ten-year Bund at -0.5% yield, and hedge the Euro currency back to dollars using a forward currency hedge. Since the interest rate differential as implied in the currency forward is approximately 2.5%, this turns the -0.5% into +2% (<https://www.forbes.com/sites/vineerbhansali/2019/06/17/trading-sardines-the-case-of-currency-hedged-negative-yielding-bonds/#719d6e535f70>).

This led me to ask who would be sophisticated enough to engage in this “arbitrage”, knowing very well that it is based on the use of a currency derivative contract, with the risks of such derivatives, including associated rollover risk. So I dug a bit deeper into this and not surprisingly, to a large degree the old mantra held up again: “I saw the enemy and the enemy is us”!

Let me explain with a couple of examples and some details. *All data and information in this article is sourced from the Bloomberg terminal.*

The first example is the German ten year benchmark Bund. It carries a coupon of zero, matures in August of 2029, and has a

yield of -0.56%. To get its price, the bond math is super simple. The modified duration of a zero-coupon bond is roughly equal to its maturity. So you take ten times the yield and add that to 100 to get a price of 105.82 (the additional amount is due to bond “convexity”). In other words, the upfront cost of insurance that the buyer of this bond is paying to the German government is about 5.8%. The insurance policy assures the buyer that the German government will pay back the principal of 100 in ten years, for an “insurance fee” of 5.8. It is as simple as that - buying the bond at a price above par means the buyer is paying a premium for insurance. Since the price of insurance moves up or down based on demand and supply, it is hard to say if this is a high price or low price, without knowing much more about the likelihood of outcomes for which this insurance is being transacted. For instance, if all of Europe implodes in the next ten years, this might be a “cheap” insurance policy. On the other hand, if central banks and governments are successful in creating inflation, this might be a very high price to pay, since the 100 received at maturity will be worth less “real” money as the value of the currency in which the principal is paid would be worth less.

This particular bond was issued just recently at a price of 102.64 (the issue price was higher than 100 since at issue the yield was already lower than 0 at -0.26%). A total of 7 billion Euro was issued. Of this Euro 7 billion, Euro 1.5 billion was retained for “market intervention”, leaving a float of Euro 5.5BN. So who owns the rest? While I don’t have details on each holder, a search through my Bloomberg shows that a decent amount is owned by indexed bond funds based in the U.S. Of these funds, the ETFs who own them have to post the holdings daily for

anyone to see. And there they are, lurking in your IRA, 401K or broker account. While many of the diversified global bond funds have more than five thousand individual securities, they all have to buy the bonds. One fund, for instance the Vanguard BNDX fund, is currency hedged, which we discussed above. Of course there are others as well, and most people point to demand out of Japan, where yields are negative as well, but about half a percent less negative than in Europe. So from the perspective of Japanese investors, it is better to buy the European bonds on a currency hedged basis than similar U.S. bonds.

Another example that has been in the popular blogosphere and which is being compared to tulips and bitcoin is of the Austrian 100-year government bond (RAGB 2.1 of 9/2117). This bond has a current yield of 0.80%, and a modified duration of 55, which means that even without adding in the bond convexity (which is “huge”) the bond moves over 70% in price return terms for a fall or rise in yield of 1%. So not surprisingly, as yields have fallen this bond is currently at a price of 186 with a face value of 100. At issue, it was 5.8 Billion Euros in total issuance, which is relatively small given the size of global bond markets. In a given week, this bond trades on average about Euro 8-10 million in size. Again, my Bloomberg terminal lists various index funds in the U.S. as the largest holders, and as I dig in deeper, I found that the Vanguard BNDX ETF owns a small amount (about one week’s trading volume of this bond). Since 100-year bonds of AAA countries are a rarity, if this is in your index you have to have it at any cost, not unlike those rare tulips of yester-years. There is almost no way to replicate the convexity of this bond without leverage, which is prohibited by most bond ETFs. So

if your tulip...er...bond collection is to be complete, you will need this bond at any cost! And yes, a yield movement of about 0.02 percent (2 basis points) up wipes out a year of yield (e.g. from 0.80 to 0.82 percent). Not for the weak of heart.

There are three main points that follow from this discussion:

First, if U.S. indexed bond funds are the largest U.S. buyers of global negative yielding bonds, then they could, at some future point in time, be the sellers of these same bonds. This could happen if they decide that the yield on the bond fund is not sufficient compensation for the capital risk they are taking. The indicated yield, for instance, on BNDX is 1.1%, and its duration is around 8.3, so a roughly 0.13% move in the global yield curve wipes out a year's worth of yield. That's a pretty skinny margin of error. Some of the tulip like bonds will trade like, well, tulips, once they are no longer fresh.

Second, since financial alchemy is what converts the low or negative yields into positive yields, any compression in cross-currency rate differentials can result in hastening the fall in the yield in these funds, since currency hedging cannot provide the additional "yield". To this point, an aggressive cut by the Fed that reduces the difference between U.S. and foreign yields could result in a lower hedged yield. If the Fed cuts 50 basis points in the next meeting, suddenly the U.S. bond market could attract the attention of currency hedged investors out of Japan as well. A massive re-allocation out of European negatively yielding bonds then could result in the convergence of the yield spread between European bonds and U.S. bonds. Could this mean the start of another round of European debt problems

that won't have a simple monetary cure this time since yield levels are so low already?

Third, and most important, is the fact that the virtuous cycle of easy monetary policy and no inflation in the aftermath of the financial crisis has sucked money into bond funds at an incredible pace. As trillions of dollars of cash have been created out of thin air by central banks, a large hoard of bond market holdings via low cost, passive indexed bond funds and ETFs has been the preferred way for both retail funds and many institutional investors to obtain exposure. The providers of the index funds do exactly what they say they will do; i.e. buy the bonds according to the weight in the index, regardless of price or future return prospects. The risk is that this virtuous cycle turns into a vicious cycle where they are forced to do what they have to do by the terms of their prospectus. If the bond market hits a rough patch, and investors exit their indexed bond funds, there will likely be indiscriminate selling of the individual bonds as well. This latent illiquidity of indexed bond ETFs has been only visible a few times in the past, and when it happens it is not pretty. The last time we saw a stampede out of an ETF was in February of 2018, when the volatility selling ETF XIV went from hero to essentially zero overnight. Clearly an indexed bond fund would hold up better than a levered VIX futures ETF, but we simply don't know how much better.

So the takeaway is this: Only time will tell whether buying bonds at record low yield levels and record high prices is a good investment. I can argue both sides like all good two-handed economists even though I am not one myself. However, one thing seems clear – a large fraction of bond buyers are probably

buying them on autopilot, paying little attention to yields. As long as the price of the bond is going up, it is hard to argue with doing more of the same since the value of the holder's account is probably going up. We simply have to watch and see what happens once and if the tide turns. In the meantime, investors may want to consider getting out of indexed bond funds that own negatively yielding bonds and instead, consider buying some good old-fashioned treasury bills that currently yield almost twice as much! As they say, being passive is also an active decision, especially when it comes to being a creditor, which is what one is when investing in a bond fund.

## What a Thirty-One Year Negatively Yielding Zero Coupon Bund Means For Investors

August 23, 2019

**T**he issuance on August 21, 2019 of a thirty-one year zero coupon bond at a negative yield was for me like finding the Higgs boson (aka the “God Particle”) was for a particle physicist in 2012. While theory predicted its existence a few decades ago, the actual discovery was nonetheless stunning. Just as the discovery of the Higgs boson validated the standard model of physics, and invalidated other theories of the universe, the issuance and trading of a negatively yielding zero coupon bond has validated, in my view, the theory that investment today is mostly about psychology, scarcity, need for safety, and overwhelmingly politics; and much less about clean, economic arbitrage-free mathematical

relationships, time-value of money, and “no-free lunch” by which most finance professionals are trained.

There are indeed other zero coupon bonds trading at negative yields in Germany, over a half dozen of them. For example, there is the two year maturity BKO of 6/11/21 that trades at a negative yield of -0.86% and a price of 101.50. Then there is the DBR 0 of 4/5/24 maturity that is a little less than five years to maturity and trades at a price of 104.18 today and a yield of -0.88%. The seven year maturity zero trades at -0.82% and a price of 105.91. The ten year maturity zero has a price of 106.66 and yield of -0.65%. And of course finally and most importantly we have the thirty year zero issued a couple days ago that closed at 104 today and a yield of -0.127%. Just by looking at the term structure of yields, one can roughly estimate the term structure of the price of insurance (for return *of* capital instead of return *on* capital) by subtracting the price of the bond above 100 from 100. (*All data in this paper is taken from the Bloomberg terminal August 22 and 23, 2019.*)

The big deal is that bond investors assume that “anomalies” like negative yields are fleeting, and the term structure of yields should reflect this. Depending on who you speak with, roughly the five- to ten-year point is considered long enough for fundamental distortions in yields to be smoothed out. But thirty years is a very long period, and until recently, beyond the reach of policy makers and governments; but quantitative easing has changed all that. Our hero for this note is the thirty one year maturity German government zero coupon Bund issued on 8/21/2019, with a maturity date of 8/15/2050, and no call or put option provisions. It does not pay any interest until



the maturity date, but this “non-interest” compounds annually, with a day-count convention of ACT/ACT. This, folks, is as simple and atomic as a bond ever got. This bond is basically equivalent to the “discount factor”, and there is no need to engage in complex coupon stripping and discounting math. We can just read the discount factor from the price. The reason that I call this the “god-particle” is because this bond is the most fundamental building block of finance theory, because the risk-free discount factor is the fundamental building block of all financial math. Never in the history of bond trading has a thirty year zero coupon bond been issued at negative yields or above par in price. And until recently it was considered, at least in academic finance, to be an impossibility.

The price at issue was 103.61, and the redemption price will be exactly 100 [Source: *Bloomberg, August 21, 2019*]. Since the yield to maturity is so close to zero, there is no present value computation to speak of, and all the bond math follows from one long division using pen and paper. Both in character and purity, this bund is breathtakingly “pure” in its valuation. The consequences of the simplicity, however are astounding. Just as a peek into the true nature of atomic physics shows the breathtaking simplicity and beauty of nature, a peek into the second grade math of a zero coupon bond exposes where we appear to have come to in the world of finance. Since there is only one cash-flow, the price of the bund is par (100) discounted back to today. We can simply say that the buyer of this bond is willing to pay 3.61 percent upfront, or roughly 12 basis points per year for insuring that the nominal, i.e. not inflation adjusted principal is returned. This bond has essentially no credit risk, since Germany is widely noted to be one of the most responsible

fiscal managers in the world. So we can assume that the yield has negligible impurity from any other factor.

Things start to get more interesting when we look at the risks of this security.

The duration of a zero coupon bond by definition is equal to the maturity of the bond. Now remembering our first bond math course, there are two important definitions and interpretations of duration. The Macaulay duration is the weighted average maturity of cash-flows from a bond. Since there is only one cash flow at maturity, the Macaulay duration at issuance of this bond is 31 years. The intuition behind Macaulay duration is that it's the "fulcrum" that balances the weight of the intermediate cash-flows against the principal's return. So in this case the fulcrum is at the maturity, i.e. both intuitively and mathematically, this bond's cash-flows are akin to a very long lever, with the one and only pivot point at maturity. As Archimedes told us many years ago "give me a lever long enough and a fulcrum on which to place it, and I shall move the world", here the owner of the bond is building an incredible amount of potential return for a very small change in yield. This long term zero at a price above par is very much like an Archimedian lever and there aren't too many of them around, unless one uses derivatives or synthetic leverage. In other words, if you are an unlevered investor who can only buy fully paid cash bonds, there is no other choice than to buy this bond in order to obtain the price and yield tradeoff you desire.

The modified duration is the other important concept, and is the sensitivity of the bond to yield changes, i.e. the percentage

price change for a small change in yield. For this bund, the modified duration is about 31 years; i.e. a 1% change in yields can change the price by approximately 31% of its value.

The convexity of this bond, or the rate of change of the duration, is about 10; i.e. for a large fall in yields, the bond's price will increase by a factor of convexity times the square of the yield change, and for a large rise in yields, the bond's price will be cushioned by the convexity, leading to a significant amount of asymmetry. For a zero coupon bond, the convexity is super high anyway, increasing as the square of the maturity. For example, a cousin of this bond is the German bund maturing on August 15, 2029 which has a ten year maturity. The ten year zero has a convexity of "only" a tenth of the thirty year bond.

## When Easing Monetary Policy Really Means Tightening

September 13, 2019

**T**he ECB's September 12th meeting was one of the most anticipated meetings of a Central Bank this year. Not only was this the last meeting for "Super Mario" Draghi to show how far he was willing to go in terms of providing monetary stimulus, it was also an event where the potential for unforeseen consequences and consequent collateral damage was high. I believe five important things happened at this meeting, and I would like to explore what they collectively mean for markets.

First, the ECB cut the deposit rate, as expected, to -0.50% from -0.40%, which one would say was technically an "easing". Second, they brought back an essentially unlimited and open-ended quantitative easing program back into the picture, promising

to buy 20 billion Euros of bonds every month starting in the near future. Third, they introduced a tiering system for deposits; deposits below a six times multiple of required reserves would earn a return of 0%, whereas anything above would earn the negative interest rate; i.e. banks would have to pay money on their reserves exceeding the threshold. Fourth, leading up to, and during the meeting, it is reported there was strong opposition to the aggressive bond-buying plan, and the next ECB President will have to corral the dissidents (Source: Bloomberg news). And finally, in the press conference, Dr. Draghi essentially admitted that the central bank was out of ammunition, and pleaded for fiscal stimulus from countries with positive fiscal balances, like Germany. (*Source for all information in this paragraph is the ECB press conference*).

The impact of a small rate cut was essentially overwhelmed by the other factors, and after a brief and short-lived fall in yields, the German yield curve flattened and yields rose by almost 0.12% in the two year maturity (Source: Bloomberg). Easing? This felt like tightening. In the aftermath, global bond yields have started to rise sharply as the self-fulfilling dynamic of the last few weeks is reversed. Are bond investors in for even more selling even as the ECB let loose its monetary bazooka?

To understand why yields rose even as the deposit rate was cut, we have to look at what market participants are likely to do in response to this new layer of “ad hoc” policy decision making. If you are the CEO of a bank with excess deposits, it would probably make sense to find a bank in the Eurozone that does not have deposits above the 6x threshold, and move the money there at 0% interest rate. In other words, the introduction of

the tier within a very heterogeneous European banking system potentially creates an arbitrage opportunity for banks, and likely sets in motion the conditions for short term yields to rise. When the deposit rate is -0.50%, and the two-year yield is -0.75%, it makes sense for investors to consider selling these bonds and moving into bonds that yield higher than -0.50%, or even depositing it at banks with reserves yielding 0%. Clearly the most important beneficiaries of the “ease” were peripheral countries like Italy, where longer term yields fell significantly in the aftermath of the ECB announcement. A conspiracy theorist would speculate if this is perhaps a parting gift from Draghi?

Second, the low long-term yields are likely to bring in more issuance from countries struggling to get their economies to grow. Since it is increasingly evident that the negative yield monetary experiment has failed in achieving stated economic objectives (inflation), this might be an opportune time for countries to “go direct”; i.e. issue long-term bonds for fiscal support and expansion. Since one of the casualties of the negative yield environment has been the carry trade for German banks, it would not be surprising if fiscal issuance is used as a means to steepen the yield curve and bring back the carry trade to restore some profitability for European banks. This “helicopter” money drop is likely to happen next, though the timing, of course, is unpredictable.

The sharp fall in yields over the last few weeks had brought in forced buyers who had to buy bonds to hedge their liabilities. Pension funds, index funds, mortgage hedgers, trend followers, risk-parity managers were all pulled into the bond rally for perfectly rational risk management reasons. What we are seeing

now is the inverse, as the same reason will argue for shedding of the long duration positions. Call it “convexity” driven selling or what you want, but the fact of the matter is that the thirty year zero coupon bond that I wrote about (which was issued at a negative yield), is now trading back at a more reasonable positive yield, having given up more than five percent in price terms in a few days. And that 100 year Austrian bond? It has fallen about 15 percent in price from the peak made a few days ago (Source: Bloomberg).

As I have discussed in the past, when yields are negative, bizarre things tend to happen since the real financial machinery of markets quits working the way it is supposed to. While economic models might suggest that there is no fundamental difference between positive and negative yields, the fact of the matter is negative yields means bonds are insurance policies that promise a certain loss of return. Since they are also the fundamental discount factor for all asset classes, a sharp rise in yields means a potential sharp fall in all asset prices. What could turn out to be the most surprising – and painful – result of this easing, that was really a tightening in my view, is a sharp fall in global equity prices. At the end of the day, if there is little growth, and yields are rising at the same time, why would one want to invest in stocks? A correlated selloff in bonds and equities will be devastating for pension balance sheets.

Whatever the outcome on global asset markets, one thing seems fairly clear: uncertainty in monetary policy effectiveness just went up significantly. If the market begins to smell the despair of central banks and a tilt towards “make it up as you go policy”, the penalty from the bond vigilantes will be swift and may

very well filter into other asset classes. If credibility and is not restored in short order, we will likely look back and wonder why we believed that central banks were the “only game in town” and how we put so much faith in their ability to generate real economic outcomes. Asset prices, as always, will likely adjust way before the economic data picks it up.



## Fixing Major Plumbing Problems With A Plunger: Why The Repo Problem Is Deeper Than It Appears

September 19, 2019

**A** lot has been written in the news recently about the repo problem. A couple of days ago overnight funding rates spiked to 10%, which has been unheard of since the financial crisis. How can it be that with all the money being printed by global central banks, dealers are not able to finance their holdings of Treasuries overnight at reasonable rates, and a corporate tax payment date can move the Fed funds rate way beyond the Fed's target range? Could this "latent illiquidity" be a bigger problem than it first appears? Has the Fed lost control of the one thing it can control?

EXPECTING THE UNEXPECTED



My view is that the repo problem is one symptom of large

interest rate differentials between the US and the rest of the world, and is causing traditional buyers of US Treasuries, i.e. foreigners, to hesitate because it costs them money to do so on a currency hedged basis. (*Source for all data in this paragraph: Bloomberg and the Wall Street Journal*).

The Fed's solution to the whiff of illiquidity in the markets has been to flood the system with more money each morning. The way the Fed has done this is to buy \$50 billion to \$75 billion worth of Treasuries from dealers every day in exchange for cold hard cash. In the short term, this has driven the lending rates back into their target range. For now.

Listening to Federal Reserve Chairman Jerome Powell's press conference yesterday, it appeared that the Fed has declared victory and they have the situation under control. But I don't need to remind readers that small anomalies in the basic foundation of markets, like the world's most powerful central bank not able to control the one rate they need to control, is potentially the symptom of something more structural and consequential. Putting in short-term cash to ease the repo squeeze is like trying to unclog the plumbing of a large city using a plunger.

I believe that the real problem is that the current global financial system and its plumbing has evolved since the financial crisis in a more or less ad hoc and random basis. The Fed, ECB, BOJ and other central banks created a whole slew of acronyms to solve short term problems. This is like building the infrastructure in a house without a coordinated plan, where each room has different size pipes feeding it water, or multiple gauges of

electrical wiring distributing electricity.

Let us take the plumbing analogy one step further to see why the problems we are seeing are inevitable, and why throwing more money at it is not a permanent solution. We have the Bank of Japan flooding the system with a huge pipe, taking rates more and more negative and buying up more and more of the local debt. Some of the money leaks out into the rest of world looking for yield. We have the European Central Bank also printing money and making larger and larger pipes that drive money from the core countries to the periphery. Some of this money also leaks out looking for return, since it costs money to keep money at the ECB due to the negative yields. All symptoms are that the banking system is now saturated with free money in Europe, and is beginning to refuse this liquidity spraying out of a firehose. Then we have the Fed, which went from a big pipe to a tiny little pipe as QE became quantitative tightening.

In an effort to maintain their credibility and their independence from politics, the bankers have used the afore-mentioned plunger this week to clear the relatively tiny pipe, rather than to ease aggressively, which would be similar to replacing the clogged up tiny pipe with a brand new bigger pipe. So the core problem is this – the last decade has seen a flood of money that has been created that has to find its way to its ultimate destination, but it has to do so via a network of rusty, aging pipes that are clogged up. Throwing more water in to clear the pipes, using a clog remover or a plunger, will just not do the job. The pipes are clearly backing up!

This has potential serious consequences for the clearing of the bond market and hence for other asset markets.

The main effect of short term rates being much higher in the US than the rest of the developed world is that the short term interest rate differentials between the US and the rest of the developed world are very wide. For example, US short term rates are over 2% higher than both Europe and Japan (where they are negative). In the past, US Treasury issuance was swept up by foreign investors due to the nominal yield, safety and liquidity of the US government bond market. Today, for the marginal European or Japanese investor, the negative carry on buying a US Treasury and hedging the currency risk is quite large. As I have written in previous articles, this turns expected bond returns upside down. A US Treasury has negative currency hedged yield for Japanese and European investors. So despite the high nominal yields being provided by US bonds, they are not being bought like before. If fiscal deficits continue to increase, there will be more of these bonds that will need to be cleared. As a matter of fact, risk takers in the US obtain a higher yield by buying Japanese and European bonds and hedging the currency risk, turning low yields into higher yields. So the water is indeed flowing back uphill! (*Source for all data in this paragraph: Bloomberg*).

Compounding the plumbing problem is that dealers are required to bid on Treasury auctions. So they are stuck with these Treasuries no one wants to buy. Since they have to keep lots of cash on reserve at the Fed, they are liquidity poor even though we are looking at massive reserves. Since the US yield curve is inverted in every maturity except the very long end, holding

these Treasuries is a loss-making, negative carry trade for the dealers. This is not unlike the broken plumbing in Europe, where banks are asked to deposit reserves at negative rates, but lend at zero, hence losing money every day they are open for business. Let's hope this repo problem is not a precursor of larger problems for the US financial sector.

In my view, there are a few possible resolutions to the problem. First, the simple solution would be for the Fed to cut rates and re-steepen the yield curve, so banks can make money on the carry trade, and foreign buyers can step back into the US bond market with reduced hedging costs. The Fed is unlikely to do this for political reasons unless the equity market forces them to do so. The second solution is for the Treasury to follow through with issuance of longer dated bonds, or move issuance to longer maturities generally. This is largely untested, and might receive push-back from dealers since they will have to bid on these long duration securities that they will have to finance. The third solution is for the Fed to re-start QE aggressively and buy Treasuries in all the auctions. This is likely, but might run into limits, not to speak of credibility issues since they only recently stopped QE.

Ultimately, what we are experiencing is the collateral damage from the piecemeal solutions that were put in to solve problems around the globe in an uncoordinated manner. The plumbing is a symptom of much deeper structural problems due to uncoordinated and experimental monetary policy globally. The real solution would be to rip out all the pipes in the house and replace them with brand new plumbing. But that is very unlikely since the rooms, so to speak, are occupied with

entrenched views local to each region. As long as rates are negative in much of the world and much higher in the US, we are likely looking at a continuation of these problems for US bonds. Without global short rate convergence, it is unlikely that the problem will be solved easily.

The risk to broader markets is investors realize that the plunger is not enough to clear out the clogging, and that the pipes start to burst, i.e. the problem overflows into corporate credit and high yield markets, and a vicious cycle of de-leveraging starts. While unlikely, if that were to happen, an aggressive cut by the Fed, or QE infinity as in Europe might be the only solution – but too little, too late. At least for now, it seems that the Fed is reluctantly beginning to move closer to the ultimate solution of cutting short term rates below intermediate rates. What was a pivot at the beginning of this year could become a snowball; to this end, it was interesting to see the “mid-cycle adjustment” comment of the last meeting replaced by “insurance cut” at this meeting (*Source: press conference post the FOMC meeting*). As we enter the dangerous fourth quarter for markets, we have to keep our eyes and ears open for stranger noises coming from the pipes submerged below the financial house.

## Why The Fed Might Have To Cut 50 Basis Points At The End Of October

October 10, 2019

**A**s an investor, I try not to get snared by the “shoulda, coulda, woulda” trap that people interpret as excuses for false premises, bad execution, or just being wrong. As a corollary, I try not to give my opinion on what the Fed should or should not do. This is because they are economists, I am not, and also they have more data than I will ever get. But having observed the Fed for almost thirty years, I do think I have a tiny edge in forecasting what they will do because they generally, and eventually (1) do what’s the easiest solution to multiple problems, and (2) they like to appease markets by confirming market expectations.

Now I am no Donald Trump, so my pronouncing that the Fed is going to most likely cut 50 basis points next time will have no



impact whatsoever in what they actually do. But the problems from not cutting the funds rate aggressively are accumulating, and as always, the market and data, and pure logic, I think, will convince them to potentially cut 50 basis points as soon as the next meeting.

First, as I wrote in the last piece in this forum, the Fed is trying to clean up the repo plumbing problem with a plunger. Well, they actually went a step further in the last few days, promising to use “Drano” of sorts by possibly buying short term Treasury Bills, which is better but still not the solution to the structural problem of an inverted short term yield curve and large cross currency differentials. The market thinks this Treasury buying is QE4 starting up, but Chair Jerome Powell denied this is QE. I think it’s a stealth way to get set up to cut rates. The real solution, of course, is to bite the bullet and cut rates - not to make money cheaper necessarily, but to re-steepen the US yield curve and to compress the interest rate differential between US short term rates and the short term rates in the rest of the world.

The market has already priced in an aggressive easing path which the Fed is certainly aware of. Looking at the Eurodollar futures curve, we can observe that 3 month LIBOR drops from 1.85% in October 2019, to a U-shaped low of 1.20% in September of 2021 (Source: Bloomberg). In other words, the LIBOR market is already pricing in 0.65% of cuts over the next two years. Backing out the implied probabilities from the Fed Fund futures contracts, the market thinks there is a 92% probability in October of a 25 basis point cut, and a 55% percent probability of rates being 50 basis points lower by the

December 11, 2019 meeting. I think the October cut could be larger, i.e. 50 basis points, and this will result in the yield curve re-steepening in the short end, a rally in risk assets and a repricing of the easing expectations further out. In other words, an aggressive cut now will require less of a cut in the future, and possibly normalize both the “plumbing” and the pricing of the US yield curve relative to the rest of the world.

Why, you may ask, is it important for the US yield curve to play ball with the rest of the world’s rates markets? The simple answer is that if the US yield curve is both inverted and US rates are higher than the rest of the world, it discourages foreign investors, who have to clean up the increasing Treasury issuance, to buy them, and also discourages US banks from buying these same Treasuries. Foreign investors are less likely to buy them in the current environment because the high interest rate differentials makes currency hedging very costly and wipes out the yield of the still positively yielding US bond market. It is also a discouragement for US investors, since buying longer assets and financing them with a higher short term rate in a negative yielding environment is a negative carry trade - and banks hate negative carry. And the same currency hedging logic makes it more profitable for US investors to even buy foreign, negatively yielding bonds and get yield from the currency hedge. Cutting short rates aggressively now could partially solve both of these problems, and hopefully will have the bonus gift of increasing longer term yields moderately as well, which will make the whole US yield curve more normal, which equities will like.

So coming back full circle, I think the Fed will cut 50 basis points

not only because it should, but because it is the easiest, most logical path to restoring the global debt markets to normalcy. It is such a low hanging fruit I doubt that politics will even come into the picture. As an investor, locking in short term T-Bills at almost 2% yield seems like the easiest investment while we wait for the Fed to do what makes eminent sense from almost every perspective. For those who worry this might result in an asset price bubble, let me assure you that the market, which is much smarter than me or the Fed, collectively has probably already reached this conclusion and has priced it in.

## The Incoming Flood of Japanese Money Into US Treasury Bonds

February 19, 2020

**E**ven with global stocks reaching new record highs almost daily, the money flowing into global bond markets and falling yields has been the more surprising fact this year. As global Central Banks cut rates in the face of the coronavirus, or flood markets with liquidity, much of the cash is finding its way into bonds all around the world, despite low yields and robust economic growth.

Watching decisions of certain large participants provides some clues to what might be going on.

A highly watched participant in the market is Japan's Government Pension Investment Fund (GPIF), the largest public pension fund in the world, with over \$1.5 trillion worth of

assets. This fund invests globally, and late last year announced that it would re-classify currency hedged foreign bonds as domestic bonds (Source: Nikkei, September 30, 2019). By currency hedging, negatively yielding European bonds are turned into positively yielding bonds for the duration of the currency hedge (which is usually much shorter than the maturity of the bonds).

So, for example, and as I wrote about last year, this move could justify the buying of larger quantities of negatively yielding European bonds on the basis of yield, since they could now be classified as domestic Japanese bonds.

According to various reports from dealers (as of Feb. 19, 2020), in January of 2020 foreign pension funds purchased a record high of almost \$19 billion of unhedged foreign bonds. Estimates are that this week the GPIF will be changing its foreign bond asset allocation to 25% of its holdings, which would require the purchase of six times, i.e. almost 12 trillion yen (or over a hundred billion dollars), worth of unhedged bonds over time. This is a very large number indeed and could be consequential for the US dollar versus the Japanese yen.

Let us dig into this a little bit.

The Japanese government is printing money as part of an almost two decade long monetary stimulus program. This started with the ZIRP (zero interest rate policy) in late 1998; then Abenomics (2012); QQE, or “Quantitative and Qualitative Easing” (2013); QQEE or expanded QQE (2014); NIRP or “Negative Interest Rate Policy” (early 2016); and “Yield Curve Targeting” (late

2016), which has expanded the balance sheet of the Bank Of Japan to over five trillion dollars.

As a consequence, in Japan, two to ten year yields are negative, and thirty year bond yields are a measly 0.4% (Source for all data: Bloomberg). On the other hand, due to the negative deposit rates in Europe, a Japanese investor now has a currency hedged yield of about -0.44% on two year German Bunds, and 0.34% on thirty year German Bunds. Investing in Italy on a currency hedged basis results for a Japanese investor results in zero yield for two years, and a little over 2% (2.15%) for thirty years, with all the political and credit risk of Italy that comes with it. The Japanese are on a demographic trend, and elderly citizens need guaranteed yield for retirement.

Given the alternatives, the same Japanese investor gets 1.4% on a US two-year treasury on a currency *un-hedged* basis (and -0.53% on a currency hedged basis). For a US thirty year treasury bond the Japanese investor gets a yield of about 2% on a currency un-hedged basis (and only 0.05% on a currency hedged basis). Even without taking any bond duration risk, the three month T-Bill unhedged yields in the US is almost 1.6% (Source for all data: Bloomberg), which should look darn good in comparison to negative European yields as long as the currency risk can be managed.

The decision facing a large public pension which looks for yield today is to make a balanced choice between taking currency risk by investing in the US on an unhedged basis, or taking no currency risk, but taking bond price or duration risk by investing in European bonds.

It is my opinion that as long as the world is willing to let Japan print money and buy foreign assets, the currency risk ought to be minimal. For now, the currency options market seems to agree, as the implied volatility on the US dollar to Japanese yen exchange rate has crashed to a two decade low (Source: Bloomberg). Thus, with no currency risk, investing in the US bond market will likely be the preferred investment destination for market participants going forward.

To see this simply, let us imagine an extreme scenario. Assume that all US bonds were trading at exactly zero yield. Then a foreign pension with access to a printing press could simply buy a ladder of treasury bonds with maturities from a few months to a few decades. As the shortest bonds mature, they would use more freely available cash to extend the bond ladder.

By doing this, the foreign investor has created a zero coupon ladder where the coupon is simply the proceeds from the maturing bonds. If the yield is positive as it actually happens to be in the US, then the total yield on the ladder is even more valuable than the zero coupon ladder.

There are currency risks. If the yen weakens substantially then this would require more yen in order to maintain the ladder. However, from a public welfare perspective, a weakening yen is positive for the Japanese export sector, and for a nation that relies heavily on trade, this would likely be a positive. On the other hand, if the Yen were to strengthen substantially, a larger ladder of US treasury bonds could be constructed with the same amount of yen, and the buying of dollars for yen would likely slow down, if not stop, any yen appreciation. As long as politics

allows it, the yen's appreciation will be "managed".

In other words, given implicit access to the benefits of the yen printing press, the GPIF's actions to move toward currency unhedged bonds is likely to be very positive for the US treasury bond market. In the short run, the willingness of market participants to allow Japan to run a very high debt to GDP ratio without penalizing the currency leads to this state of affairs as being the path of least resistance. And yes, let's not forget that it allows the US to have a willing buyer of its debt which can fund the increasing US fiscal deficit and allows Japan to keep the yen weak. In the short run, at least, it's win-win for both parties.

Is there a loser, and if so, who is it? My view is that the largest beneficiaries of currency hedged bond buying (so far) have been European bond markets, which have been able to get away with offering low and negative yields due to the currency hedging yield pickup. If the re-allocation toward unhedged US bonds occurs, as I expect it to, the US dollar would likely be the biggest beneficiary, and the Euro and its sibling low yielding currencies and their bond markets would likely be the biggest losers.

If negative yields cannot be turned into positive yields via financial engineering as has recently done via financial alchemy, someone else has to be willing to step up to purchase European bonds. With very little prospect of earning much yield from them, these private buyers might be hard to find. Public buyers like the ECB might have to continue to be the buyers of last resort. The question for every investor is whether Central Banks can permanently keep bond markets propped up. The



fate of the bond markets and by extension most risky assets that have been the beneficiaries of low yields depends on the answer.

## Broken Markets: Notes From The Trenches Of Market Turbulence

March 12, 2020

**T**he current financial crisis is the fifth one I have experienced. It is not very different than the other four. As usual, markets went from being completely complacent to completely panicked in a matter of days.

In January, I wrote a piece in this forum about “market avalanches”, and how sunny weather and inviting slopes in the winter can bury you in minutes if you are not prepared. Unfortunately, this time, just as the last four times, many investors chose to try to race the avalanches unhedged and unprepared even though the signs were evident that things were getting precarious. Some banked on diversification to work out. While others banked on liquidity and gold to help them stay the course. Many of these cute “free options” did not

quite work out very well. I also referenced in that piece Bob Shiller's book that uses the metaphor of pandemics in markets. Little did I know that the analogy, while so useful, would be so tragic for life, markets and economies around the world. The pandemic of fear, once started, is impossible to close off by cancelling flights, quarantining people and restricting travel.



I have been working 20+ hours a day at my desk for the last three weeks, and today, in what seems like the peak of the market panic, I have a few moments to raise my head and summarize what I am seeing, and what my experience indicates we can expect for the days to come. This too will pass, but it won't be immediate. Here are the reasons why.

The most important thing that I am seeing is the total evaporation of liquidity in almost all markets. The Fed and other central banks think that by performing repo operations they

can provide liquidity to panicked market participants and the economy. That “un-fact”, unfortunately, is a pipedream that only a nightmare like this week’s markets can set straight. Their liquidity is not going to the market – it is being hoarded like Costco toilet paper. The Fed just did a repo operation to buy Treasuries (\$500 billion!) which boggles the mind to an already short of Treasuries market. They need to provide bonds to pensions and other hedgers, not indirectly suck it out of the system. Perhaps a massive fiscal issuance of long bonds is not too far behind, we can only hope.

What is notable (as per dealer reports and my own foggy tired eyes) is that the current liquidity in the two deepest financial futures markets, the E-mini S&P contract, and the Treasury futures markets, is only one 20<sup>th</sup> (5%) of average liquidity of the last five years. I have seen liquidity cycles for three decades, and this is the worst ever. The bots are out of the market, and its mano a mano, just like the old days. Ponder that for a moment. If you are a believer in systematic delta hedging, risk-parity, volatility selling strategies, the simple truth is that if you have any size to move you won’t be able to in such illiquid markets. Finance theory meets fear, and so far fear is winning.

I expressed my concern to our clients a couple of days ago that this fear is that we fall into a liquidity black hole that even the Central Banks cannot tame. As I wrote in a paper in the [Financial Analysts Journal with Larry Harris](#) two years ago before the [XIV debacle of February 2018](#) (aka VelocityShares Daily Inverse VIX Short-Term exchange-traded note), the volatility selling ecosystem could create a delta hedging response which is similar to what we just saw. Not surprisingly,

there was a lot of criticism of the paper from self-interested parties, but hopefully regulators who did not think it was a systemic issue then now see that it is a serious problem. If the ecosystem of unlicensed selling of financial market insurance is not curbed or controlled, this little bear market could mushroom into something really serious.

Note that given the proximity of the zero bound, and after a great run, sovereign bonds and duration overlays are not performing any more as hedges. This is not surprising since yields are almost at zero worldwide. After a dizzying rally of 30-50 basis points in the Treasury markets overnight for a few days in a row, it seems that investors are not willing to buy more Treasury bonds, since to get the same price performance from here on, the whole yield curve has to go deeply negative. In fact I am seeing much outright selling of sovereign bonds to generate precautionary liquidity. German Bunds are already in deeply negative territory, and they have quit responding to falling equities. The ECB's actions tonight will be critical in setting the tone for global equity markets. I don't expect much other than what they have already been doing, i.e. cutting rates and buying more bonds than the market wants. Unfortunately doing more of what does not work is becoming a tradition. The possible silver lining is a German fiscal plan that could supply the world with a much needed supply of bonds. The ECB should also stop buying up European bonds, since the liquidity only flows into financial assets, creating air pockets when it leaves.

Also pay attention to the slow leakage in corporate credit spreads that could accelerate. As the equity markets fall and

volatility indicators hit all-time highs, spreads are widening out. This is ominous, because low interest rates have allowed corporations to buy their stock back for the last half decade at a record pace. As spreads widen, the “arbitrage” between total equity yield and corporate borrowing rates collapses, leading to fewer buybacks. And indeed we are not seeing the early morning buyback bid that we saw for the last few years. Some Central Bankers have proposed buying corporate bonds. Big mistake, since it will just spread the disease of zombie capitalism into the hands of the tax-payer.

Long dated implied volatilities in most options markets are beginning to tick up. This may create a feedback loop into risk asset prices. Signs of capitulation are everywhere. Russell 2000 vs. S&P has restarted its major trend of weakening. This is usually a precursor to a sharp meltdown as the small, weak hands have to liquidate their companies. Even after a 10% percent underperformance, this “value-trap” could still claim more victims.

So having seen these a few times what should one do? First, try to do nothing. Just observe, if you can bear to peek at your 401K balance. If like me, your kids are going to be out of school for two weeks maybe spend some quality time with them and even learn how to play Minecraft - the virtual game via which they uncannily prepared for the “social distancing” movement. Second, if you still have the urge to do something, try to maintain liquidity. Third, look for opportunities where the baby is being thrown out with the bath-water, e.g. ETF selling that sells stock baskets and depresses the good and bad securities alike. In short, this is time for thinking actively, not

just throwing money at the market and hope it multiplies, which unfortunately many of us have become too used to.

## The Fed Cut 100 And The Market Freaked Out – Here's Why

March 16, 2020

**S**unday afternoon, the Federal Reserve cut interest rates by 1% to almost zero in a surprise move, and as Chair Powell started to speak, the equity futures markets went limit down quickly, followed by an even more precipitous fall at the open Monday morning. What happened?

Here are a few reasons I believe why the market reacted so negatively.

First, by meeting out of cycle and cancelling the routine Wednesday Federal Open Market Committee meeting, an element of surprise was added which is never good when the markets are on edge. Shock therapy is not a great cure for a patient already reeling from shock. The Fed normally prepares



the market by floating trial balloons through various Governors speaking and even leaking it to the press to gauge the market’s reaction. None of this was done. For a Fed that has hitched itself to “data-dependence”, the surprise cut communicated that the data was worse than what everyone thinks it is. While the intent was good, the market interpreted this as the Central Bank capitulating too late. The time to cut rates aggressively was a few months ago, when the initial symptoms of broken plumbing showed up in the repo market.

Second, by using all their firepower now markets think there are no more monetary bullets left. Yes, there is still the possibility of negative interest rates, and possible purchases of corporate assets, but Chairman Jerome Powell explicitly denied that either one was on the table at the moment during his telephone conference on Sunday afternoon. The Fed has painted itself into a corner with its credibility now at stake if it goes negative. I expect stealth negative rates via massive amounts of liquidity, which he refused to call QE (again). For a market in pain, using hedge language (i.e. not calling QE what it is, is not soothing).

Third, buying a very large number of Treasuries and mortgages misses the point. This is not 2008 – the mortgage market is not really in distress. What is in distress is the ability of corporations to service their highly levered balance sheets if demand craters, driving down revenues, and spreads widen enough to choke off credit. Buying Treasuries will only exacerbate the problem with spreads. So, extending loans to businesses directly, i.e. “helicopter money”, has to be on the table now, which requires coordination with fiscal authorities. The Chair’s remarks that the Fed expects banks to lend money

to corporations just does not square with reality and banks revealed preference for what they do with government money. Banks have shown time and time again that unless there is law to do so, they would (and probably should) hoard the liquidity for the future.

Fourth, by buying Treasuries the Fed is effectively elbowing out all the pensions who need that duration to hedge liabilities. Now these entities will have to compete with the government to lock up debt that is at historic lows. The convexity of long Treasuries creates a vicious cycle where more demand creates even more demand. Buying Treasuries in the name of liquidity provision misses the big picture of risk management-driven demand meeting scarce Treasury availability.

Fifth, by driving interest rates down to zero, suddenly all non-US bonds have a lot less carry for foreigners who hedge their bond purchases. This is a set up for a mass exodus out of negatively yielding European bonds (the only reason to buy them recently was the carry from the currency hedge). Since many passive global bond ETFs own a large proportion of these foreign bonds, a mass liquidation of global bond portfolios will counter most of the purchase of Treasuries from the Fed.

Sixth, regulators still appear to be oblivious to the fact that this crisis is likely different in origin. A lot of the liquidation is likely coming from the short-volatility ecosystem having to hedge all at the same time, and the electronic marketplace of today is not willing to provide the liquidity for this hedging. The Fed is fighting the war of 2008, while to me this event seems closer to the 1987 crisis which was driven by programmatic dynamic

replication of options. Until the short volatility ecosystem, i.e. the “shadow financial reinsurance” industry comes back on the radar of the regulators, the illiquidity is unlikely to disappear any time soon.

Though I am not a fan of politicians, what we saw on Friday was close to a master stroke from the administration’s fiscal package. For example, the idea to buy oil with dollars (that the US can print), to fill the strategic reserve had the potential to kill three birds with one stone: (1) put a floor on energy prices, (2) tighten energy sector spreads, (3) exchange fiat dollars for something real – oil. The market rallied smartly on this. Unfortunately, the surprising action from monetary authorities undid the positives from that strategy.

In this state of affairs where the public is quickly losing faith in the Fed, the lessons are simple – investors are largely on our own and have to self-insure. The Fed Put, at least for the time being, has been exposed to be impotent. So maintain liquidity in cash, sell part or all of the Treasuries to the Fed to generate this liquidity, and get ready to buy stocks at a deep discount when the time is right. Credible fiscal action or an expanded set of monetary tools will likely provide the signals for when that time is here.

## Helicopter Money Is Here!

March 17, 2020

**F**inally, at long last, the market has forced the administration to do what it had to do: Send money to the people via a check in the mail, of course, assuming Congress approves this fiscal bazooka. The Treasury secretary announced this morning that he would propose a \$1,000 check be given to every American: “Americans need cash now, and the President wants to give cash now, in the next two weeks.” (Source: Bloomberg, White House Press Briefing March 17, 2020)

I wrote about this inevitable outcome in this forum multiple times last year, and after seeing the performance of a panicked Fed [FDX](#) which did little to soothe markets, it became obvious at least to me last week that a direct-to-the-consumer check writing campaign was not too far behind. If the condition of

the market does not scare you, just look at the picture I took last night at my neighborhood grocery chain – empty shelves everywhere!



*Mostly empty shelves at local grocery store on March 16, 2020.  
Salad dressing was still available in small quantities.*

In my humble opinion, last week probably marked a turning point from “In the Fed We Trust”, to “In The White House We Must Trust”. Though not confident of White House policies, let me be the first to say that this move is the right one for a wounded economy. This is because it cuts out the middleman – the banks, who have shown no desire to distribute money to the public. In addition, the fact that taxpayers can defer payment of taxes for 90 days is also the right move in the current environment. The government can print dollars at essentially

1% a year, and use the money to declare a tax holiday. There are willing foreign and domestic buyers of these bonds.

So where we are today is that the fiscal authorities will print money (by essentially borrowing more) to give directly to the public, and the monetary authorities will buy up the bonds thus issued and pump in more liquidity into the system which most likely will remain clogged up. The lack of coordination between the monetary and fiscal authorities will likely keep the bond market volatile for the moment, but yields are probably not going anywhere fast. There is the chance that foreigners who have lent the US lots of dollars realize they are subsidizing the tax deferral and run for the exits while they can. But where will they go to park their capital?

What does this mean for markets?

If printing money and giving it to the public causes Americans to go out and spend, helicopter money could turbocharge inflation, for which no one is currently prepared. On the other hand, if Americans decide to hoard the checks for precautionary measures or essential spending that they had not planned for (e.g. lost wages from having to stay at home and watch the kids), then this could just add to the malaise of too much liquidity but not enough consumption. I doubt that most Americans would actually go out and buy stocks with this windfall, never mind try to eat at a restaurant that's closed. So the equity market rally that this stimulus is designed to fire up might not yet happen. But it's a step in the right direction.

In my view, the important thing is not what the immediate

response of the market is, but the fact that doors closed for awhile have suddenly been opened. Helicopter money is here to stay, and this might begin the trend where beaten down real assets such as food, materials, oil, and metals could compete with financial assets such as stocks and bonds. There are plenty of closed end funds in the energy and real asset category that have been sold by panicked investors to raise cash. They might be worth a look.

## Preparing For Inflation: What Can We Do If The Misery Index Turns Up?

March 22, 2020

Unfortunately for investors, the shocks from the coronavirus are following the horror script of a vicious unwind of financial asset prices. Despite the unprecedented stimulus from global Central Banks [CSFL](#) and governments, the situation is being perceived by most investors as getting worse, not better. What happens next? What can we do, if anything?

In my view, and as discussed in [“Helicopter Money Is Here”](#) last week in this forum, the stops are out as far as government action is concerned. As I write this piece on Sunday afternoon, expectations are building that even the fiscally conservative Germans are willing and ready to issue hundreds of billions of new money to facilitate further “direct” aid to ailing com-



panies and consumers (In [“Who In The World Is Buying These Negatively Yielding Bonds?”](#), I wrote that German yields are negative due to excess demand from all sorts of investors, so if they can pull this massive issuance off, they will be borrowing money and getting paid for it). I have been expecting a handoff from monetary to fiscal authorities for a few years now. But I did not expect that the handoff will happen under such unfortunate circumstances, and once the Central Banks are almost completely out of conventional ammunition, then massive fiscal stimulus becomes the only new game in town.

What is most likely to follow next is the use of new expanded monetary and fiscal tools that will be invented daily. We already saw an inkling of this as the Fed [FDX](#) bought a large number of short-term municipal bonds last week. I expect we will soon see some sort of approval to print money to buy corporate bonds; ETFs and equities are probably not too far behind if the financial markets seize up. Buying corporate bonds by the Central Bank is surely going to result in a messy political debate, because lending money to corporates who have been binging on debt to spend the money, amongst other things, on massive buybacks, is going to bring out severe criticism of big company bailouts. But unless corporate spreads are somehow stabilized, a large number of companies are not going to be able to finance their operations and could potentially lay off large numbers of employees, cut salaries and benefits, and curtail spending. The taxpayer is going to be asked, yet again, to bail out large firms in order to benefit society indirectly.

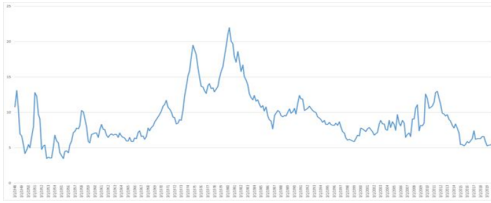
While the Central Banks are cutting rates and buying bonds, pumping money into the system, the fiscal authorities will be

issuing more debt. If everyone issues debt all at the same time, and the only large buyer of this huge tsunami of debt is the Central Bank, yields and spreads may be contained in the short run; however the extra cash in the system will likely result in more money chasing fewer “real” goods. In other words, we could potentially end up in a situation very rapidly where there are lots of dollars, Euros, Yen etc. but not enough goods due to the severe impact on global supply of goods.

Investors have become used to subdued inflation for decades; however just as quickly as the bull market in equities was caught in an avalanche of risk aversion, we are possibly looking at a regime change in inflation expectations as well. If this occurs, financial assets could suffer a double whammy – not only do earnings get adversely impacted due to a demand slowdown, but inflation and a rise in real rates causes investors to have a loss of confidence that the long-term inflation anchor will be maintained. If long term rates rise from incredibly low levels, the discount factor on future earnings rises, likely reducing asset prices further. To put this inflation genie back in the bottle would require tighter financial conditions, i.e. rising interest rates; however the possibility of Central Banks raising rates is very low at this time.

In such an environment, there are few places to hide. The so called “Misery Index” shown below could explode, causing even more increased risk-aversion and asset liquidation. The simplest version of the misery index is the sum of the unemployment rate and the inflation rate. At an unemployment rate of roughly 3% today and an inflation rate of 2%, this index is close to 5.8%, which is close to the lowest in recorded history. The

misery indexes for other large regions are also toying with their all time lows (Euro Area: 8.6, Japan: 2.8, UK: 5.7 etc. Source: Bloomberg, Author). In other words, times have been just great for the last few decades in the whole world, which is why we entered this decade with optimism and record market highs.



*US Misery Index from 1948-2020: US Inflation Rate +  
Unemployment Rate AUTHOR*

Rising misery has social ills, such as rising crime rates, so the social costs of a correlated rise in inflation and unemployment are bad not just for assets, but for quality of life.

So, what is an investor supposed to do in this environment?

There is enormous value from being liquid and having the resources to buffet increased bouts of risk aversion. Thus, first and foremost, investors should have ample liquidity in their portfolios not only to be able take advantage of opportunities as they arise, but also to draw upon the liquidity for daily needs, sustenance, and operations. Second, the opportunities that will arise in a world that is collectively inflating will arise from safe, real assets that are being sold at cheap prices. For instance, assets in the energy sector, in many cases, have lost

more than half their value over the last month. Third, investors should consider looking for assets that the fiscal and monetary authorities are buying that are also safe and provide exposure to the real economy. “TIP TIP S” or Treasury Inflation Protected Securities is one example.

Putting these three ideas together in summary means implicitly preparing for inflation to rise, while maintaining enough liquidity. And yes, one should not invest their hard earned liquidity in negatively yielding bonds, which are even more likely than ever to lose money in this market environment. I believe there is still time for investors to exit international bond funds that own these negatively yielding assets.

No one expected financial markets and the economy to turn as quickly as they did in the last few weeks. No one expects inflation to rise quickly either. While I certainly hope that inflation does not come back with a vengeance, if it does defy expectations, many investors could be blindsided, so the time to prepare is now.

## Why The Fed Will Go Negative

March 27, 2020

**U**ntil now, the US has avoided the negative rate phenomenon that has become embedded in the monetary and fiscal environment of Europe and Japan. To recycle and parody parts of a phrase that former Fed Chairman Ben Bernanke used almost twenty years ago reflecting on deflation in Japan – “It (Negative Rates) will likely happen here too”.

The US Fed has resisted cutting rates below zero so far. In my opinion, it is only a matter of time before either current Fed Chairman Jerome Powell or the one to follow him announces negative interest rates in the US, not because they want to, but because they are forced to. And yes, it will be another pivot or pirouette, and “data-dependence” and a new understanding of the way the economy and the markets work will be used as the

justification for the change in philosophy.

The massive amount of money that is being globally thrown at the economy and the markets will result in this negative rate outcome as the path of least resistance and an unintended consequence of too much liquidity in all the right — and all the wrong — places.

First, the Treasury Bill market is already trading at negative yields. As of March 26, 2020, the one month T-Bills were trading at a (negative) yield of approximately minus fifteen basis points (Source: Bloomberg). This is the market “clearing” rate where demand meets supply. As of this writing, an investor could have bought bills in the Treasury auction at 0% yield, and sell them to a buyer in the open market at a negative yield, pocketing a tidy, almost risk-free profit. Since yields move inversely to prices, this means the investor is buying from the Treasury in the auction at a lower price and selling it in the open market at a higher price, transferring wealth instantaneously from the taxpayer to take advantage of this arbitrage.

The Treasury Secretary works for the President, and the President has repeatedly called for negative interest rates, so I do not see any reason why he would not insist that US Treasury auctions allow for investors to pay a fair market, higher price to the taxpayer who is ultimately lending the money to the investors. But if T-Bills are auctioned at a negative rate in the future, the Central Bank will need to take a cue from the market and go negative to keep the short end of the yield curve from becoming more distorted than it would otherwise be. This is basically what happened in Europe and Japan, and I suspect it

will happen in the US.

Second, Fed Chair Powell, in his most recent television appearance (NBC news Today show March 26, 2020) left the door slightly open for other measures when and as needed. Given that the Fed has already cut rates by 150 basis points in the last month, to almost zero, by definition there is not much ammunition left in the rate bazooka unless they cut below zero. This ammunition also consists of QE infinity, which is a stealth way of generating so much liquidity that investors are willing to lend at negative rates. The outcome is the same: either explicitly cut rates below zero, or make the market rates go below zero first. Our analysis shows that in the last month that due to the stock market crash financial conditions have tightened as if rates were raised 1.5% to 3%. To undo this sharp tightening that happened due to the fall in equities and widening credit spreads, the “shadow” interest rate has to fall way below zero. In other words, the observed, true interest rate is too high by the same magnitude.

## Picking Winners and Losers: Government Action Will Determine Where Best To Invest

April 7, 2020

**I**t is impossible to look at the prognosis for COVID-19 and not conclude that the global economic sudden stop is a negative for the equity markets. But as always, just looking at the surface and making strong conclusions from the news might not be the best way to make investment decisions. In the current market environment of extremes, conventional wisdom may not be the most effective way to make profitable investment decisions.

Three different types of viewpoints are currently being expressed about the prospects of the economy and the markets. The first, optimistic, view is that this is just a shock correction,



and as soon as the peak of the pandemic passes, the markets will rebound smartly. The second, more neutral, view is that a structural change has occurred whose consequences are impossible to forecast, so markets will be in a new environment of uncertainty and volatility. The third, pessimistic view is that we have not seen the extent of the damage yet, and before things turn around, the markets will make new lows, e.g. the S&P 500 will yet fall below 1500 (another 30%-40% below current levels).

In “The Affluent Society”, John Kenneth Galbraith introduced the concept of “the conventional wisdom”:

*People approve of what they understand. We adhere, as though to a raft, to those ideas which represent our understanding. This is a prime manifestation of vested interest. Vested interest is more preciously guarded than any other treasure. In the field of social ideas familiarity is the touchstone of social acceptability. Acceptable ideas have great stability – they are highly predictable. I shall refer to these ideas as the “conventional wisdom”.*

As investors, our task is to ascertain which one of the three opinions is likely to win out in the formation of monetary and fiscal policy, and thus influence the actions or inactions of government authorities. In the immediate future, the participation of the government as player/referee will determine the course of financial markets, because today only global government balance sheets are large enough to counter the fear embedded in markets.

For the optimistic group, who are attached to the idea that this is just a short term correction, the best suggested course of

action for the government is to stay out of private markets. This group will likely be most supportive of temporary, reversible government action that only addresses economic issues but not private company operations.

## Zombie Airlines Are Flying Into The Arms Of The Government

April 12, 2020

**I**n my last post in this forum a week [ago](#) I suggested that airlines would be one industry sector that would willingly enter into a shotgun marriage with the government by giving up equity and an ownership stake in exchange for a bailout:

*Without policies that would enable them to survive, the consequences of a loss of passengers means no revenue, and a stock price that rapidly plummets toward zero. Since there is little revenue at the moment, the practice of spending free cash flow to buy back stock, as these companies did over the last few years, is probably over for now. Facing the grim reaper, they would now prefer that the government not only take an equity interest, but also mandate pricing and surcharges that would enable them to stay in business. In*

*other words, these national air carriers become utilities run by the government.*

Indeed, as of the second week of April, 230 applications for aid from passenger carriers has been received by the Treasury (Source: Bloomberg April 11, 2020).

Combined with the Fed's recent decision to buy the bonds of issuers who have fallen from investment grade to junk under the new "[Main Street New Loan Facility](#)", I expect increasing corporate actions from companies that were investment grade prior to March 22 to take action to get downgraded. At the moment, eligible borrowers from the new facility cannot have 2019 revenues higher than \$2.5 billion or more than 10,000 employees (Source). The maximum loan size, for all practical purposes, is \$25 million, which is a drop in the bucket for the major airlines. Since most big airlines will not be allowed to fail, I expect some of these limits to be relaxed if the economic crisis veers further out of control. Further, the limits on buybacks and compensation, and an interest rate of the overnight fed funds rate + 250 to 400 bps makes this loan very expensive, and makes it unlikely that large airlines will accept these terms. Thus I believe that we are only seeing the first inning of what will be a complete restructuring and perhaps consolidation of the airline industry.

Take for example, Delta Air Lines. Delta (2019 revenues \$47 billion, 90,000 employees) is the first airline which has encouraged 35,000 employees to take voluntary leave. Fitch immediately downgraded Delta to BB+ from BBB-. At the time of this writing, Alaska, American, Delta, JetBlue and United

are all junk. Southwest is rated BBB+ by Fitch, but very close to being downgraded to junk. As of this writing, the carriers, many of whom were buying back their stocks with free cash flow just a few months ago, are negotiating with the Treasury to get a bailout without having to pay the taxpayer [back](#). .

A few days ago my pilot friends and I flew over an airport in Southern California. Mothballed – or “pickled” in airline lingo — aircraft as far as the eye could see.



*Mothballed Or “Pickled” Aircraft Parked At Southern California Airport In March 2020 AUTHOR*

Financial economists, including those at the Fed, went to similar schools and learned the “Merton model” used for valuing the securities issued by a firm. This model relates different

components of the capital structure, i.e. stocks and bonds of a firm, to each other, via an equation similar to the Black-Scholes equation used for option pricing. If we think of a company as issuing stocks and bonds to raise capital, the Merton model says that the bonds are a “put option” on the assets of the firm, and stocks are a “call option” on the assets of the firm. Thus holders of the company’s stocks can only lose the capital they put into the company, but can see unlimited benefits as the stock price rises. The holders of the bonds earn a “premium” in terms of the yield spread, but can in theory lose the full amount of what they have lent the company in exchange for senior rights to the assets of the company.

Thus, just as call options and put options are related to each other by the mathematical relationship called “put-call parity”, stocks and bonds are also related by an identical theoretical relationship in markets with no transactions costs. Their market price is linked by the common “asset volatility” which determines how far away from bankruptcy the firm is at any given time.

The simplest way to push the perception that the firm has moved further away from bankruptcy is then to (1) buy the stock to window-dress the company, which the Fed cannot do, yet, (2) suppress the asset volatility, which is also hard to do unless the Fed buys underlying assets and holds to them, or (3) buy the bonds and thus implicitly accomplish (1) and (2) by compressing the spread, which the Fed is beginning to do. The fly in the ointment, so to speak, is that like all other options, this relationship between stocks and bonds is a theoretical “arbitrage relationship”, which only holds true if

there is essentially unlimited liquidity between the stocks and bonds. Like all arbitrage relationships, in misbehaving and illiquid markets it can fail to hold for extended periods of time.

As we just witnessed in the stock market debacle of mid-March, there simply isn't ample liquidity in the markets. The absence of liquidity means that the ideal, academic relationship between stocks and bonds that people have become used to may eventually also break down, and even as corporate spreads of the bonds are driven tighter by Fed action, their stocks will tank and maybe even go to zero. The net result? The Fed, aka the taxpayer, will own the underlying assets of the firms!

Let us pause for a moment and think about this in the context of airlines. If (1) the government provides support for recently downgraded companies, (2) you can control the factors that result in a downgrade, then (3) strategically it makes sense to get downgraded. People, and yes companies, respond to incentives. A perverse consequence of the expanded and unlimited safety net that the Fed and Treasury are providing is that it becomes optimal for airlines, and other companies, to "zombify". This "strategic default" is not novel; in the global financial crisis many homeowners and companies with underwater loans simply walked away from the assets in exchange for a reprieve from their debt obligations. And zombification has become the norm in both Japan and Europe, where BOJ and ECB policies of cheap money have managed to keep the companies afloat for now.

In a deeply inter-connected system one cannot, of course, let companies fail entirely. We are living in a period where the government is likely going to become the main owner of much

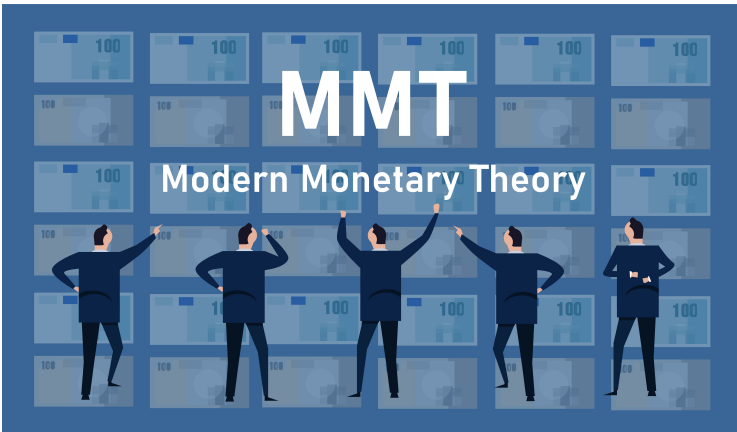
of corporate America in a creeping form of nationalization. Traditionally this is not great for profits, and not so great for existing owners of stock who are going to be elbowed out for more preferential terms for the government. To avoid this outcome, and similar to the 2008 Global Financial Crisis ("GFC"), companies will be forced to merge and consolidate, not unlike the forced sale of Bear Stearns to JP Morgan at that time.

As an investor, I believe that the implications are a little more actionable. If we know that the government is going to print money to buy debt to keep companies from defaulting, for now we should consider doing the same, since the Fed's printing presses are, in the short term, essentially capable of printing unlimited amounts of cash. For companies that won't be allowed to fail, it is better to hold their senior debt, and wait to buy stocks until the current holders of stock have capitulated. Just as banks were bailed out in the GFC with taxpayer money, there is little hope for airlines to survive without a bailout. The terms and conditions, as they are unveiled, will determine when the timing is right to join the government in buying their equity.



## When MMT Meets The S&P

June 17, 2020



**M**odern Monetary Theory (MMT), is becoming all the rage now among progressive economic thinkers. The simplest way to explain MMT is

that sovereigns like the US, Japan and UK, who issue in their own currency can never default, hence deficits mean absolutely nothing in the short run, and maybe even in the long run. On the other hand, for the 19 members of the European Union who have willingly ceded their monetary sovereignty to the ECB, deficits do matter since they cannot print their way out of their troubles, unless the ECB does it for them.

Using the language of Stephanie Kelton's new book "the Deficit Myth", Uncle Sam is a money issuer, while the nations of the European Union are money users, and therein lies the difference. In countries like the US, Japan and UK, more deficits mean more money in bank reserves, which means lower, not higher interest rates. Interest rates in these countries are a policy variable, set by their Central Banks at whatever levels they want to. In countries like Greece, Italy and the like, more deficits, if they were allowed, would mean interest rates and spreads as set by the market, and can only be set by the Central Bank if it was blissfully ignorant of the distortions it creates across the member economies.

I do not agree with all the tenets of MMT, just like I do not agree with all the tenets of "New-Keynesian" economics that is the doctrine of the day at the Fed, or even the Friedmannian "monetarist" school, which was the doctrine of the Fed almost half a century ago. But it does seem that with no perfect theory that has worked in preventing bubbles and busts, the money makers in Washington today are being pulled in the direction of what MMT says. So as open minded investors, it behooves us to imagine – if the Fed actually embraced MMT, reluctantly maybe, what does it possibly mean for markets? If anything, I

would likely argue, it is massive fiscal stimulus in the guise of a monetary policy, which is hard to argue with. I cannot help but wonder whether this stimulus has something to do with, for example, Hertz (HTZ) filing to issue new stock this week even as it declares bankruptcy; or a company such as Nikola (NKLA) reaching a market cap of almost twenty five billion dollars with a handful of employees and no revenue (Source: Bloomberg).

But before we go into the broader implications for the market, it is important to note that the basis of MMT is the following foundational assumption: the Federal government does not need the people's money via taxes or via borrowing; it first prints money and gives it to the people so that it can use the money to keep account. Kelton calls this the "STAB" model, i.e. spending comes before taxes and borrowing. This is different from what classical economics teaches us, where taxes and borrowing has to come before spending. Since it has monopoly issuance power for the currency, the Fed uses this monopoly to put the money in circulation, and takes it out by taxation, or converts it to a future liability by borrowing. Taxation is then a way to balance who gets to keep it and when, and borrowing is a way to give people a way to move today's money into the future. So the government, under MMT, does two things: it makes a "horizontal" transformation by re-distributing money, and a "vertical" transformation across time from savers to borrowers, or vice versa.

This is all a massively oversimplified description, but I believe that it summarizes in practical terms how MMT works. Which brings us to the main risk of MMT as described by its proponents. Most MMT economists would say that the main risk to

MMT is that the irresponsible sovereign prints more money than is needed to keep the game going, leading to excessive money in the “wrong” places. This excess spending would result in inflation, and eventually bring down the standard of living if growth in the economy is not keeping up pace. Most MMT economists, however, also don’t count financial asset price inflation as part of inflation; it matters little if your inflation metric is CPI, PPI, the GDP deflator or what not. If asset prices are not in the inflation metric, then “voila”, one can print an infinite amount of money as a sovereign, and since there is no inflation, presumably there is no harm done.

But experience tells us that when too much money goes into financial asset markets, they become more vulnerable to crashes. When the market crash eventually happens, the Fed steps in again, to...print more money, i.e. to pump asset prices back up. And the cycle continues, because the Fed can always print more money. And yes, sharp rises in asset prices also eventually result in inequality between the rich and the poor since the rich are typically the ones who predominantly own financial assets, but this is not a forum to discuss social matters.

We do know that as long as the price of goods does not rise by too much, those who spend their money to buy these goods don’t complain much, and as long as financial asset prices don’t fall much, those with assets don’t complain much. But if financial asset prices fall sharply and goods prices rise a lot, everyone complains, forcing the hand of the government and the Fed. Which is why we have the Fed now underwriting direct purchases of corporate bonds, and soon, as in Japan, equities. As my former colleague Mohamed El-Erian has beautifully written

in his book, they are “The Only Game in Town”, and they know it. The sooner investors realize that the Fed has unlimited power to create bank reserves and extend credit against the reserves to itself buy assets and force others to buy assets, the sooner they will realize that fighting the Fed when it comes to asset prices is a foolish game.

So that’s where we are today. Yet again, the Fed has saved the world, by buying assets when people panicked and sold them. The Fed has taken the elements of MMT and opened up the money spigot and credit window wide open, albeit the main beneficiaries so far have been owners of capital. Asset prices are again close to all-time records. There are no signs of inflation (again, because asset prices are not in the CPI), so for now all appears to look good. The Fed does not control the economy, but it does control financial markets. Classical economic thinking that does not have financial markets as a key element of their theory are just as outdated as Newtonian mechanics in the quantum world.

For US based investors, the directives seem to be clear for now: (1) Buy every dip in stocks, (2) Don’t worry about inflation, (3) Spend like your life depended on it. On the other hand, in countries where the sovereigns do not have the ability to print in their own currency, or those pegged to a foreign currency, or those who borrow a lot in foreign currency, the lessons are exactly opposite: (1) Do not buy the dip unless you are sure there are fundamental economic reasons to do so, (2) Do worry a lot about inflation, (3) Save like your life depended on it. And yes, I mean this for the Greeks, the Italians and all the others who are at the mercy of an ECB that has consistently failed in

delivering on its promises.

Putting these themes together, it appears that investors and market participants alike might be well-served, at least for the time being, to consider over-weighting US stocks over Europe and Emerging Markets, over-weighting US Treasuries over bonds of countries who cannot issue in their own currency, and generally betting on sectors, like retailers, that will likely benefit from a return to spending in the US once the COVID-19 shock wears off.

At some point, it is likely the Fed will backtrack from its blanket support of markets, but until then, it is time to crawl out from under the rock and carefully participate in the next melt-up in US markets. Europe, unfortunately, is a completely different story.

## Kudos To The Fed For Saving The World, For Now

June 5, 2020

**W**hen Federal Reserve Chair Jerome Powell and the Fed went all in, this author and many others complained that the Fed was possibly behind the curve, and perhaps too late, and was trying to make up for it by being overly aggressive by slashing rates to zero and promising unlimited QE and asset purchases. Other critics have been harping about the wedge between economic outcomes and market outcomes, as equity markets reach record highs, even though the economy is a mess.

The big question is whether the market will catch down to the economy or the economy will catch up to the markets. Today's amazingly positive payroll report might give a reason for all to cheer, and most of the credit goes to the Fed for averting

disaster. For now.

As I wrote a few months ago, my wife has rightly suggested that in the US the market is the economy and the economy is the market. Since the Fed cannot impact the economy directly, but can impact the markets by buying assets, it did so. Miraculously the economy seems to be catching up to the markets. Today's payroll data, where unemployment fell sharply instead of rising as was widely anticipated by economists, shows that the Fed's bet of engineering economic outcomes through market support is possibly paying off. The biggest risk now for the economy is a widespread escalation of the protests that we have witnessed over the last few weeks, and while a high stock market can amplify perceptions of inequality, getting people back to work can only help to soothe frayed nerves. And yes, boosting the markets comes with moral hazard whose outcomes are unknown.

After three months of driving blissfully empty roads, I was in my first traffic jam yesterday. Airlines bookings are up, and many airline stocks have doubled in the last week (e.g. American Airlines stock closed at 11.11 on Monday June 1, 2020 and has doubled to 22.22 as I write this on Friday June 5, 2020. Source: Bloomberg). Restaurants are opening, Southern California beachgoers are dipping their toes in the water without risk of citation, barbers are clipping shaggy hair, and offices are gradually allowing people to come back to work. This sure looks like a V shaped recovery to me at the moment. And I hope it keeps going.

So where does this leave us when it comes to investing?



In the early part of this year, three things happened that were negative for the stock market. First, retail investors pulled out of the market and moved into the safe harbors of cash and short term bonds. Second, companies cancelled buybacks, and it is common knowledge now that buybacks have supported the stock market over the last decade. Third, systematic strategies such as trend followers, risk-parity and others who buy and sell the market based on algorithms went short the stock market or reduced their stock exposure close to zero.

There are signs that all of these sidelined buyers are coming back. Aided by trillions of Fed dollars sloshing through the system, generationally low interest rates, and an implicit commitment to easy financial conditions, a food fight is in the making for beaten-down assets. What went down hard — e.g. airlines, energy, leisure — are beginning to scream back. On the other hand, should anyone really want to hold negatively yielding bonds — à la Europe — as trillions of Dollars, Euros and Yen are printed to raise inflation? I expect investors to bail out en masse from bond markets where money is being confiscated surreptitiously.

As the US equity markets make new highs, I suspect that criticism of the Fed will rise, just like it did after the global financial crisis. The risk to markets is that the Fed pivots again, and starts to back-track on its promise of support just as the economy is healing. The Fed remains the only game in town, and the sooner investors understand that the one thing that saved their retirement accounts and their savings from being decimated this time (like last time during the global financial crisis) is the Fed, they should allow that making everyone well-

off means some will benefit more than others. Those who bought credit in front of the Fed's purchase of credit benefited handsomely and possibly unfairly, but this is not the first or last time that this dynamic has played out.

It is too soon to tell if this crisis is done. But it is easy to see that as the markets resume their march toward all-time highs, the next cycle of boom and bust is possibly in the making. Intelligent investors should, and will, start to prepare for it. For now, it is time for risk-on, but with one eye toward what happens when the Fed takes its metaphorical punch bowl away just when the party gets going.

## How The Fed Is Using Financial Engineering Alchemy And Leverage To Boost Stock Prices Without Buying Any

July 2, 2020

**A**mongst the many responses to my last post [“When MMT Meets The S&P”](#), the best and most important one I received was this question: *“What is the mechanism by which the Fed is indirectly supporting equity markets? Since they haven’t yet announced the direct purchase of equities, how is their trillion dollar underwriting affecting this rally?”* (From fellow ultrarunner and Guinness World Records holder Chris Solarz of Cliffwater who has done seven full triathlons in seven days, amongst other amazing world records.)

The simple answer: *Financial Engineering*. There are three ways

I will discuss here how the Fed is supporting equity markets without announcing or undertaking the direct purchase of any stocks.



Direct support of corporate bonds: With the Fed's balance sheet expanded to almost \$8 trillion, and new facilities in place to buy primary and secondary market corporate bond purchases, the Fed has engineered a truly levered purchase of equities. This is because of the relationship between the debt and equity of a company, which financial analysts know as the "Merton Model" of a firm's capital structure.

When the Fed buys corporate bonds of a company, it compresses bond spreads and volatility, which simply means that the implicit value of the equity of each company goes up. This is because tighter spreads mean lower default probabilities, which is equivalent to a higher expected value of the firm's equity

(lower default probability means that there is lower likelihood of equity holders getting wiped out). Note that as of the end of June the Fed was the second largest owner of the Vanguard Short-Term Corporate Bond ETF (VCSH), holding 4.53% of the outstanding shares, and the third largest owner of Blackrock's iShares iBoxx \$ Investment Grade Corporate Bond ETF (LQD) holding 3% of the outstanding shares (Source: Bloomberg). By buying these billions of dollars of ETFs, the Fed essentially used the relationship of corporate bonds and corporate equities to boost the equity prices of the companies without even buying a single share. Details of exact amounts of ETFs purchased are posted on the Federal Reserve's website ([here](#)).

In the picture below (taken from Bloomberg data on July 1, 2020) we see that the total number of outstanding shares in these ETFs has jumped along with the increase in the Fed's balance sheet and with its outright purchases of the ETFs. Especially for LQD, shares outstanding have jumped from 250 million shares to over 400 million shares over this period. (Source: Bloomberg). If I were to overlay the increase in the Fed's balance sheet on this increase in the share count, the correlation would be extremely high.

## EXPECTING THE UNEXPECTED



*Shares Outstanding in Corporate Bond ETFs LQD and VCSH.*

*Source: Bloomberg.*

So why does the Fed purchase of ETF shares not show up in the ETFs trading at a premium to their NAV (Net Asset Value)? If the Fed is buying corporate ETFs, won't they richen up the ETF relative to its underlying holdings? In fact, the Fed's Secondary Market Corporate Credit Facility writeup on its website ([here](#)) says that they would not buy ETFs if the prices materially exceed the net asset value of the underlying portfolio:

*"Pricing: The Facility will purchase eligible individual corporate bonds and eligible broad market index bonds at fair market value in the secondary market. The Facility will avoid purchasing shares of eligible ETFs when they trade at prices that materially exceed the estimated net asset value of the underlying portfolio" (author's underlines).*

In other words, what the Fed is saying is that it will only buy ETFs as long as they are fairly priced; i.e. the weighted average

value of the underlying bonds is close to the value of the ETFs. Obviously one reason for this disclaimer is to put to rest critics who say that the Fed is distorting the ETF market. But can we really say that ETF prices are not distorted by simply looking at the premium of the ETF to its NAV?

Unfortunately, the Fed — and indirectly the tax-payer — might have allowed itself to be gamed by savvy market professionals, yet again.

To see this one has to understand how ETFs are created. In short, when the Fed purchases ETF shares, so called “authorized participants” can create new shares if they don’t have the ETF shares already. In other words, when, the Fed indicates to the creator of the ETFs (e.g. Blackrock or Vanguard in these examples), that it intends to buy ETF shares, the Fed can either buy the underlying bonds and deliver them to the ETF creator in exchange for the newly created shares, or let the creator of the ETF go and buy the bonds in the open market to create the ETF basket. So there is plenty of potential for what is called “front-running”. As soon as the Fed published their criteria of eligible ETFs, market makers and arbitrageurs got the cue and probably bought these bonds ready to deliver to the Fed when it came for the ETFs. One could label this a classic case of wealth transfer from the taxpayer to the market makers and arbitrageurs in the name of “supporting the market, uh... the economy”. The reason the ETF is not trading at a premium is because the ETF creator packages the ETFs into a basket and sells the basket (the ETF) to the Fed’s facility. But this does not change the fact that the underlying bonds themselves are more expensive than they would have been without Fed buying, and

by extension, the equity of these issuers is richer than it would have otherwise been.

Volatility suppression: The second mechanism by which the Fed is indirectly supporting equities without having to explicitly buy them is what can now be called the “Powell Put”. The market now believes the promise that the Fed will be there to support the equity markets as needed, so the Fed can be thought of as an equity market insurer of last resort. By underwriting this put, the Fed is basically funneling tax-payer credit into the market since selling a put theoretically is equivalent to selling volatility and being long the stock market. Further, since the Fed has a printing press, it has an infinite ability, at least theoretically, to support the equity markets, as long as the taxpayers allow it to do so. This unlimited volatility selling promise has resulted in a cratering VIX (it fell from 80 to below 30; Source: Bloomberg), and when volatility falls, risk-based systems increase allocation to equities in another version of financial engineering-driven portfolio construction. So by moving the tail (VIX) down, they are able to move equity markets up and tighten credit spreads further (see above for how tight credit spreads boost the stock market).

Discount rate manipulation: The Fed has three traditional and two more novel levers that it is using when it comes to interest rates. First it cut short rates to zero. Second, it started the latest round of QE to buy long term assets. Third, it is using forward guidance or expectations management to keep long term yields from rising. A fourth strategy, called yield curve control is under consideration, which would “twist” the yield curve with longer term yields falling more than shorter term



yields. And finally, there is the potential of a fifth strategy, of negative interest rates, which the Fed is denying so far as a possibility, but in my view is inevitable. Indeed, using my own calculations of the now largely defunct “Taylor” rule, one would expect the equilibrium Fed Funds rate to be close to minus 5%! Since 0% is so far away from minus 5%, we should believe the Fed when it says its “not even thinking about thinking about raising rates”. Thus, all else being equal, for any model of equity pricing, such as the traditional DCF (discounted cash flow) model, any of these five factors that lower rates would result in higher current equity prices. This is not my forecast, it is simply financial engineering mathematics.

The above three mechanisms are examples of the use of financial engineering, in a highly levered manner, to indirectly influence equity prices. Each of these mechanisms also has a potent psychological element associated with it as well which turbocharges equity prices by influencing investor behavior. Whether the Fed buys corporate bonds or ETFs, suppresses volatility, or reduces rates, the common impact is that the investing public feels less risk averse and more likely to suffer from bouts of FOMO (Fear of Missing Out), and TINA (There is No Other Alternative) and rides on the Fed’s coattails to create MAMU (Mother of All Meltups – thanks to Ed Yardeni for the last acronym). The financial engineering outcomes are thus levered up because of the psychological impact of animal spirits adding to the bullish sentiment. And with MMT all the rage, the main beneficiaries of unlimited money printing and credit extension are stock prices.

Alas, as we know, even financial engineering has its limits. If we

dig deeply all three of these modes can fail if the transmission mechanism, i.e. “financially engineered leverage” fails. And financially engineered leverage can fail suddenly and sharply.

For instance, if corporations issue ever more debt to meet the Fed’s demand for corporate bonds such that corporate leverage rises faster than the actual capital available to support it, the first mode fails. If the Fed fails to make investors whole the next time the equity markets fall, (i.e. it fails to honor the implicit put option it has written) the market’s belief changes. Finally, if there is true inflation and the bond market falls sharply due to rising yields, then the discounted cash flow mode of boosting stock prices fails. If all three fail simultaneously, things could become dire indeed.

In that low probability but extremely high severity scenario the Fed would likely just buy equity ETFs and equities. As long as the Fed has the authority to buy assets, print money, and under-write risk taking, as it currently has, don’t fight the Fed. But be ready to bail out as soon as they start thinking about thinking about raising rates.

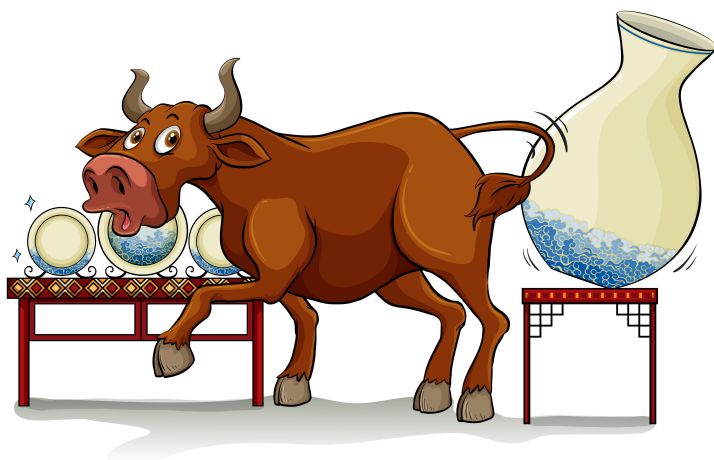
## Bull in a China Shop: When The Fed Buys Microsoft Bonds It Is FOMO Time

July 3, 2020

**M**y readers will hopefully forgive me for my newfound obsession with what the Federal Reserve is doing in the financial markets. There used to be a time when quants like myself would spend lots of time deciphering data and mispricing in security pricing. Like drinking in bars and going mask-less, it would appear those times are long gone since the Fed's action is maybe the only game worth analyzing in town these days.

If you have read my recent post on the Fed buying corporate bond ETFs ([here](#)), then surely you might have wondered that when and if the Fed switches from buying ETFs to buying

individual bonds, what bonds will it buy and how it will it decide? Well, the wait is over. The Fed posted the data on its transactions this week ([here](#)). It is Christmas in July for bond geeks like myself.



To wit, here are a couple of transactions that caught my eye from the trade-level data posted by the Fed in that spreadsheet (I verified the transaction itself happened on FINRA's Trace data). On June 17<sup>th</sup>, 2020 the Fed bought \$3 million face value of Microsoft [MSFT](#) Corp's 2.4% bond (CUSIP 54918BW3) maturing on 02/06/2020. It paid a price of 103.367 (I confirmed on my Bloomberg that indeed 3 million of face traded on that day at that price at around 11 am PST). The yield was 0.219 percent, and the spread to the Treasury bond maturing on May 31, 2022 was 1.9 basis points, or 0.019% higher than the corresponding Treasury. Around the same time, another Microsoft bond (CUSIP 594918BA1) with a coupon of 2.375

and maturing on 02/12/2022 traded at a price of 103.303 for a yield of 0.257% with a spread to the same treasury bond of 5.7 basis points. This trade is also listed in the trade file recently published by the Fed.

Issuer	CLISIP Number	Coupon (%)	Maturity Date	Trade Date	Contractual Settlement Date	Par Value (US \$)	Price (%)	Accrued Interest (US \$)	Purchase Amount <sup>1</sup> (US \$)
MICROSOFT CORP	5949188W3	2.400	02/06/2022	06/17/2020	06/19/2020	3,000,000	103.3670	26,600.00	3,127,610.00
MICROSOFT CORP	5949188A1	2.175	02/12/2022	06/17/2020	06/19/2020	5,300,000	103.3030	46,081.60	5,727,746.60

*The Fed purchased MSFT corporate bonds on June 17, 2020 as part of its secondary market stimulus program. Source: Federal Reserve data*

Now there is absolutely nothing wrong, to be clear, if the Fed wants to buy Microsoft, or for that matter Walmart [WMT](#), Ares Capital Group, Toyota Motor Credit Corp (or any of the hundred or so trades listed in the spreadsheet they published).

But I wonder if the Fed's corporate bond buyers really know what they are telling the markets, and what investors are really hearing.

Let us focus on Microsoft's bonds for this article, though I highly recommend readers take a close look at the rest of the list of sixty or so bonds. Microsoft is AAA rated by Moody's [MCO](#) and Fitch. Its stock price is at a record of \$206, which is up 30% YTD and over 50% in the last year alone. It made over \$56 billion in income (EBITDA). Its pre-tax margin is 34.7%, and its PE is 36.4. It has free cash flow of almost \$5 per share.

The company's market cap is over \$1.5 TRILLION! (Source for all data: Bloomberg). Whichever way an investor looks at it, this is a massively profitable company producing noteworthy profits and cash, with or without the COVID-19 shock.

The Fed's bond purchase amounts are tiny, and the maturity is short; so in the big picture the financial impact appears to be negligible and the risk to the taxpayer is essentially nonexistent.

But the *signaling* aspect is just huge. If the US Central Bank, with its new-found bravado of purchasing private assets is crossing many "red lines" (as per Powell's interview admission a few weeks ago), by buying AAA bonds of a company that does not obviously need its cash, the Fed is sending clear signals to the markets that this is a time to back up the truck and take that newly printed money to the bank. In other words, the money spigots are wide open, and investors are being encouraged to throw caution to the wind, for now. Please speculate, already!

At some point someone will ask whether buying bonds of AAA rated companies who do not need the money, or ask for that money, is similar to sending checks to dead people or to those who use it to day-trade stocks, and whether it really achieves any economic purpose.

But for now, we are seeing how blunt the tools of monetary policy makers are, especially when they try to move fast and quickly solve economic problems with just more cash and more credit.

As always, savvy investors will see the bluntness of the tools,

and will take advantage of it before someone thoughtful figures all of this out. Right now, we have a bull in the china shop. And in financial markets, unlike Silicon Valley, when you move fast, things break.

And by the way, what's so special about MSFT?

AMZN, GOOG and NFLX also seem to have some eligible bonds for the Fed to buy. Maybe FB should issue some as well?

Like Microsoft, they clearly need all the financial help they can get.

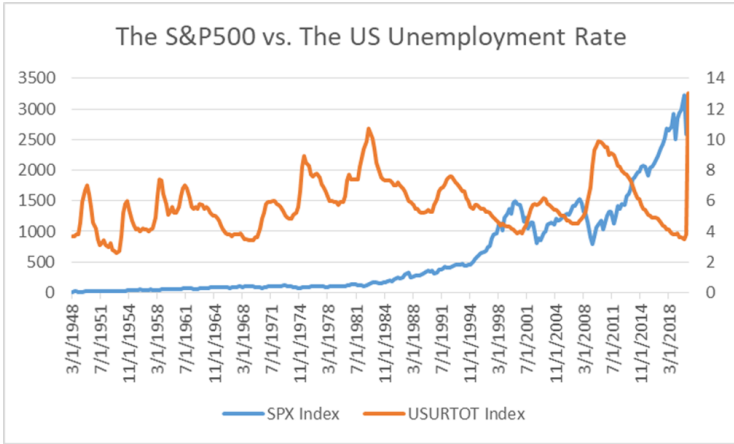
## Stock Buybacks Are Ready To Make A Comeback Even If The Economy Does Not

August 5, 2020

**T**he S&P 500 is back almost 50% from its March lows and now ready to make new records. Money in circulation is up almost 30% year over year (source: St. Louis Fed), while the economy remains mired and vulnerable; the unemployment rate remains at multi-decade highs, and to quote Chairman Powell (June 10 speech), the Fed is not even “thinking about thinking about raising rates”. Could the stock market, especially the tech sector, go any higher if the economy does not recover?



STOCK BUYBACKS ARE READY TO MAKE A COMEBACK EVEN IF THE...



*Stock market ready to make new record highs even as the unemployment rate remains high, showing the disconnect between markets and the economy. VINEER BHANSALI*

The short answer is yes, it can, because if history is any guide, stock buybacks, especially in the tech sector, are likely going to make a comeback, just as they did after the global financial crisis. This, of course, excludes companies that borrowed money from the Federal government as part of the CAR ES Act and are prohibited from stock buybacks for a year after the money has been repaid. But buyback-happy companies swimming in cash such as Apple and Warren Buffett's Berkshire Hathaway to name a few aren't looking for government bailouts.

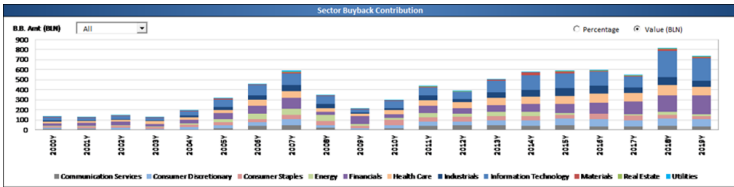
The combination of cheap money and a weak economy together could imply that US corporations can justify buying back more of their stock rather than spending it on stuff for which there might be no demand. This is nothing new, and despite attempts

by some politicians to make buybacks illegal, there is really nothing stopping companies from doing what they need to do to get their valuations up. Recall that until the recent crisis which made the Fed the lender of last resort and buyer of corporate securities, bidding up stock prices in the process, buybacks were the main forces behind rising stock prices. The handoff from the Fed back to the corporate sector will put another floor below stock prices.

Corporate cash levels are at extremely high levels, and corporate funding costs are at rock-bottom levels. With the enormous amount of liquidity and credit that has been pumped into the system by the Fed, corporations have borrowed money like there is no tomorrow. For example, information technology companies have increased their borrowing by almost 200% year over year in the first six months, and simultaneously taken the opportunity to extend out the debt to longer maturities, thus locking in cheap funding costs (Source: Morgan Stanley Corporate Credit Research).

After the shock of March of this year, even Microsoft and Google have benefited from the Fed, and taken the opportunity to issue massive amounts of new debt. Google announced a buyback and \$10 billion of new borrowing (including \$2 billion of a 40-year maturity bond at a yield of just over 2%) this week which was massively oversubscribed (Bloomberg, Aug. 3, 2020). According to Bloomberg, Apple has \$194 billion of cash, Microsoft \$137 billion, Alphabet \$121 billion, and Amazon \$71 billion. That's a whole lot of ammunition to buy back stock with money lent by willing lenders.

## STOCK BUYBACKS ARE READY TO MAKE A COMEBACK EVEN IF THE...



*Just as buybacks peaked before the Great Financial Crisis of 2008 and then started up in force after the Fed's liquidity injections, we are possibly looking at a resumption of record buybacks on the back of the massive monetary injection. VINEER BHANSALI, based on Bloomberg data.*

And don't forget the Fed is actually lending these mega companies even more money as part of its various debt facilities, and these companies are actually borrowing beyond that with global yields so low. Their coffers are literally overflowing with money!

Amongst the main lenders who are buying the corporate issuance remain foreign investors and insurance companies. Foreign investors are attracted to the still positive yield of US corporate debt which must look juicy compared to negligible yield in their own countries. For insurance companies, yield is necessary for the insurance model to work. The US stock market is thus the main beneficiary of both global cheap money policies and the need for yield. One might be worried that corporate leverage is again reaching stratospheric levels. In the investment grade arena gross leverage is 2.7x, as compared to 2.3x after the dotcom crash, and 2.1x after the financial crisis (Source: Morgan Stanley Credit Research, Aug. 3, 2020). But with all this cash pouring in, the real risk today is that the

liquidity spigots are somehow turned off. I don't see any signs of this from the Fed, yet. If anything, they are likely to step up the supply of money to another new level.

Are we in in the starting gates of another decade long bull market in stocks even as the economy struggles? If the post GFC bull market was the most hated bull market of all time, this one would probably be the most surprising one of all time. But all this money has to go somewhere, and stock buybacks seem to be the obvious place for it to go.

## The Fed's New Framework For Easy Money And What Investors Should Do Now

August 27, 2020

**T**he announcement of an updated framework ([here](#)) of Federal Reserve Policy is consequential for investors, as anyone can see from the markets' jubilant reaction. There are three key changes that are salient to investors and even more so for those who are parents of school age children.

Since it is that time where parents are beginning to wonder about the new regime of schooling, teaching techniques and grading, let me address the framework change by using some analogies that highlight what investors and parents might be forced to think about in a new regime for monetary policy.

First, imagine that instead of children being graded on how well or badly they do in school — i.e. “symmetric” response to their performance— they were only graded on how badly they did relative to a hypothetical best possible performance, and they got more attention if they did badly than if they did well. The first part of the Fed’s new framework is that the policy decision will be informed by “assessments of the shortfalls of employment from its maximum level” ([here](#)) . In other words the response function will be asymmetric and pays more attention when un-employment is rising than when it is falling. Will this work? To answer this we have to ask the key question of whether the potential (as in “best possible performance”) is even knowable - so far it has been a moving target with no conclusive results. Since the “maximum” potential employment is likely to remain a complex and moving target, what this means in plain English is the Fed will err on the side of making more allowance toward easier policy than it would have done within its past framework. In other words, cheaper money.

Second, imagine that instead of evaluating the performance of students each year on their performance on that grade, both students and teachers were evaluated on the average grade over an undefined period. For example, the average period could be over all of the kindergarten years, middle school years, junior high years, high school years, maybe even college years. The period, being undefined, could also be changed in retrospect to obtain the numbers desired to “fit-the-curve”. All else being equal, this moving of the goalposts, I think we would agree, would make the relevance of grades more irrelevant and murky than they already are. It would certainly give the measurer a lot more leeway to define the metrics that define success and

failure. Replace the statement “(the FOMC) seeks to achieve inflation that averages 2 percent over time”, with something like “the school will seek to achieve a grade that averages an ‘A’ (or ‘B’ or whatever) over time”. You get my point – when there is a long history of weak grades, the school will allow for more time to engineer grades to the average target. More easy money for longer.

Finally, a look at the explanation for these changes. Imagine your school saying these changes acknowledge the challenges of educating students, “given a persistently low ability of them to do well at school”, presumably with one reason being that the teachers were not able to teach the students well in the past. The Fed “acknowledges the challenges for monetary policy posed by a persistently low interest rate environment” ([here](#)) except that the interest rate environment has been created by the Fed and other Central Banks in response to past events! In other words, it’s a collective “oops!” ... or, “we had to cut rates to stimulate the economy, but it didn’t work so well, so now we must change how we measure stuff, not knowing whether it will work or not either. But trust us regardless”. More easy money but perhaps a credibility problem beginning to sprout.

Now I do believe that the Fed’s aggressive actions and change of posture over the last couple of years has saved the equity markets and perhaps the global economy from the abyss more than a few times and counting. With no room to cut rates further, the Fed is now moving closer toward whatever else it can do to keep policy very, very easy, and rates very, very low for a very, very long time. The door is slowly opening for negative rates, yield curve control and stepped up asset purchases as

long as there is no headline runaway inflation.

For investors, the message is as clear as it can get. Whether you are a believer in moral hazard or not, this is a directive to **BUY RISK ASSETS!** for now; but take care to protect your portfolio from inflation – once it arrives this time, inflation will not be fought as an enemy – on the contrary, it will be welcomed into the house. Whether or not the economy recovers under new policy frameworks or our children learn in the new style of zoom schooling, the simple fact is that everyone will be able to declare victory because the goalposts can be moved. The risk is that as the facts change, not only do we change our minds, but we get into the habit of changing our goals if we cannot reach them.



## ‘FAITH’ In The FAIT Of Flexible Monetary Policy Is Key To The Fed’s New Framework

September 3, 2020

**T**he evolution of the Fed’s thinking over the last 30 plus years I have been in the business of investing has been quite remarkable, and it continues to have important consequences for financial markets.

About three decades ago, right around the Volcker rule, the paradigm could be represented by a single letter: “I”, for inflation. And “kill it”, was the mantra, at any cost.

Right around 2000, when I was a young(ish) portfolio manager at PIMCO in the heyday of the bond vigilantes, a new letter was added, “T”, for inflation targeting. I still remember Ben

Bernanke, then a professor at Princeton before he was the Fed chair, invited to speak at a firm-wide meeting where he talked about his well-published theories of the advantages of “constrained discretion framework” (as opposed to the black and white choice between “rules” or complete “discretion”) and why inflation targeting with a transparent, publicly announced goal was “IT”, the way to manage the public’s expectations and make good monetary policy.

Last week, in one fell swoop, the Fed added two more letters to the framework to bring it to FAIT: “F” for “flexible” and “A” for “average”, and gently did away with a lot of the constraints in constrained discretion. Average simply means that instead of setting a 2% target at a given point in time, success or failure would be determined based on an undefined “average” of inflation over an undefined period. “Flexible”, as clarified by Governor Lael Brainard in a speech means this is not a “rule”, and possibly allows a lot of flexibility ([here](#)). To quote: “While a formal average inflation target (AIT) rule is appealing in theory, there are likely to be communications and implementation challenges in practice related to time-consistency and the mechanical nature of such rules. Analysis suggests it could take many years with a formal AIT rule to return the price level to target following a lower-bound episode, and a mechanical AIT rule is likely to become increasingly difficult to explain and implement as conditions change over time. In contrast, FAIT is better suited for the highly uncertain and dynamic context in which policymaking takes place.” Definitely a tub of cold-water and a “FAITFUL” death for the dogma of mechanical rules that were so fashionable just a few years ago in academic economic theory, especially in the era of Milton Friedman.

There is a great gamble being taken here on faith that “we know better now” even though there is no reason to believe so; which leads to the unsaid but implicit last letter, “H”, which spells out to the public to just have faith in this new framework, even though the old frameworks have not worked in the US, or for that matter in Japan or Europe. I expect all global central banks to take the Fed’s lead and start moving back in the direction of Greenspanian obfuscation and opaque policy.

Having faith in the power of the Fed to produce an economic outcome (not just a market outcome) has an analog in my recent experience solo backpacking in California’s Sierra Nevada mountain range. It was cold, and most of my matches were too wet to start a fire. I had maybe a couple of dry looking ones. I also had an MSR bottle full of stove fuel. My choices were (1) do nothing, (2) try to get the stove started in the traditional way and risk losing my last dry matches, (3) pour the fuel on the stove against the manufacturer’s recommended lighting procedure and set the whole contraption on fire hoping to light the stove’s burner. I won’t tell you what option I chose, but that’s beside the point. The point is that doing nothing or using the traditional approach were more risky than to take the long shot in principle, even though it meant crossing several “red lines” similar to the ones that Fed Chairman Jerome Powell mentioned in an interview a few months ago ([here](#)).

As long as the stock market keeps rallying (akin to “as long as I get the fire started but don’t burn the forest down”) no one complains since everyone feels richer. But once the forest starts to burn — i.e. the negative consequences of the moral hazard wrought by the FAITH framework are realized — a new type

of witch-hunt, aka “who killed the economy and the markets”, will begin.

Until that happens, investors need to realize that a heretofore “data-dependent” Fed has finally capitulated to market forces and decided the best course in a world of fuzzy models and weak economic foundations is to pragmatically ignore the data and continue to err on the side of being more accommodative. This is just stating what I consider to be facts and revealed preferences. The pivot from tactical policy making (“data dependence”) to strategic policy making (“FAIT”) in a span of two years is amazing indeed. But the commonality is that the ends (“easy” money) can be justified in either approach.

If this is not clear enough, let me remind you of Pascal’s wager again to put things in context. If you had to choose between the existence or non-existence of God, it always makes sense to bet that God exists to avoid the consequences of not believing: “Pascal argues that a rational person should live as though God exists and seek to believe in God. If God does not actually exist, such a person will have only a finite loss (some pleasures, luxury, etc.), whereas if God does exist, he stands to receive infinite gains (as represented by eternity in Heaven) and avoid infinite losses (eternity in Hell)”. (Source: Wikipedia).

In other words, the Fed’s message is clear: have FAITH and go long (the market), bubble or no bubble. Betting otherwise will not be good for your pocketbook. But if and when the FAIT makers change their minds again, or investors’ faith is shattered in the power of the Fed, look out below!

## Why China's Negative Yield Zero Coupon Bond Is A Big Deal – For China And The Markets

November 19, 2020

**O**n November 18, 2020, the Chinese government issued 4 billion Euros worth of debt at rock bottom yields. The star of this issuance was 750 million Euros of zero-coupon, five year maturity bond issued at a price of 100.763. The redemption of this paper at maturity will be at 100. In other words, this bond was issued at a negative nominal yield of -0.15%. And that excludes whatever inflation we might experience for the duration that might result in a lower “real” yield (Source: Financial Times, November 18, 2020). Yield hungry investors lined up to buy this bond, since, compared to the -0.50% on German Bunds, -0.15% looks like a deal!

In a number of articles in this forum written over a year ago ([here](#), and [here](#)), I wondered in amazement that there would be such demand for negatively yielding, long term German government “Bunds”. Reality is even more amazing than imagination, and the issuance of the Chinese negatively yielding bond was met with investors lining up to pay money to the Chinese government for the mere privilege of lending. Now, technically investors don’t mail a check to the Chinese government. They simply pay more today than the par amount they will receive in the future. To be exact, for every 100 Euros they will (hopefully) receive in five years, they are willing to pay a little over 100.75 Euros today. The extra 0.75 Euros is where the negative yield comes from.

With the geopolitical troubles between the US and China now brewing for a few years, investors have been looking for signs of the Chinese diversifying out of their massive holdings of US debt that is held in Treasuries. So far, there has been little, if any, sign of sale of these Treasuries. Just as well, because the first large tranche of Treasuries that gets sold will likely be met by an anticipation by markets that more is to come, which could result in a huge impact on the price.

With the Fed having adopted Modern Monetary Theory (MMT) in all but name, there is another reason for the Chinese to rationally not sell Treasuries – the US taxpayer, via the Fed, is buying them at higher and higher prices, to the tune of \$120 billion a month! In other words, the US debt is essentially guaranteed to retain its nominal value.

Given this wonderful state of affairs for China, one of the best

ways to diversify its holdings of forex reserves is to issue debt in Euros, and get paid for it at the same time! What they obtain is a large amount of Euros, which they have the option of just storing in a vault, at zero yield, or lending out at higher rates elsewhere if they choose to. Note the difference between a sovereign issuing foreign debt and a private enterprise issuing debt in a foreign currency with negative yields. A private enterprise would issue debt in Euros, and once the Euros are received, it has currency risk. If the Euro's value fluctuates, it could end up owing more real value in the future when it has to redeem the Euros. Thus a private enterprise would have to hedge using the currency market, and the act of currency hedging would essentially negate a lot of the benefit of the low (negative) yields.

A sovereign does not have this same constraint; the Chinese government has the long term goal of diversifying its currency reserves. So holding Euros and the currency fluctuations are actually beneficial and consistent with the diversification objectives. If the Euro weakens over the redemption period, they will redeem with fewer RMB. If the Euro strengthens, they can simply print more RMB to exchange for the Euros needed. This is the “magic” of MMT for sovereigns.

From the perspective of a market participant, this is simply brilliant global arbitrage. If every other sovereign with a printing press realizes that in the short term, you can get this “something”, for “nothing”, I expect much more issuance of Euro denominated low or negatively yielding bonds. This is simply an unintended consequence of the ostrich-in-the-sand-like behavior of the ECB, among other Central Banks, pushing

interest rates negative and buying up negatively yielding bonds in Europe, helping flood the market with cash. Is it any wonder equities seem to defy gravity during a global pandemic?



## When BFFs Collide: How The Fed-Treasury Spat Could Create A Major Market Move

November 23, 2020

**T**his year the combined efforts of the Treasury and Fed arguably resulted in the market averting depression-like conditions. Hats off to both Treasury Secretary Steven Mnuchin and Fed Chairman Jerome Powell for creating a once-in-a-lifetime pact out of necessity that crossed many red lines to intervene directly in markets and indirectly in the economy. That cooperation seems to be coming apart as the Treasury requested that the Fed return unused funds that it had given the Fed for its emergency lending facilities, and the Fed Chair confirmed that the Fed would work out arrangements to return the unused funds. Why is this important?

A short summary of how the mechanics of the Fed's stimulus works might help the reader understand why any breakdown in this shotgun wedding before year-end could break the market's confidence – and complacency.

Though wonks might nitpick on my description, here is how the Fed-Treasury compact operates when it comes to making COVID-19 related loans, which are massive in size. Treasury and Fed got together and set up a number of special purpose vehicles (SPV) with an alphabet soup of acronyms like the MSLNF, CPFF, PDCF, MMLF, PMCCF, SMCCE, TALF, PPPLF and a few others (see full list [here](#)). They all work essentially the same: the Fed loans money to the SPV, and the US Treasury, i.e. the taxpayer, puts in the equity to back the loans, the unused portion of which is the money that the Treasury wants back at the end of the year. The SPV then goes out and makes loans. If there are any losses, as always the equity holder, i.e. the US taxpayer, swallows those losses first. So, as always, the equity is the shock-absorber or the foundation on which the leverage stands.

Where does the Treasury get the money to put into the SPV? Basically it borrows the money by issuing Treasury bills and bonds, which directly affects the Federal deficit. The curious reader will now ask: who does the Treasury borrow money from? The short answer is whoever is willing to lend. This involves foreigners, US pensions, and even mom and pop savers. Increasingly, however, the biggest buyer of the debt is the US Central Bank, yes, the Fed itself. The Fed now owns more Treasuries than any other single owner in the world (source: Federal Reserve).

So if the reader is still following me let us summarize where we are so far. The Treasury borrows money from the Fed; the Fed basically “prints” this money. Then the Treasury takes this money to the SPV and creates an equity stake. Against this borrowed money the Fed lends more money – to be precise it can lend out around ten times the equity. Sound like leverage? That’s because it is! So for each \$500 billion of equity that the Treasury provides, the Fed can in principle lend out \$5 Trillion (!) of loans. So if the Treasury pulls back most of the capital, no new loans can be made, but the loans already made are backed by roughly 10% of the loan value in Treasury’s equity.

To repeat: the SPV is supposed to lend money (or invest in bonds, which is the same thing). If it is able to do so, then the interest income from the loans or bonds can be paid back to the Fed and the Treasury and thus the taxpayer. The Treasury can use this interest income for anything that it has authorization from Congress to do, and the Fed for its part, takes the interest income, and yes, you get it, gives it back to the Treasury, after keeping a small amount to pay for the cost of running itself. But earning interest is not the main reason for this approach. The bazooka, i.e. trillions of levered buying ability, exists to create a backstop; as the Fed started to buy corporate bonds and ETFs, credit spreads tightened and equity markets made new records. Credibility of the Fed is based on the Treasury’s equity. Sounds like something, actually a lot of something, for nothing. Which it is, as long as the house of cards does not collapse for whatever reason.

EXPECTING THE UNEXPECTED



Now, suppose the Fed is not able to lend the money because

everyone who is eligible has already borrowed as much as they can. In 2020, "zombie" companies have gorged themselves on record amounts of debt that the Fed and buyers from around the world have bought. With no business, and no income, they can still walk into the Fed and ask for more loans. Reminds me of the housing market bubble of 2007-2008 when folks with no income, no balance sheet, and no job could get "no-doc", "NINJA" ("no income, job or asset verification") loans for buying second and third flippers.

So where we are is that the Fed wants to make loans, but no one who needs them is stepping forward. The loans and the "bazooka" of almost \$5 trillion of loans has few buyers since everyone is done borrowing – they already have too much savings, and most people are not able to take vacations or even buy hot tubs or RVs due to supply chain problems.

This is where the friction between the Treasury and Fed is today. If the Fed does not make loans, the Treasury's equity is tied up and earning little income and not impacting the economy which depends on more consumption driven by the borrowing.

The Fed is between a rock and a hard place. If it does not follow its lending discipline (whatever little is left of it), then it lends to speculators and zombies, which results in an asset-price bubble and subsequent collapse. However, if it returns the Treasury's equity, it has no backing on which to potentially make loans in the future if they are needed. As they say, no equity, no credit, and a levered Fed with no equity will be in very tough place politically. And what about the current portfolio of junk bonds etc. they have already bought? If the zombies go back into their

grave (i.e. refuse to pay), then the Fed won't be able to prop up the market unless a new emergency authorization for levered asset purchases is created by the next government.

Now that the reader is caught up in the state of the dispute, what can investors do?

My (maybe wishful) view is that rationality should eventually prevail. The thought of an orphaned Fed with a massively levered balance sheet won't be considered very seriously, if at all. But anything can happen these days. If the SPVs are forced to return capital to the Treasury, a credit market unwind could cascade into an equity market selloff because the Fed has little excess equity cover to buy any more credit which is indirectly purchasing equity in disguise. So for the time being, my bet is that the Fed will ease loan terms, and in exchange for an implicit extension of the programs, make more loans more aggressively as we enter the year end. Or a new, social program friendly government could actually follow up some time next year with an even larger program to stimulate credit. Which is to say that we could be setting up for another upside melt-up in the equity markets.

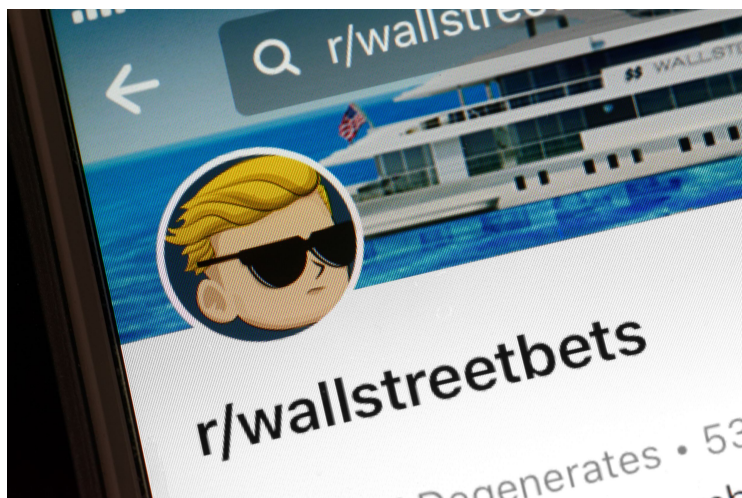
Whatever the short-run outcome investors should be wary that houses of cards are inherently unstable, and if the rational course is not the one that is taken, they should be prepared to run for the exits or hedge while there is still time to do so. Given the size of the breakup, a big move in the markets is in the process of building either way.

## Two Kinds Of Short Squeezes – Reddit Squeezing Stocks And Central Banks Squeezing Bonds

February 2, 2021

**A** short squeeze happens when one sells something that one does not have, and in order to get it, is driven to pay a much higher price than one thought possible. The news of the Reddit swarms driving the price of GameStop [GME](#) via such a short squeeze has made global headlines. There is another squeeze that has been going on for quite a while under the radar and could very well be related to the Reddit squeeze. I am talking here about central banks, especially the European Central Bank (ECB), which is engaged in the purchase of bonds at lower and lower yields, or higher and higher prices, squeezing investors who are naturally short these bonds, such as large pension funds and insurance companies who need these bonds

to hedge their liabilities. Could a central bank engineered bond market squeeze be a cause of the stock market squeeze everyone is talking about?



Let us compare the two squeezes from various dimensions.

*Participants:* In the case of GameStop, the buyers are retail, small investors, who have ganged up against the big-boy shorts. In the case of the bond market, the buyers are the large central banks who have ganged up against bona-fide bond investors like pension funds and insurance companies who actually need these bonds to hedge their liabilities. These funds are “short” these bonds and have don’t have many places to find them, given the regulation controlling such asset-liability hedging. The stock squeeze has so far hurt hedge funds, while the bond squeeze has hurt banks, pension funds and insurers.



*Implementation:* In what is probably a phenomenal application of basic option theory (“gamma hedging”) to real markets, the Reddit gang bought short-dated call options and induced the sellers of the options to buy the underlying stock to drive its price higher, almost ensuring them guaranteed loss. In the case of the bond market squeeze, the central banks have stepped in front of other buyers by printing money and inducing real buyers of bonds to cough up a higher price, and even buy these bonds at negative yields, a guarantee that eventually they will lose money if they hold the bonds to maturity. Since bonds are a convex function of yields just as options are a convex function of the price of the underlying security, the more bonds the central banks buy, the more the need from the real buyers to buy those same bonds. In both cases, risk management forces the hand of the person who is naturally short the security.

*Valuation:* If one is stunned at a money-losing, brick-and-mortar dinosaur like GameStop trading at a hefty market cap of almost \$30 billion, one should be just as surprised at bonds in most European countries trading at negative yields. Clearly, on the valuation dimension we can say that it is hard to justify the current level of pricing in either market. Valuation in both markets is in uncharted and unimaginable territory due to actions of clearly identifiable parties.

*Supply vs. Demand:* In the case of the stock squeeze, it is clear that GameStop’s 140% short interest means that the shorts are short more stock than is available, i.e. the net demand exceeded the supply by a whopping 40%. In the case of the bond market squeeze, it is similar. The ECB is buying more of the bond issuance than is being supplied, thus creating an

excess demand and thus increasing prices. And just like the Reddit slogan “I am not selling”, the ECB is holding many of these bonds (for example, almost 15% of the 30Y zero coupon German Bund trading at a yield of minus 0.11% is “retained for market intervention”, Source: Bloomberg, ECB).

*Rationale:* In the case of the stock market squeeze, the very visible verbalized rationale of the Reddit gang is to hurt the shorts and transfer their wealth to the little guys. In the case of the central bank-driven short squeeze in the bond markets, the rationale is to make borrowing for many nations cost less than nothing, and thus transfer money from rich countries with great credit to the poorer countries with worse credit. For instance, in Europe, the ECB buys bonds from Italy, Spain etc. with a guarantee to receive less in the future, if the bonds are held to maturity. Transfer from the big guys to the little guys, again.

*Philosophical Doctrine:* A quick look at the Reddit threads is enough to conclude that the group of participants wanting to push the stock prices higher have bought into the common philosophical belief; i.e. that they are morally right in doing what they are doing, and that by holding, and not selling, they can engineer the outcome of higher prices and more capitulation by hedge funds. Economic dogma and belief in a monetary solution to economic problems is not very different. One only has to read math-filled papers by monetary economists to see that just like the Reddit “club”, many economic theories of the day are religious in their belief that inflation is the solution to economic problems, and unlimited money printing is the way to spark inflation which will eventually lead

to economic welfare.

These two flavors of short-squeeze are of course two sides of the same coin. When central banks print money to buy bonds at higher and higher prices, the money ends up as an enormous amount of excess liquidity in the system. This money has to go somewhere. It is not hard to see that once this money finds its way into the pockets of every speculator, large and small, in the market, it is optimal for each of them to lever up the exposure to the stock market and risk assets, as they have done. Since short-dated options provide the most leverage for the same amount of money, we can connect the dots to conclude that the stock market short squeeze is a direct consequence of the bond market squeeze engineered by central banks. Perhaps, for the first time, the power of social networking has enabled the aggregated power of retail investors to match the power of institutions. The bond market squeeze has weaponized the stock market squeeze.

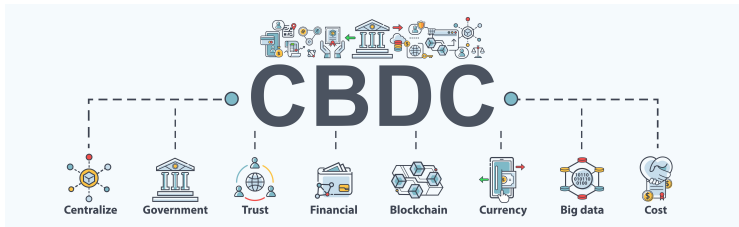
The investment conclusions are straightforward. We are witnessing the natural consequences, some intended, some unintended, in many different markets, of the power of cheap money and rising wealth inequality. Thus, as long as wealth inequality is rising, governments are in charge, and money is cheap, we should expect to see many more distortions popping up in many other corners of the market. This is a time to own optionality, both on the left and right side. Which might be the reason that the VIX is stuck at a high level.

As an investor, it never pays to fight the Fed, or the ECB, or the BOJ or anyone with a money printing press. With the new

populist force of the retail investors who can gang up and drive prices aided by this printing press, regardless of valuation, it will also not pay to fight them. Big Government and “Big” (by virtue of “collusion”) Retail investors are here to stay as long as money and leverage is cheap. Intelligent investors will anticipate the actions of both, whether they agree with them or not, and position themselves to profit from the activity of both. Distortions will be magnified, and proper sizing of investments becomes critical for survival. Selling short something that one does not have can lead to consequences that up to now have been unimaginable and absent in most risk management systems.

# Bitcoin Versus Central Bank Digital Currency And What It Means For Investors

February 17, 2021



**M**ario Draghi got a straight A grade from Janet Yellen as quoted in a Wall Street Journal [interview](#) (Source: *Wall Street Journal, February 12, 2021*): “Whatever it takes will go down in the annals of central banking history as the most important interventions ever. It’s hard to imagine

where we would be without it.”

Indeed, an un-elected technocrat with the power of the printing press behind him has now made history as the appointed, unelected Prime Minister of Italy. Yellen, making her own history, is the first female Treasury Secretary of the United States (which is always an un-elected position). Central banks and central bankers have always been political institutions with subterranean political ambitions, and now they have discovered that one shortcut to the helm of the country is to give elected officials who have the power to appoint them what they want – buckets of free money under the now respectable practice of unlimited money printing. They have the world’s economies so dependent on their power to print money that they will, in all likelihood, begin to control governments and their policies, without having to be voted in. Monetary policy has conclusively overflowed into fiscal and political philosophy, and its ramifications for asset prices and portfolios are immense. Move aside Wall Street – retired central bankers now aim for the Palazzo Chigi or more. There is also a competition ready to erupt between Bitcoin, the “elected” digital currency of its network of users, and “appointed” digital currency, known as CDBC (Central Bank Digital Currency), which will likely be quite consequential for investors.

To catch up readers on the context: Just a few years ago it seemed like Italy was going to have to default, and as the third largest economy in Europe, this event would result in an inevitable implosion of the European Union. In a now famous gunslinger speech, Draghi, then the President of the European Central Bank (ECB), told investors around the world that the

ECB would not let this happen, and reversed the course of history that his descendants at the ECB in particular and the rest of the world of central banking have equated with the second coming of a “monetary messiah”.

In short, Draghi convinced the world that the central bank possessed the will and the ability to do as it pleases, despite the objections of the frugal German members of the ECB – both in terms of money printing, buying up assets, and re-distributing this wealth. The acts of the US Federal Reserve in 2020 (Powell’s “crossing of red lines”), and of others is a rerun of the Draghi resolve, and convinced a cadre of central bankers to the point that now money printing, credit extension, and buying of assets is considered not only normal, but expected. New, Herculean, perpetual motion machines with uncontested powers have been found, and to cite Draghi once more, “believe me”, they are being used.

The ECB has bought up multiples of the net supply of both sovereign and corporate bonds in Europe. Functionally bankrupt countries can issue bonds at negative yields, and even corporations who possess the option to default can sell their debt to the ECB at prices that mean a certain loss for the ECB if held to maturity. Banks in Europe can borrow at more negative yields than the loss that they incur from placing reserves at a negative yield with the ECB, miraculously turning two negatives into a positive. But the bond market-driven re-distribution in Europe is probably done, with nary a peep from the old bond vigilantes. Central bank digital currencies will likely be the next lever to extend the reach of the central bank monopoly into every citizen’s pocket. Watch out Bitcoin!

This is little more than monetary policy surreptitiously replacing fiscal policy along the way to re-shaping politics. In a world swimming in liquidity, negative yields are a way to transfer wealth from the haves (savers) to have nots (borrowers). Countries like Italy, who are not able to get their fiscal and political matters straight under the best of circumstances were (and are) being rewarded for their mess by the sugar-daddy ECB policy engineered by their own Draghi.

If Europe is a family of countries that have committed to supporting each other for the foreseeable future, this policy makes eminent sense. In the United States, we take Federal tax revenue and distribute it to needy states, or states run by politicians who know how to bring home the pork. For a family to continue to exist in harmony, the responsible sibling has to be willing and able to support the wayward one. At some point Northern European savers will revolt against this profligacy. Even the most patient member of the family has a limit when it comes to re-directing the fruits of labor to waste forever. Tensions are certainly building. But for now, the seemingly free generation of wealth has few opponents.

For investors, the signs are as clear as can be. Money printing, while it lasts, will likely be used to solve all problems. Rising asset prices may keep asset owners compliant for now, and redistribution of wealth may keep the needy (and the noisy) happy. So far this has been achieved primarily by the purchase of bonds by central banks – more bonds than are being issued. Many believe low interest rates and jawboning will ensure an accelerating race to the bottom for all fiat currencies. Whoever can devalue fastest will win in the short run, with the dollar



likely to win out in the race to the bottom. Other than forced buyers, I believe that bond owners may find that in the long run, they have lost the most and been cooked alive. And if the political climate changes, bond market watch out below! How much easier will it become to exercise monetary policy as an arm of fiscal policy if frictions were removed by making the currency of each land purely digital.

Seeing the inevitability of this outcome, investors will get real. Those with access to real assets, confiscation, and repression proof assets such as gold, silver, rare earth metals, and even bitcoin will seek to accumulate them before governments, threatened by the risk of an en mass exodus from fiat currencies, perhaps make them illegal, or replace them with their own digital currencies, like India is considering. In the US, the 1934 Gold Reserve Act, with the long title “An Act to protect the currency system of the United States, to provide for the better use of the monetary gold stock of the United States, and for other purposes”, sets precedent for confiscation of anything that challenges the central banks’ monopoly on currency. Bans for private crypto could be veiled behind rhetoric that cryptocurrencies are illegal because they facilitate illegal activity. Which will give central banks the perfect excuse to find the next method to tax its citizenry – central bank digital currencies.

When this happens, governments hope to be able to dip into the digital wallet and take what they want, when they want. In the evolving hegemony of un-elected officials pushing the boundaries of economics, money and politics, for smart investors this is a time to build portfolio defense against more aggressive interventions and legalized confiscation. And yes,

when it comes to the bond market, it seems that the ECBs interventions have served its purpose in redistributing wealth, even though the cost has been enormous for savers. From here on, private holders of bonds are on their own. My own preference is to keep duration very short, buy real stuff that will soon be fashionable again as fiat currency becomes more funny than it already is, and use non-central bank digital currencies while they are still legal stores of value - but those days could be numbered and become relics of history.

## Will The Real Inflation Please Stand Up? Why Paying Attention To Asset Price Inflation Is Important For Investors

February 25, 2021

**B**y now pretty much everyone knows that the massive amount of financial stimulus from the central banks and the government has bid up all asset prices. But the Fed and the rest of the central bank community vehemently denies, at least publicly, that the seeming froth in all markets (stocks, bonds, credit, real estate...) is anything to worry about, as long as there is no inflation.

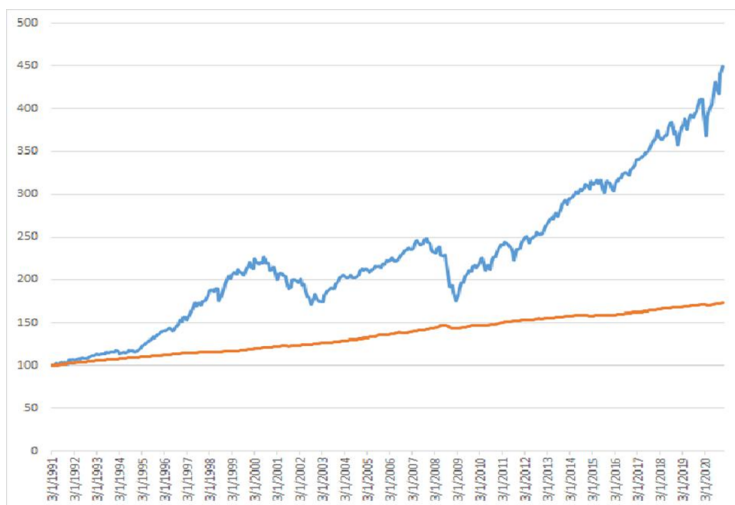
In particular, they are now all leaning on Modern Monetary Theory (MMT) which says that as long as there is no inflation, a sovereign government can, and should, print unlimited

amounts of money to solve economic, financial and social problems. And to prove there is no inflation, they point to the CPI (Consumer Price Index), PPI (Producer Price Index) and PCE (Personal Consumption Deflator). It is not important that the reader know the details of these indicators other than that none of them have financial asset prices in them. In other words, they monitor price increases in the cost of a carton of milk or a dozen eggs, not the value of a house or a security.

But shouldn't asset price inflation be included in the inflation metrics? One rationale to include it would be that folks with the ability to own financial assets (generally the "rich") primarily use asset prices to store value. In the future, when they might need the money, they can liquidate some of the assets to pay for ordinary goods and services. Thus excluding asset price inflation is like saying that the only thing that matters for people's lifestyle decisions is what they will consume today and tomorrow, and maybe the next year. It also assumes ordinary people are not very smart, and they are short-sighted on how they make decisions based on prices. For someone who has assets, it is simply commonsense that if push came to shove, they could, or would, sell some of these assets to pay for food, gas, shelter etc. At least that's the way I think I would respond.

Almost fifty years ago a relatively unknown paper by Armen A. Alchian and Benjamin Klein was written with the simple title "[On A Correct Measure of Inflation](#)", making essentially this same argument. Alchian and Klein started with the assumption that ordinary people are neither myopic nor stupid, and indeed do make decisions considering the possible outcomes even in the distant future; i.e. a lifetime approach. Yes, they are

not perfect, but to ignore that they consider the longer term outcomes of their choices just does not seem accurate. In the picture below I show the growth of \$100 due to inflation using the traditional inflation metric (PCE deflator) used by the Fed in red, and an asset price adjusted metric, where the PCE deflator and the S&P 500 are equally weighted.



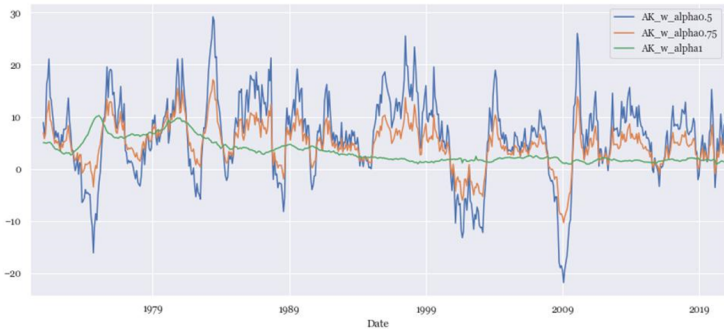
*This chart shows the cumulative gain in the traditional inflation metric used by the Fed called the personal consumption deflator, in red, and a modified metric which equally weights the PCE and the S&P 500 in blue. Longtail Alpha LLC*

One big technical problem with including asset prices in inflation metrics is that since asset prices are very volatile, they would make the inflation metrics very volatile (see chart below), making it much harder for policy makers to observe one number that they can then target with real-time monetary policy,

such as raising or lowering interest rates. Also many things are indexed to the inflation metric, so a volatile metric would make book-keeping of these obligations very messy (averaging may be able to help, however) But that's the nature of the beast and making one or two metrics paramount over everything simply ignores the complexity of the real world, a world in which asset ownership is becoming more democratized. We cannot simply choose a simple metric because it makes our life easier, especially if the welfare of the world depends on it. Including asset price inflation in traditional inflation metrics makes the metric more noisy, but is this a good reason to continue ignoring asset price inflation when both the Fed and the economy respond to asset price inflation and deflation? When it comes to social costs, oversimplifying the complex is a recipe for disaster. As the saying goes: "not everything that is worth measuring is measurable, and not everything that is measurable is worth measuring", and if asset prices are an important driving factor for the economy, financial stability, and Fed response, I believe it should be given more importance in the metric that sets policy.

In the infatuation with precise measurement the real inflation baby has been thrown out with the bathwater. I sense some physics envy from macro-economists in their effort to make economics like Newtonian physics with a few simple equations. But since people with moods, manias and panics make the economy and the markets, not inanimate unthinking atoms and molecules, it seems silly to try to boil economics down to physics.

WILL THE REAL INFLATION PLEASE STAND UP? WHY PAYING...



*Alchian-Klein and traditional inflation metrics.*

*This exhibit shows the consumer inflation rate as measured by the PCE in green, and an adjusted inflation rate using the Alchian-Klein approach of weighting inflation with asset price growth rates for different weights. The asset price adjusted metric is more volatile than the “pure” consumer inflation metric. Source: LongTail Alpha*

In practice, the markets already know that the Fed is targeting stock prices even though they are volatile. A precipitous decline in stock prices creates fear, and could lead to deflation, recession and maybe even depression. The answer has been to deal with the fear of economic recession with financial repression. As the unswerving support for keeping interest rates low and asset purchases remains on auto-pilot, savvy investors have already started to build protection for the ultimate unwind and pivot. Investors know that at some point, not too far off, real inflation could catch up to asset price inflation, or asset prices could catch down to a deflating economy and when that happens, the Fed will have to scramble

to catch up. And yes, if a correlated stock and bond market meltdown results in deflation in asset price adjusted metrics of inflation, the Fed will most likely have to take rates negative and buy even more assets, perhaps even stocks. That's the way it always works.

For now, policy makers have started to paint themselves into a corner. The problem with being cornered is that the only way out is an unpredictable action. Markets are getting ready for this and smart investors will begin to build some serious defense in their portfolio. Either that or ride it out and hope, like with March 2020, the markets bounce back in a reasonable time. As usual, it's important to remember that you cannot get something from nothing. If we are dreaming of rising asset prices to the moon without something going wrong in the economy sooner or later, don't blame faulty metrics. And don't depend on the Fed to bail us out again and again. One advantage of mis-specified inflation metrics is that for those who can see through the mirage, opportunities abound.



## Avoiding The Coffin Corner: Get Ready For A Rate Increase Sooner Rather Than Later

March 12, 2021

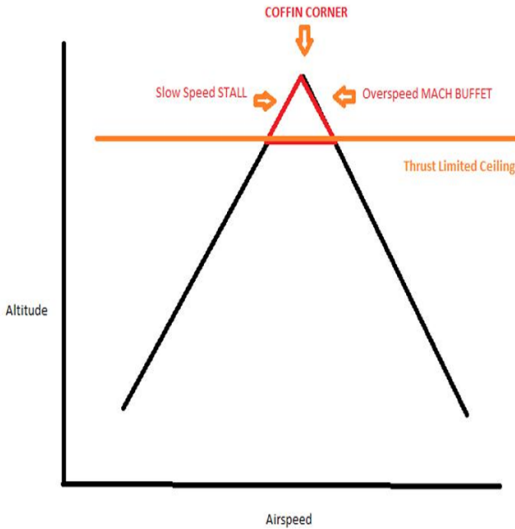
**B**oth investors and policy makers cannot avoid thinking of the economy, or investment portfolios, in terms commonly used for flight. For instance, the words “soft landing”, “stall-speed”, and “crash”, all have connotations that are equally valid, and indeed guide, albeit metaphorically, policy decisions as they do the decisions of aviators. The only difference is one is a life and death matter, the other just causes pain in the bank account. The temptation to go higher and faster is also common to both.

In this note, I will discuss a phenomenon that is typically studied by professional airline pilots flying turbojets which

are extremely relevant for investors and policymakers today as markets reach new heights and the economy seems to be humming along with no apparent inflation in sight.

As a jet aircraft gains altitude (or the air gets hotter), its stall speed — i.e. the speed below which it has no lift and can literally drop out of the sky — starts to increase. This means that to maintain flight, the aircraft has to be flown increasingly faster as altitude increases to avoid stall. But there is a limiting factor to the speed on the upper end as well. If a non-supersonic aircraft is flown too fast — i.e. close to the speed of sound (the “critical mach number”) — shock waves can develop, which can result in a catastrophic loss of controllability. The aircraft can literally nose over even though it is very fast. This is known as the “[mach tuck](#)”. At a specific altitude accurately called the “[coffin corner](#)”, the aircraft becomes essentially uncontrollable.

The coffin corner is an altitude where an aircraft is caught between stalling and the mach buffet and cannot be flown in a stable condition.



Now think of high flying asset markets. In the implicit desire to keep the economy, stock, bond and other asset markets high, global policymakers have been “going big” and going fast. With no inflation in sight (using traditional inflation metrics), the temptation to push pedal to the metal by printing money and extending credit to solve all problems is just too high.

Central banks, especially the ECB, are justifying this by saying that if they don't keep policy easy and buying assets, the economy will “stall”. But what could really be happening is that with high asset markets, the economy might actually be going too fast – if deeply negative yields are not the financial analogue of breaking the sound barrier, I am not sure what is.! As Ed Yardeni recently wrote, in the desire to go warp speed, there is a risk that the “starship” is incinerated.

Fortunately, there are solutions to escape the coffin corner in flight, and I think the market's current message of both stocks and bonds selling off together will start to get attention from the pilots of our economy as well. The easy solution is to not even get to the coffin corner. To prevent reaching the coffin corner, modern aircraft are "thrust limited"; i.e. they are simply not allowed to get too fast. I suspect that with interest rates at zero, and a massive amount of future liquidity coming, current policy is already past this limit. The other solution is to react once in the coffin corner. The correct response by a pilot in the coffin corner is to lose altitude, and to go down to where the stall speed is lower. In other words, if a pilot unfortunately finds himself in the coffin corner, he has to descend quickly. If he doesn't do it, the aircraft will do it for him with disastrous consequences.

From this perspective it is no wonder that both the stock and bond markets have gone through convulsions in recent days, whipsawing from highs to lows. Unless we believe that the economy is a supersonic fighter jet, to try to break the sound barrier and to try to make asset prices higher through easy money can result, counterintuitively, in a collapse. Empirical analysis based on decades of data shows that when shocks emanate from the equity markets, bond markets are a good diversifier for portfolios. This is the experience that most of us have had for the last three decades. But when shocks begin to emanate from the bond markets, which typically happens due to inflationary fears, diversification does not work as well. One reason is that arithmetically an inflation risk premium increases long term yield expectations, i.e. via steepening of the yield curve, and this is bad for both stocks and bonds.

I believe that policy makers in the US will get the message loud and clear, and I expect them to start preparing markets for a gradual rise in rates, past statements of easy policy notwithstanding. A new “hawkish pivot” is in the making, or else markets will force the pivot for self-preservation. Unfortunately for folks in Europe, the ECB is intent on flying through the coffin corner, and the outcome will likely not be pretty.

In this environment, passengers, i.e. investors, should tighten their seat belts; i.e. consider becoming defensive, and possibly allocating more to cash and low duration bonds. Both turbulence and volatility could continue to rise. Markets and economies are not aircraft, to be sure. But the basic principles of aerodynamics apply to both in spirit, and certainly there are limits that cannot be pushed too hard in either case, without risking catastrophic consequences.

## Pivoting Powell And Yield Curve Twists: How To Dance To The Fed's Shifting Tunes

June 21, 2021

**L**ast year Fed Chair Powell temporarily put inquiring minds to rest by telling reporters that the Fed was not even “thinking about thinking” about raising rates. Last week, in the aftermath of another pivot from easy policy to possibly tightening policy, he said that the most recent meeting was a meeting that could be called the “talking about talking” (of tighter policy) meeting. Powell is a lawyer, and one thing I know about lawyers is they always leave enough room to wiggle out by re-interpreting everything (in full disclosure I finished a year of law school in evening classes about two decades ago before having to put it on hold, and am happily married to a lawyer). This allows a Fed, led by him, to be uniquely qualified

to change its mind when the facts seem to change. Powell himself has demonstrated the ability to make 180s when faced with new data, the most notable one being the pivot from a tightening bias in 2018 to an easy policy which might have averted a market meltdown. Last week's suddenly hawkish Fed and the stupendous (by bond traders' measures) flattening of the yield curve shows another case of how learning to dance to the rapidly changing music of the Fed will become critically important.



Through an approach that statisticians and bond investors have learnt to use to simplify the gyrations of the bond market, the macro movements of the yield curve can be distilled into three major moves. These are called “parallel shifts”, “twists”, and “butterflies”. For bond dancers, “Shift-Twist-Butterfly” are three ways to dance. They are similar to combining

notes to make chords, and chords to make progressions in music. As in music, these simple patterns repeat, and just as musicians can communicate moods with simple combinations of these fundamental musical phraseologies, the market distills the information from the Fed in terms of these three key movements of the yield curve. Typically about 80% of yield curve moves are shifts, about 15% are twists, and the rest are higher “harmonics” of the yield curve. Last week was mostly a twist, as levered carry trades that depend on the difference in yield between long and short duration bonds were rapidly unwound, as the first signs of short rates going up became evident. The yield curve slope between the two-year and thirty-year point flattened by almost 0.25% in a week which is notable because the yield of the two year is still around 0.25%, so all the action is in the long end of the yield curve.

The impact of this new tune will likely turn out to be most evident in the area of inflation protected bonds, and then show up in all other assets. Treasury Inflation Protected Securities, or TIPS as they are called, obtain their prices from “real”, as opposed to nominal yields. Today, even with the economy having rebounded vigorously, real yields in the US are in deeply negative territory. The five year TIPS yield rose by almost 15 basis points on the day of the new pivot, while still yielding minus 1.5%. In other words, for investors buying this bond, even if inflation were to turn out to be 2% over the next five years annually, the nominal return would only be 0.5%. More important, the five-year real yield sliced like a knife through butter through the broadly watched 200 day moving average, and if technical analysis is to be believed, is headed towards 0%, albeit this may take months to happen (Source for all data here



is Bloomberg).

Most investors think that the real yield should track the real economy over the long run. The real economy should, in the long run, be a function of the real productive capacity of the workforce. So a negative real yield, if it were accurate, would reflect that the real productive capacity of the economy is going to be negative. With demand booming, prices rising, and the public beginning to splurge on travel, restaurants and theme parks, it is very hard for anyone to credibly argue that the real growth of the economy over the next five years is going to be that negative (negative 1.5% a year). So negative real yields, which is primarily the doing of the Fed (it purchased more than the amount of TIPS issued recently), has forced the Fed into a corner. And the only way out of this corner for the Fed is to dance to a brand new tune, and allow real yields to drift higher, maybe even into positive territory.

The TIPS yield curve twisted even more aggressively, as the rise in short term real yields was countered with a fall in long term real yields signaling possibly a cooling down of the economy to a sustainable place over the long run now that the Fed is paying attention to rising price pressures.

Another clue on why this might be part of the new song that the Fed will start to sing is that the five year forward five year breakeven inflation rate, widely followed as the expectations of forward inflation rate, has reached a comfortable value right above 2%. Since the Fed essentially controls this forward breakeven rate today by their marginal buying and selling of both nominal and real bonds, it makes sense that the Fed went

from the tune of “substantial further progress” (i.e. easy policy to replace 8 million jobs missing) to pivoting, to possibly a taper and an earlier-than-expected tightening. They can now declare victory in getting the market inflation expectations (which they actually control) to their target.

The Fed’s brand new FAIT framework, which I have previously called “FAITH” (Flexible Average Inflation Targeting *with Hope*), basically allows for pivot(s) to become part of policy. We can maybe even call this new policy the *PITS framework, i.e. Pivoting Inflation Targeting of Sorts*, where the pivot itself depends on what the Fed thinks real-time inflation is. Bottom line, the hope turned to reality too quickly, and last week’s events should not be shocking to even those who expected Powell to pivot, because this is how a data dependent Fed will behave – they have already told us so.

The problem is that no one has any idea of whether the current inflation data is likely to persist. In other words, the Fed had the market convinced that it believed in the “transitory” nature of inflation, but now it is acting as if it is not that confident in that forecast because it has no idea either. Therein lies the conflict – while the Fed wants the market to believe that it will react to actual, not forecast data, it is implicitly making the forecast that inflation is going to be transitory, maybe. So, the Fed wants to be flexible, but also wants to change its mind about its flexibility if the data starts to disagree with its forecasts!

For investors, the message is clear – first, real yields are likely to rise to allow the cognitive dissonance of negative TIPS yields to resolve with evidence of a booming economy. Passive investors

in bond markets, especially those who have bought TIPS on the back of the Fed's purchases are likely to find out how painful even bonds can be, because rising real yields can drive the returns of all bonds negative, unless inflation nosedives, which is looking more and more unlikely. This includes many passive funds that not only own negatively yielding real bonds, but also negatively yielding nominal bonds from Europe and Japan.

In a world where the Fed is likely to change its mind not only about the best policy posture but also between flexibility and some sort of rules, interest rate volatility is likely to rise sharply. Since interest rates are so low, rising interest rate volatility means that volatility across all assets can rise sharply and suddenly because of the fundamental nature of interest rates in pricing all assets.

Markets today are conditioned to the Fed being able to squash volatility by buying all types of assets. This may not be the best bet to make if the Fed itself is increasingly uncertain about its own path and response function, and the only way for it to exit out of that corner is by aggressively pivoting, yet again. And by the way, for those who are curious, that "butterfly" dance of the bond yield curve is deeply related to the volatility in the yield curve. The sooner investors learn to change their own dance before the music switches, the more likely that they will survive on the new dance floor.

# The Great Inequalizers: How Central Banks Have Unknowingly Created The Largest Wealth Disparity Ever And What It Will Mean For Investors

July 2, 2021

**A**bout two years ago, I read Walter Scheidel's book titled "The Great Leveler", which traces the history of how economic inequality usually, and sharply, decreases through catastrophes and mass violence. The bottom line of the book is that mass-mobilization warfare, transformative revolutions, state collapse and catastrophic plagues have been responsible for destroying the fortunes of the rich. How does this politically charged concept of "inequality" rise to the point of being vulnerable to the leveling forces in the first place? And can we look out and try to anticipate market responses as this cycle of widening wealth distributions also starts to turn back

inward? I have frequently witnessed intelligent debates on how the government's policies increases or decreases the wealth gap. But it has been very tough to find sufficient data to conclusively argue either point of view, until now.

Now many of the facts are out in a number of well researched reports, of which I will mention two here. In the recently published [Global Wealth Report](#) by Credit Suisse, the authors provide ample evidence that the action of central banks globally has been to create a massive wealth boom for the rich, primarily because the stimulus has gone into asset prices such as stocks, bonds and homes. Another recent publication by the Joint Center for Housing Studies of Harvard University, [The State of the Nation's Housing 2021](#), concludes that *"households that weathered the crisis without financial distress are snapping up the limited supply of homes for sale, pushing up prices and further excluding less affluent buyers from homeownership. A disproportionately large share of these at-risk households are renters with low incomes and people of color."* The numbers are simply staggering. In 2020, even though global economies went through a shock, easy monetary and fiscal policies boosted the wealth of the world by almost \$28 trillion (coincidentally global central bank balance sheets expanded by roughly the amount) which was not uniformly distributed at all.

I hasten to add that I do not think that there is a sinister motive or conspiracy here. If central banks are indirectly responsible for the rise of economic inequality today, it is mainly because to them all problems look like those that can be solved by injecting more money into the system. For those, including this writer, who can take advantage of the flow of liquidity via asset

accumulation, every liquidity injection during a crisis provides an opportunity, bringing resonance to the saying “let no crisis go to waste”. Witness the hundreds of billions of bonds being purchased by the Fed and the ECB even as the global economy is booming and asset prices continue to make new records.

The main risk of the central banks’ liquidity inundation philosophy arises from the fact that the financial plumbing is not quite set up to direct the massive amount of liquidity and pipe it to the proper places, so it both overflows and is sucked off in directions where it was not intended to go, and also that once started, it is almost impossible to stop. Central bank policies have not only boosted asset prices which have boosted the wealth of those with assets which was probably not the intention, but also resulted in a setup where central banks are deathly afraid of withdrawing liquidity for risk of upsetting the asset markets. But once they eventually cave in the face of data, e.g. if the current Fed’s song “inflation is transitory” changes, the next crisis could be precipitated, and will set up the next set of opportunities for asset owners to become even wealthier.

Before we get into investment strategies that this dynamic suggests, a few highlights from the Credit Suisse report:

- Rich countries and regions (US and Europe) gotten richer whereas poor countries (India, Latin America, Africa) have gotten poorer.
- Countries that suffered worst from COVID-19 and could afford it generally had the most outsized response from their central banks, resulting in the largest wealth gains.
- The wealth gains within a country were also extremely non-

uniform. The wealth gap between the ultra-rich and the ultra-poor widened to new high. This discrepancy also shows up in gender and minority wealth growth rates.

The report correctly concludes that accumulated asset wealth provides those with assets a reserve, or insurance, with which they can better withstand significant future hardships and financial downturns. The corollary is that those without the precautionary savings are more exposed to downturns, resulting in an increasing need for government provided catastrophic insurance, whose only source is some sort of redistribution from the haves to the have nots.

So what does this observation tell us about the likely outcomes for policy and the markets?

First, on policy. As my good friend and former PIMCO colleague Paul McCulley has said in the afterword to my new [monograph](#): *“simply put, central banks are losing their status as the putative only game in town”* and that *“Sovereign governments are relearning the verity that central banks are their own creation and should be harnessed to maximize the collective welfare of their citizenry, serving as the handmaiden of fiscal policy rather than the disciplinarian of fiscal policy.”*

Or in the words of Bassetto and Sargent’s paper titled “Shotgun Wedding: Fiscal and Monetary Policy”: *“From the point of view of sequences of government IOUs called bonds and money, institutional arrangements that delegate decisions about bonds and money to people who work in different agencies are details. Central bank independence is a convention or a fiction.”*

In other words central banks have become tools of the government whose agenda in the coming years will shift from increasing growth to assist in redistributing and re-alignment. I do not have a dog in this race, and I have no axe to grind. In most democratic societies, the elected government is nothing but the people. So if the people are indirectly responsible for allowing central banks to amplify inequality currently, then the people, via their power, will have to re-distribute the wealth in order to create the need for better safety nets as the leveling processes accelerate in the future.

The simplest way that the re-distribution will work is for taxes to rise for the wealthy, and we see it already in the proposals of the current White House. "What the Fed giveth, the taxman will taketh". Betting otherwise is probably not a good odds at least for the next four years.

The simplest sequence is for asset prices, especially equities, to rise further still, so that some new tax policies can tax a good portion of the increase in asset values which would be re-distributed to non-asset owners. For bond markets, the simple fact that yields are so low today does not allow tax revenues on the income to be significant, but the prices of bonds rise as yields fall, so there is plenty of scope for taxation of increased asset values, which could be quite problematic for many global bond markets where yields are negative. So any tax on the value of the bond holdings could be a second driver of lost wealth over a long enough horizons; and don't forget that other hidden tax - inflation.

For illiquid assets such as real estate, the lack of transparency



makes valuation, and thus taxation, somewhat problematic. Thus, real estate, like many digital assets such as Bitcoin, is likely to provide investors stores of value somewhat protected from re-distribution, but further decrease their liquidity and transparency. With increased re-distribution through helicopter drops of money, I can see a pressure on raw materials and consumable commodity prices rising, whereas the threat of wealth taxation resulting in storage commodities (such as gold) will result in downward pressure on these commodities.

The competing objectives of asset taxation for re-distribution versus allowing free flow of capital across international boundaries will result in different outcomes for the global currencies in the world. For example, of the \$70 trillion in US equities, households now own “only” 38%, or \$26 trillion, but foreign investors, no doubt due to low prospective returns in their own countries, including due to negative yields in Europe and Japan, own almost 16% or \$11 trillion of US equities (Source: Goldman Sachs and Fed data), which is the highest recorded share of foreign ownership of US equities in history. Any taxation of the value of the equity market will thus be partially funded by foreigners, which, on balance could be negative for the US dollar if they decide to find other places to invest. With the substantial amount of foreign ownership of US bonds, this could also result in a fall in demand for US fixed income assets.

Observing very long cycles of divergence and re-convergence in wealth distributions, it appears to me that the pendulum is ready to start swinging back toward the middle as the leveling process re-starts. Inflection points such as these are usually disruptive and volatile. I do hope that the leveling processes

are not violent this time, and the pendulum is not a wrecking ball.

We could look back in a decade from now and wonder why it took us so long to realize that the actions of central banks caused adverse consequences for the distribution of wealth. My guess is that we all see the connection already but don't really care; since almost everyone feels a little bit wealthier, and the relative differences are not large enough yet to overshadow the increased absolute level of wealth.

But since asset prices are the main reason for this phenomenon of widening wealth distributions, and government agencies are the main reason for the increase in asset prices, we should not be surprised if asset prices and indirectly the action of the other agencies of government are also the main drivers for a compression of the wealth distribution in the years to come. Some market participants, including myself, believe the environment could be ripe for a lot of action in the fat left and right tails of asset price distributions.

## Hot Dogs And Bonds

July 9, 2021

This July 4<sup>th</sup>, the highlight of my TV watching was Nathan's Hot Dog Eating Contest 2021. I don't know about you all, but MLE ("Major League Eating") is a lot more fun to watch these days than other organized sports, not the least because it reminds me of what's happening in the world of major league central banking ("MLCB").

Despite their vigorous opposition, I had my kids turn off their video games to watch Joey Chestnut beat his own previous world record of 75 hot dogs and buns in ten minutes to win a 14<sup>th</sup> title. For quant aficionados that's 7.6 DPM (dogs per minute). To me, this is a feat that is simply incomprehensible. As a card carrying scientist, I just had to research the techniques behind this incredible feat, and my research led me to documentary evidence on the legendary battle for supremacy between

Takeru Kobayashi of Japan and Chestnut going back almost two decades.

While watching documentaries on speed eating, I learned a bit of the science behind speed eating (here is a great [link](#) to some of the factoids). It is just mind-blowing, to say the least, how geometric precision, pre-saturation by dunking, and every plate to mouth movement is practiced and choreographed. There are even instances where the eater is ready to hurl out the ingestion, but if a true champion, can regurgitate even that! The sport is not at all about eating in the sense most mortals think of food, but about speed and volume. Quite simply put, the physiological response of a competitive eater is entirely different from a normal person. For example, the stomach of a major league eater expands by 400% of its original size, and does not initiate the STOP EATING NOW response that you or I would have. Pushed far enough, I would probably gag in a few single digit count of hot dogs, but a superstar eater can train to suppress this response.

The four largest central banks of the world are engaged in their own hot dog eating contest, and each is trying to set a new world record – all the stops are out. We are speaking trillions of bonds eaten at a speed of hundreds of billions of bonds per month (BPM). Led by economic dogma and doctrine, and empowered by rallying asset markets, they have become emboldened to inhale more and more bonds, in many cases by multiples of the outstanding net supply.

The “science” and the rhetoric also keep evolving with the contest as new, just-in-time innovations to defy the gravity

of debt are rediscovered. For example, the US Federal Reserve adopted flexible average inflation targeting (FAIT) to allow them to keep interest rates at rock bottom and maintain \$80 billion of Treasuries and \$40 billion of mortgage bond purchases even as stock, bond and housing markets all reach record high prices (Source: [Federal Reserve](#)). The European Central Bank, not to be left behind, abandoned its inflation philosophy to adopt a brand new one that will allow for inflation to overshoot. The Bank of Japan, the reigning champion of competitive bond gorging, has a debt that exceeds its GDP by a large margin and is for now, also the reigning champion of government sponsored buying of stocks. Just like the legendary battle between Kobayashi and Chestnut, what the Japanese invented decades ago in terms of quantitative easing has now made it mainstream sport for the other competitors in the central banking field.

I am not able to write in this forum details of the aftermath of the hot dog eating contest. For most of us the hot dog competition is in itself such an awe inspiring act that we probably don't even want to ask or know what happens next. But just a few searches on the web have graphic and gory details (search for videos by one "Furious Pete"). Fortunately, the aftermath of the bond gorging is equally predictable, though (slightly) less nasty in its details.

At some point, and no one knows when, the massive amount of debt that has been built and eaten by central banks will have to be disgorged, even though MMT (modern monetary theory) claims there is no such limit unless there is inflation. There are three ways this can happen. In the first, and most chaotic

approach, central banks just quit eating new bonds or even start thinking of selling their holdings. In the second approach, they don't stop buying bonds, but indirectly create a debasement of the currency in which the bonds are denominated. In the final approach, they exchange their bonds for other assets. From the perspective of markets, the first approach results in a rise in yields and a fall in prices. The second approach results in competitive devaluation of currencies, and in the third approach, other asset classes, such as equities, benefit from the flows out of bonds. In all three cases, it is hard to argue for holding bonds as long term investments. For an in-depth discussion of today's bond market ecosystem and the role of central banks, please download a free copy of my recently published CFA Institute Research Foundation monograph on the upside-down bond market ([here](#)).

On the last approach of substitution let me remind you that there are competitive eating contests for hard boiled eggs, pizzas, tacos, cow brains(!), lemonade...you name it. Some central banks are also already on to the next game of buying other assets. The BOJ has been buying equity ETFs for quite a while now (Source: [BOJ](#)). The Fed and ECB have already shown their interest in buying corporate bonds. It is a matter of time before they all start to compete in these other contests. And why not, if asset purchases all the time have no negative consequences?

So, faced with the ongoing competition to acquire assets by central banks, what is the best strategy for investors? First, and I repeat the warning of contest organizers: "don't try this at home". Leave hot dog speed eating and bond gorging contests

to the pros. Take my word that it is foolhardy to try to beat Joey Chestnut at hot dog eating before the contest starts. But perhaps, right after he has set the world record (now at 76 HDB – hot dogs and buns), and has won the contest, it could be worth challenging him to a competition for perhaps half a dozen more. One might still lose the contest, but the odds seem way better. I sense that we are getting to the same point in the bond markets. Central banks are ready to declare victory, and weak hands trying to fight them have capitulated. Many central banks have already begun to pivot toward tighter monetary policy outlook even as they keep buying bonds. As in hot dog eating, timing is critical in the markets too, and the best time is when the champ is stuffed to the gills.

Three Little Birds - When Lawyers  
Run Central Banks

July 19, 2021

**R**ise up this mornin'  
Smiled with the risin' sun

*Three little birds*

*Pitch by my doorstep*

*Singin' sweet songs*

*Of melodies pure and true*

*Sayin', "This is my message to you-ou-ou:"*



*Singin': "Don't worry about a thing, worry about a thing, oh!*

*Every little thing gonna be all right. Don't worry!"*

*Singin': "Don't worry about a thing" - I won't worry!*

*"Cause every little thing gonna be all right"*

*- Bob Marley & The Wailers*

Jay Powell, Christine Lagarde and Haruhiko Kuroda are the three little birds of central banking singing sweet songs of unlimited money. They want you to believe there is nothing to worry about when it comes to inflation or the stock market. Powell is the Chair of the US Fed, Lagarde is the President of the European Central Bank, and Haruhiko Kuroda is the Governor of the Bank of Japan. Importantly, they are our most important economic policy makers but are professional lawyers (Kuroda is actually both a lawyer and an economist), and for the first time it seems that a PhD in economics is less important for economic policy making than a doctorate in law (by the way William Miller, Fed Chair from 1979-1980 who is held partly responsible for highly inflationary policies at the time was also a lawyer). Between the three of them, they have authorized trillions worth of asset purchases over the last few years, and have essentially funded the operation of highly levered governments, and they would like to persuade you that this is still the right course of action. Hearing Powell speak to other lawmakers in his recent testimony, we could see the obvious advantage of a lawyer persuasively speaking to other lawyers.

Market participants are, however, quite worried as they see inflation statistics spiking. The recent CPI (consumer price index) was over 5% and PPI (producer price index) was over 7% year over year (Source: Bloomberg). Inflation certainly does not seem to be transitory. Stocks, bonds and housing markets are at record high prices. The leaders of the central banks are clearly engaged in persuading the public that “economic facts” justify these actions.

I have many lawyers in my own family, and growing up in a family full of lawyers, I have a view on how lawyers establish and use “facts”. My grandfather was a lawyer, so was my father, three of my aunts, one uncle, and my wife. I am the black sheep of the family as a law-school dropout of sorts (I went for a little over a year late in evening school at Chapman University before going on permanent leave to run my business). So I have rookie training in persuasive arguments and how to tilt them to sell my point of view.

Law Professor Roberta Mann, in her [paper](#) “Economists are from Mercury, Policymakers are from Saturn: The Tax Policy Implications of Communication Failure,” illustrates the communication divide between economists and lawyers which includes interpretation of data. In the context of the central banks, where the staff is primarily PhD economists, a quote from her paper is relevant: “*Sometimes policymakers rely on economic analysis to make decisions. Sometimes policymakers use economic analysis to support decisions already made.*” The decision to keep buying bonds and keep interest rates at zero and negative is a case of using economic analysis to support commitments already made, which is why there is increasing central bank fixation on one

or two elusive numerical targets (“eight million jobs lost”, “2% inflation target” etc.). In his 2010 book “Proofiness”, Charles Seife calls this use of numbers the “dark art of mathematical deception.”

As my readers know, I am a physicist by training. The difference between scientific arguments and legal arguments is that scientific arguments are primarily “informative” while legal arguments are primarily “persuasive”. The lawyer’s goal is to weave the “facts” together for the benefit of his or her client and to persuade the judge or jury. In mock court, I had a chance to practice both sides of the argument using the same facts, which shows how facts can be interpreted to serve the client’s objective. Same facts, different sides of the argument.

Persuasive speech, which Powell, Lagarde and Kuroda, as lawyers, are adept at, consist of three classic elements: logos, pathos and ethos. Next time you listen to a testimony or press Q&A, pay attention to these. Logos refers to making logical arguments, and why, given the information and set of logical arguments, supplemented by “proofy” numbers, the conclusion must be true. Pathos refers to the emotional appeal to make the listener feel a certain way, so that they will accept the argument. Finally ethos refers to the establishment of credibility with the audience, which is easy to lose if one sticks to an invalid argument. It is well known that moderate amounts of repetition can result in persuasive arguments becoming stronger. But a very frequent, unvariegated repetition creates aversion to the repeated term. I sense that the market is close to the point where the word “transitory” has been used so many times by Powell and others that the market is no longer persuaded that the Fed

knows much about actual inflation dynamics and evolution.

Why would the Fed and other central banks want to persuade the rest of the world that interest rates need to remain low and assets still need to be purchased, even in the light of booming markets? The simplest answer is that the size of the debt load is so large, that they just don't have a choice. In order to keep debt servicing costs manageable in the short run, interest rates and bond yields have to stay extremely low. As inflation spikes up, keeping nominal yields low to keep debt servicing costs low means that real yields (real yields equal nominal yields minus inflation) are forced into deeply negative territory. For example, with ten year notes in the US yielding about 1.3%, and inflation running at 5.4%, the effective real yield is minus 4.1%! The actual real yield on the ten year TIPS is minus 1% because the Fed has been buying up most of the TIPS, forcing real yields low. Investors who are buying the nominal ten year note at 1.3% are being forced to lose over 4% a year of value – talk about being slowly boiled alive. And when real yields on bonds are negative, they drive money out of safety into risk-seeking assets, like stocks, to make up the lost yield in increased prices.

So if we agree that we are being persuaded to buy one view of the data from the three little birds/lawyers/central bank heads, what are we supposed to do?

I think the simplest answer is probably the best one. Whichever way I look at it, more asset purchases are in the cards because we are trapped in debt. Tightening policy now would mean that markets would crater, which would lead to another round of asset purchases and easy policy; whereas no tightening means

a further rise in asset prices and then a subsequent decline in the asset prices mainly due to the force of gravity, which would again result in asset purchases and easy policy. In other words, either way the next step for the central banks is to do another round of asset purchases. In economics terms, the asset purchase strategy “stochastically dominates” all other strategies. Bubble or no bubble, it is better to keep purchasing assets today than to not purchase them and have to purchase them later! Which is why the central banks are so persuasive in justifying continued asset purchases.

Second, if debt sustainability requires governments to borrow more money to keep interest rates low, investors should rationally do just as the government does because sovereigns have a printing press. Investors should also borrow for the long term and buy assets along with the central banks, but control exposure so that a serious shock to the borrowing rates does not force them to liquidate. Astute corporations are already doing this. The borrowed money can be used to buy more assets, or perhaps used as precautionary savings, or simply used to spend. Companies are buying back their stock or other companies with the elevated stock values using stock as currency as mergers and acquisitions start heading into record territory again. Recent news ([“Buy, Borrow, Die: How Rich Americans Live Off Their Paper Wealth”](#)) show that this is exactly what many wealthy investors are also doing; instead of selling their assets and incurring tax liabilities, they are borrowing from banks to indulge their spending.

Of course this path of asset gorging is not riskless. If the central banks change their mind, and pivot again, the outcome for the

market might be very different. The lawyers in charge of the central banks think they know how to pivot smoothly, but that is really the risk to taking their assurances at face value.

Given how inexpensive it is to hedge market risks today, entrusting the three little birds entirely with your financial welfare might not be the best idea. And a good reading of economics and scientific decision making might also be recommended for policymakers and investors alike.

# Global Modern Monetary Theory And What It Means For Currency Market Volatility

September 2, 2021

**I**n the simplest terms, Modern Monetary Theory (MMT) posits that a sovereign country with the ability to print its own currency should do so. This theory laughs at the notion that the growth in debt of a sovereign nation results in risk of default and thus too much debt is bad. The main speed limit imposed on the quantity of debt for MMT-ers is inflation. As long as there is no inflation, the theory demands larger and larger credit expansion and money printing. For countries with their own printing presses, such as the United States, Japan and China, the theory provides cover for government spending plans based on lots and lots of borrowing. For regions such as the Euroland, where there is no fiscal union (yet), the European

Central Bank is providing MMT of sorts by bidding up bonds of the weaker countries at nosebleed prices using the credit of the more creditworthy countries (Source: ECB APP).



*Global foreign exchange volatility*

The extremely low level of currency volatility as shown in the picture of the JP Morgan Global FX Volatility Index (Source: Bloomberg, JP Morgan) has created an even more pernicious type of Global Modern Monetary Theory (GMMT). In this theory, a sovereign country can print an infinite amount of their own currency, and buy up the financial assets of *other* countries. For example, if the Japanese feel that their economic prospects in the long run are dim, they can print a whole bunch of Yen, exchange the Yen for dollars, and buy US Treasuries with positive yields. As long as the currency vigilantes do not call time out on this activity, Japanese public investors, for



example can take their funny money and buy enough bonds for a sufficient length of time where the principal redemption of the dollars at maturity on the bonds will provide real dollar income in the future. In this set up, the coupon and interest rates become irrelevant. As a matter of fact, an extension of this strategy would be to buy bonds in Europe at negative yields and have the European bond redemption provide Euros in the future. The negative yield is just the cost of getting something for nothing; i.e. real Euros for funny Yen. But then funny Euros can be used to buy real assets in dollars, and then funny dollars can be used to buy other speculative assets globally...you get the picture.

Imagine being able to use Monopoly money, or in today's vernacular, Robux (the digital currency of Roblox which my daughter loves), to buy real money. For those not well versed in e-sports, think of airline miles as a currency that can be exchanged for dollars, where the amount of miles and the way to earn them are set by the airlines. As long as there is an exchange of funny money for real money, the owner of the funny money should rationally get into contracts to lock in the exchange for as long as possible. And yes, this is exactly what is going on when a large quantity of Yen is exchanged for dollar denominated Treasurys, or Euro denominated German Bunds, Italian BTPs, French OATs, Spanish Bonos etc.

If a private citizen engaged in this type of transaction — i.e. exchanging borrowed Yen or Euros for dollars — there would be currency risk. This trade, which is well known as the cross-currency carry trade, is exposed to the risk that the currency in which the asset is held weakens in the future, and the private

investor has to pay back the loan at an adverse exchange rate, which would require more of the asset currency to exchange for the liabilities coming due. But a sovereign does not have the same risks. Since the sovereign (in this case Japan) can print more Yen, it can just pay itself back by printing more Yen. This is MMT on steroids – call it “Turbo MMT”. What about the converse; i.e. in our example the strengthening of the dollar? Well, now the sovereign has a more valuable asset in the future, so it can exchange the dollars received on redemption for more global goods. Heads I win, tails I win, as long as there is someone willing to take my currency for the promise of a future cashflow in their currency.

As astute readers will see, as long as currency volatility remains low and the assets don't outright default, this strategy works wonderfully. In a paper I wrote way back in 2007 ([Volatility and the Carry Trade, Journal of Fixed Income](#)), there is a deep theoretical linkage between currency volatility and the carry trade, and the risk to this rosy arbitrage is that currency volatility for some reason spikes up, and the carry trades prospective gains for private investors are weakened. For sovereigns, the currency volatility means much less, unless the volatility is so large that it brings into focus the likelihood of an imminent default on long term obligations, or there is a buyer's strike against the currency of the relevant sovereign for exchange. Using the example from before, think of an airline where you have a lot of accumulated miles, and the airline is likely to go belly up. The value of the miles and frequent flyer's confidence would suffer, including fewer flyers, even though chances are that when the airline emerges from bankruptcy, the new program would still honor part or all of your miles. The

dynamic can result in a run on the currency, which is sufficient for the arbitrage to fall apart in the short term.

So the main risk to global MMT's cross-country arbitrage is not that the sovereign country would default, since by definition the sovereign can just print more money – we have examples everywhere (just look at Argentina for example) of sovereigns doing just that. The main risk is that the perception of increased risk results in investors refusing to take the sovereign currency as a medium of exchange. Currency market panics are just as likely as credit market panics, though we have not had a major one since the panic and run on the British pound that only a few of us remember.

The obvious question then is: are we there yet?

In my view, the water is getting warm, but it is not boiling yet. The frog is beginning to feel some discomfort, but he is not ready to jump out just yet (or obviously boil to his death, as goes the myth). For investors, the action items might be a little more definitive. If the global financial markets are at a point where a country with dim economic prospects can create income by lending funny money to others who do have bright economic prospects, then at some point the currency markets have to move to readjust for this arbitrage. With the incredibly low levels of currency volatility today, investors would be prudent to consider owning optionality against a sharp and sudden collapse in the Global MMT house of cards. In the end, exchange rates are the fundamental price equilibration mechanism across countries. While it is hard to ascertain the direction of individual currencies, it is much easier to imagine

a world in which the return of currency volatility puts some limits on the ability to exchange funny money for real money.

A corollary for most investors is to also recognize that some part of the funny money from GMMT has gone into stocks. The risk of a sharp bout of currency market volatility is a cascading effect on the stock market's perception of risk and the continued inflow of foreign capital that will support an already stratospheric stock market. A sudden stop to the spigot of foreign capital could be the cause for the next big hiccup in US stock markets. If the chain of funny money based "investment" comes to a stop, asset market appreciation could come to a sudden stop.

## Dangerous Transitory Man

October 7, 2021



I have to admit that I am currently on an *Avengers* binge. After the family and I went and saw Scarlett Johansson's spectacular performance in *Black Widow*, my wife and I

have convinced the children that we need to watch each movie in the series from start to finish. The problem is the children – like many children – have already watched said movies a few times, so they have no interest in explaining to mom and dad how the causal connections all work.

What they don't know is that I have been watching the same movie following central banks over the last decade, and have a decent picture of how it all ends. Not well.

The *Avengers*' slogan, according to my kids is: "Earth's mightiest heroes must come together and learn to fight as a team if they are going to stop the mischievous Loki and his alien army from enslaving humanity". In my version the mighty hero wannabes are the non-elected heads of the world's largest central banks, who have come together, based on increasingly fragile economic logic, with suits of cash, to stop deflation from enslaving human economic activity.

Unfortunately there is an "Endgame" to this story as well, although I have not watched that *Avengers* movie yet, I don't really know who survives and who doesn't. Except the one leak that Ironman does not survive. One thing is sure – between here and the monetary policy endgame, there is likely to be some spectacular mayhem that we will just have gotten used to. No, it is not a real city being blown up, but the foundations of finance that have been smashed up good. For now stock markets are high, money is raining down on the public, so no one is complaining. But what happens when the next correction is met by a lukewarm "it's not my problem" response from the *Avengers*?

After watching the recent Senate Banking Committee drama on September 28<sup>th</sup>, where Senator Elizabeth Warren called Fed Chair Powell “a dangerous man”, I feel like I am in another, real-life *Avengers* movie, and we need to figure out what the world looks like when the heroes are done with their battle. Here the bad guys are not aliens, but COVID-19, weakening economies, deflation, inflation, supply chain disruptions, increasing inequality, central bank ethics issues, bank regulation, etc.

Dangerous Transitory Man (DTM) does not worry about inflation that is in everyone’s face and in their wallet. He believes in the transitory nature of inflation. Here is a quote from him at a conference hosted at the ECB on September 29<sup>th</sup> under the auspices of “DTW” ECB President Christine Lagarde: “For some time, we and others have been forecasting that the current inflation spike will not lead to a new inflation regime in which inflation remains high year after year”. The hidden forecast is that inflation is not a problem for DTM, so the money spigots will remain open, though the impending taper of asset purchases will moderate it by a small trickle starting next month. In an old [paper](#) by two Berkeley economists the point was made that the Fed, and other central banks, just like the rest of us, make mistakes of forecasting repeatedly. But this is not the main problem. The problem, as they point out, is that the Fed has the power to act on its (frequently erroneous) forecasts, and actually acts on its forecasts. Here is the quote from this paper that is probably more true today than it was before (by the way it was written just a couple years before the financial crisis):

*“We compare these staff and policymaker forecasts for the period 1979–2001 with actual data to see if the FOMC forecasts contain useful information. We find that, for the most part, they do not. We also investigate the possible consequences of the FOMC’s misguided information. In particular, we examine whether differences between the FOMC and staff forecasts help predict monetary shocks. We find suggestive statistical and narrative evidence that they do. This may indicate that the FOMC’s attempts to add information to the staff forecast are not just unsuccessful, but may lead to inappropriate actions.”*

A new paper by Federal Reserve economist Jeremy Rudd recently threw cold water on the Fed’s long held but not proven theory that inflation expectations are what determine inflation. The best market-based metric of inflation expectations is the forward inflation breakeven rate, i.e. the difference in the forward rate as implied by the difference in nominal and inflation linked bonds (TIPS). Since the Fed can buy and sell as many TIPS and nominal bonds as they want, they can make this breakeven rate whatever they want it to be. The proof is in the Fed’s own data. It owns a huge chunk (almost 25%) of all TIPS, and there are certain maturities where it owns almost ALL of the TIPS (Source: Federal Reserve).

Regarding inflation being “transitory”, Ben Hunt of “The Epsilon Theory” has called the current table pounding on transitory inflation “Fiat News” – the proclamation of opinion as fact. With all due respect to my wife, lawyers, very aptly, are trained to paint opinion and viewpoints as facts (just a reminder – all three major central bankers are lawyers). However as inflation shows no sign of abating, and supply chains are



stretched to levels not seen for a very long time, the word “transitory” is rarely being used by Powell any more.

In a piece from Arbor Research, textual analysis of the words “employment”, “inflation” and “financial stability” showed that the frequency of the words “financial stability” relative to the other words has dropped to extremely low levels (Source: Arbor Research Report October 7, 2021). In other words, with their focus on employment and inflation, central banks are less worried about a stock or bond market crash. Since financial stability concerns are on the back-burner at the same time that the current Fed Chair is in a game of political musical chairs with other Fed officials, there is a good chance that their ability to aggressively defend financial markets will be hampered. “Crossing red lines” to defend the markets, as the Fed had to do last spring, might become harder. Will DTM even survive to serve for another term?

For stock and bond markets that have relied on the generosity of the Fed and other global central banks, a lame duck Fed chair could be a problem. The fact that stocks are selling off more on days when bond yields rise should be a major concern for those who have been conditioned to both stocks and bonds rising over the last decade. This increased positive correlation between stock market prices and bond prices is reminiscent of inflation in the 1970s, and in such an environment, diversification cannot be trusted much for portfolio protection.

An essentially unlimited amount of money has been put into the global economy by central banks and a good portion of government checks has arguably been the main cause of stock

market rallies and also the cause of the supply bottlenecks (as well as good times in Las Vegas). Demand has exceeded the ability of manufacturers and shippers to keep up with this demand. If supply chains do not return to normal in the course of the next few months, there are only two possible paths for the central banks: either let prices rise further, i.e. inflation, or to sharply slow down the demand, i.e. raise rates. In either case, holding low-yielding global bonds and assets that benefit from low rates is likely to be very painful.

The sooner investors realize that low rates and money printing, not the threat of deflation and economic slowdown, has been behind the massive increase in bond prices in particular and asset prices broadly, the sooner they will see the threat of inflation not being transitory. Any sharp rise in bond yields can pop asset price bubbles. In this scenario, Dangerous Transitory Man or Woman might not be able to keep asset prices high if non-transitory inflation requires tighter monetary and fiscal policy. The house of cards built on weak economic and theoretical foundations could quickly expose the delicate nature of global bond markets today. We could soon be repeating the quote from one character from *Black Widow*, the most recent *Avengers* movie: “The Best Part of My Life (insert “Investment Gains” for “My Life” here) Was Fake And None Of You Told Me”. Well, now we have been told.

## Central Bank Ragnarok: Inflation May Be Here To Crush The Gods Of Money Printing

November 10, 2021

**A**s I wrote about last [month](#), my wife and I have been on an Avengers binge. My young son recently convinced us to watch “Thor”, and we are on the third edition of that goofy and arrogant hero’s antics. In this one, for those who don’t remember, Thor’s older sister Hela returns and amongst other things demolishes Thor’s hammer like it was made of glass.

Central banks collectively have also been acting like Thor with their monetary policy hammer. Their Hela is, of course, inflation. The mantra of central banks has been to print more and more and more money to solve any and all problems.

Market participants have gotten highly addicted to these goofy policies and rising financial asset prices. As the most recent CPI reading showed 6.2% inflation rate (Source: Bloomberg), the highest in almost 30 years, the bottom began to fall out of both stock and bond markets. Hardly a surprise to anyone who has been to the grocery store lately, or filled their tank, but Wall Street investors are of a different breed.

Not only has inflation not been “transient”, it is becoming more persistent in places where the Fed said it wouldn’t. There are no two ways about it – the Fed got it wrong, period. But with their super-powers and an all-powerful hammer of money printing, central banks continue to take actions that will likely worsen inflation. Consider the \$100 billion of money through asset purchases every month (this is after the 15 billion of “taper” that will begin this month). By the time they are done at the advertised pace, another half a trillion dollars of new money will be sloshing in the system. Unless, of course, the hammer is shattered by the return of their Hela – i.e. inflation, which can cause the Fed to either panic and tighten too aggressively, or risk letting the situation get further out of hand. Think of an irresponsible bartender “tapering” an obvious drunk with more booze rather than cutting the drunk off quickly and completely.

The tone-deafness of current policy stance is made even more interesting, almost laughably funny, almost like the movie series, with last week’s release of the latest edition of the [Fed’s financial stability report](#). As is often the case, what I noticed the most was what was missing in that report. In the classic form of a self-congratulatory sales brochure it states a lot of facts, and shows a lot of pictures, but the narrative completely ignores

the elephant in the room – the Fed’s own actions, to gently convince readers why things are so hunky dory.

The text tries to assure investors that there is very little real risk to the economy from current levels of interest rates and asset prices. However, just to cover all bases, the report creates a nice little hedge (p7) for the Fed with the statement that *“Asset prices remain vulnerable to significant declines should investor risk sentiment deteriorate, progress on containing the virus disappoint, or the economic recovery stall”*...duh! A great example of stating the obvious but without mentioning the obvious causes.

The report also talks about how banks have had a record profit and why this makes the financial plumbing safe – another obvious statement that completely ignores cause and effect - the banks have been making so much money because they are selling the Fed all the trillions of Treasuries it buys, in a well-telegraphed fashion. Just imagine if you told me that you would buy three or four billion dollars’ worth of bonds every single day. Of course I won’t know until the event which bonds you would buy, but because every bond in the market is connected through the interest rate yield curve, my best bet would be to analyze your previous patterns, step in front to buy up all the bonds in advance of your order, sell you the ones you wanted, and then hedge my risk out. Easy-peasy. Money out of the taxpayers’ pocket and into the vaults of the bank’s shareholders. In Europe, it is even more perverse – the ECB [effectively](#) pays banks to buy bonds at negative yields as long the banks do its bidding.

How’s this one from the report? *“A forward looking measure of*

*Treasury market volatility derived from options prices changed little since May, on net, and remains below the median of its historical distribution”* (p11). The writer probably intended this to sound like a statement supporting the notion of financial stability. It is anything but. The Fed’s backstop of Treasuries is the reason that volatility appears low. To imagine what could go wrong one only has to look at the Reserve Bank of Australia a couple of weeks ago. After spending close to twenty billion Australian dollars to keep three year yields close to zero, and market implied volatility very low, the RBA threw in the towel, and the yield jumped almost seven fold, causing global mayhem in the bond markets. The RBA was the first central bank godlike creature to perish under the weight of the market. The Bank of England followed next, first preparing the market for an imminent tightening and then doing nothing. A gross act of miscommunication that created unnecessary bond market volatility, but also showed that the all-powerful central banks are at the end of the rope of credibility.

I won’t bother the reader with a line by line critique of the Fed’s recent report, though I do hope that econ professors in universities give that exercise to their students to see how well the students can sift fact from fiction, reality from fantasy, and more importantly conclusions made. But here is one that keeps popping up: *“the difference between the forward earnings-to-price ratio and the expected real yield on 10-year Treasury securities—a rough measure of the compensation that investors require for holding stocks, known as the equity premium—has increased a touch since May. In contrast to the signal from other valuation measures, this measure of the equity premium remained somewhat above its median, suggesting that equity investor risk appetite remained within*

*historical norms*“ (p 13).

Seriously. The goal of this section seems to be to convince the reader that by looking at an independent set of market variables one should logically conclude that equity risk premiums and hence equity prices are at normal levels. But note that the Fed is one of the biggest owners of TIPS (Treasury Inflation Protected Securities), whose yields are used for the “real yield” component in the calculation. Real yields in the ten year maturity are at minus 1%, because the Fed has been buying them, crowding out other investors looking for inflation protection (one part of the government, the Treasury, selling inflation insurance, and another part of the government, the Fed, buying up that same insurance!). The difference between the forward earnings to price and the real yield, which the report takes as the metric of why investor risk appetite remained within “historical norms” is therefore completely misleading, because the real yields are low because of the Fed’s own buying of TIPS.

When talking about “meme” stocks, the report says (p18) *“Longer-run changes in demographics, regulations, and technology as well as behavioral factors that could interact with these structural changes may have influenced recent trends in the demand for and supply of retail trading opportunities in equity markets.”* The report completely ignores zero interest rates, massive liquidity infusion and all the helicopter money that is being mailed to retail investors, which has clearly been one of the main reasons for increased stock market speculation by retail traders.

So how should investors prepare themselves for what is likely to come?

There is a school of thought that the Fed is the source of bubbles and busts in our economy by initially denying any risk due to ultra-easy policy (count the number of times the report suggests that things are just fine), then plays catch-up by aggressively tightening and crashing the markets – pulling the punchbowl just when the party's getting going, according to the saying. Which they can rescue again – to quote Thor: “that’s what heroes do”. It is possible we are at an inflection point, where bubble-forming rhetoric will be quickly replaced with bubble-bursting logic. If the experience from Australia and UK are a precursor of things to come, my guess is that we are setting up for an aggressive tightening pivot by the Fed, and possibly by the ECB.

To possibly get ahead of this pivot, investors would do well to consider following the simplest script when faith in the central banks' credibility is erased: first do not buy any bonds that the Fed has been buying but could likely stop buying without much warning. If one has to buy bonds, shorten duration and wait for the opportunity to re-deploy that capital once the bond market gets to its natural price and yield level. Second, anything that is a beneficiary of low yields should be underweighted. This means moving allocation towards value stocks and small stocks that have actual profits and may distribute cash. Large cap growth stocks are simply another expression of a long bond position at these rate levels. Third, self-insure your portfolio using options. Whether this is via protective put options on the stock market or replacement of outright exposures with call options, low volatility levels are an opportunity to be the last one standing if the central bank asset market put is removed from the equation. Of course, there are other scripts market participants can follow



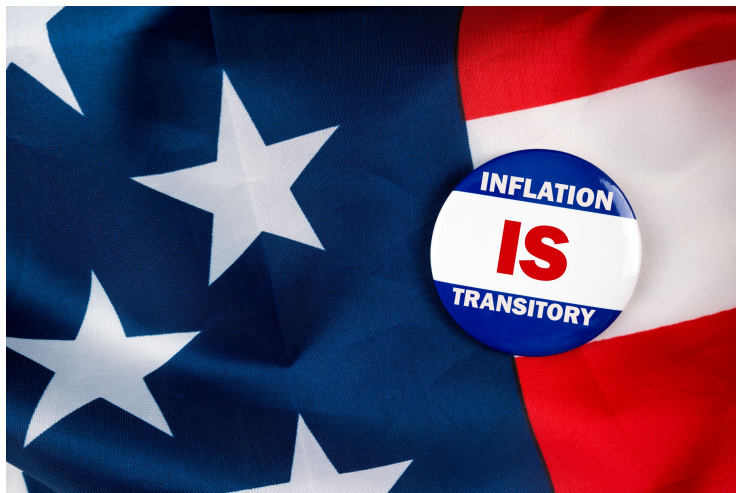
and it's important investors always consider their individual circumstances and risk appetite when considering which script to follow.

The good news is that in Norse legend Ragnarok, the twilight of the gods, was followed by a new world with humans in charge. The same will likely happen here. Once the inappropriateness of the monetary policy of the day is realized, a whole new set of more balanced policies will surely emerge (at least let's hope so), and provide investors who have survived the opportunity to thrive. We have to remember that just like Thor was able to hold his hammer because he was deemed "worthy", central banks have gotten to print money and buy trillions of assets because they rightfully earned credibility over the last three decades. With inflation beginning to run out of control while they stick to meaningless wordsmithing it feels that they are very close to losing this credibility – and when they do, they will likely lose the right to use the magical monetary hammer to keep markets afloat.

## Oops ... He Did It Again!

December 1, 2021

“Jay” Powell – that is. The famous “[dangerous transitory man](#)” has [pivoted](#) again, as we, and the market, expected. In a flash he went from the “transitory inflation” camp to “persistent inflation” camp. As expected, the yield curve underwent a vicious flattening twist, breaking carry strategies and market calm at the same time. Investors were again exposed to the whims of central bankers who do not know any better than the rest of us, but believe and talk as if they do, until they change their mind without warning, and whipsaw confidence and markets. So much for an early start to the Santa Claus rally.



Britney is free, but captive bond markets are still at the mercy of men and women with the printing press who can change their mind ... again. The markets have been telling the Fed all along that there was nothing “transitory” about inflation, but it took questioning by other lawyers that made this one lawyer “retire” the term. Neither nominal nor real yields reflect economic fundamentals today, because bond prices are set by the marginal price setter - the central banks.

But as Jim Bianco of Bianco Research has been pointing out for months now, central bankers are human too, and they go through the five stages of grief like everyone else: denial, anger, bargaining, depression, and finally ... acceptance. The Fed has accepted it was wrong, and capitulated, and the ECB, led by “transitory lady” Christine Lagarde, will not be far behind. In my humble opinion, when the facts change it is ok to change your mind. Just do it without much delay so you don’t waste other people’s money and cause serious damage by

being mulish.

The sudden hawkish pivot of the Fed has created mayhem across financial markets because it took so long. The “reflation” trade which came in many different flavors from easy policy to re-opening of the economy really came unwound in October and November. Here are some examples: levered yield curve steepening trades were unwound resulting in short yields rising and long bond falling in yield. One could interpret long term yields falling as a sign that the market thinks that the Fed is making a mistake that would slow down the economy, hence lower long bond yields are rational. I have a different view. It seems to me that given the relative illiquidity of the long end of the bond market and little free supply, this is a technical unwind from the steepening trades being taken off to stop losses. As of this writing thirty year maturity long bonds are yielding only 1.75% (Source: Bloomberg), which is almost 4% lower than inflation, so I don’t see a fundamental reason for anyone to love these long bonds unless some rule forces one to buy them – e.g. pensions and insurance companies looking to hedge liability risks, for instance, or for foreign investors from Europe and Japan who have to pay to own bonds in their own countries; energy stocks were pummeled as crude oil collapsed faced with the specter of lockdowns, and a Fed taper acceleration that was a one-two punch in the face of travel related spending; small cap stocks lost almost 6% in the last month relative to long duration mega-cap growth stocks; and stock and bond volatility has begun to wake up. Even currency volatility is stirring as each major central bank starts to set policy with its own local objectives in mind.

I think of the events of Tuesday's Powell testimony as a "last call" to hit the bar, which might still be holding asset prices up temporarily. Going back to college days, we knew that when the bartender said it was last call for alcohol, those still standing would make a rush for the bar, and order a couple extras, or maybe that last lethal "scorpion bowl". So despite the pivot by Powell (1) the Fed has not committed to tapering faster yet, (2) they are still pumping in a hundred billion plus every month of liquidity into a drunk market flush with liquidity, (3) Powell can and will pivot again if December 2018 repeats; i.e. the market crashes, or maybe even goes down 10% or 20%. This is what the market believes. We just have to wait and see if we can trust the Fed – the market should quickly put policymakers to the test to see how deep the love of markets really is.

So what does this mean for investors?

First, as I wrote in my Thanksgiving [edition](#), it never pays to be the last comfortable turkey who waits until the day before Thanksgiving to have a sudden recalibration of reality. Exiting or hedging risky assets before everyone else gets the same idea should rank high amongst investors to-dos. Unfortunately the VIX has already almost doubled (from 16 to 31) in a couple of weeks (source: Bloomberg), so short dated options are not that cheap anymore in my view. Looking out in time, if we believe that the recent Fed pivot is going to be followed by years of tightening (before markets cry out in pain again), longer dated option volatility is preferable for building robust hedges for stock portfolios.

Second, if the Fed is tightening policy shouldn't bond prices fall

and yields rise, especially when inflation is running so hot? Yes, absolutely. But in the short run the opposite has happened, and as I mentioned above, this appears due to technical unwinds of steepening trades, in a period when the Fed is still buying lots and lots of bonds. In six months' time the taper will most likely be done, at which point this bid from the bull in the china shop would have disappeared. If inflation is persistent, anyone buying bonds at current yield levels will almost certainly lose real purchasing power. Of course, the risk of a pivoting Powell is that once the market cries in pain, he pivots again and eases – and perhaps the market, now well-educated to the dance, is prepping itself for that pivot. My own opinion is that once the trillions of money printing ease, the first reaction of bond yields will be to rise, not fall. Which means that the last call that has sent patrons to the bond market will be best advised to exit before this bar closes down for good.

Finally, as my readers already know by now, there are countries like Germany and even France, Italy, Spain, Japan, where most maturity real yields are negative, and almost half the nominal yields are also negative. In these countries, where more than 50% of the bonds are owned by the central banks, a pivot would be devastating to their bond markets, and for the public who indirectly owns these bonds. Which probably means that these bond markets actually become “government bond markets” in the truest sense – only the government issues them, and only the government buys them, in order to keep yields low to make sure that debt servicing costs don't explode up. In other words printing more debt to keep up the value of old debt. Like what happens to the grass when elephants fight, any private investor will probably get trampled.

OOPS ... HE DID IT AGAIN!

We are facing an era of pivoting central bankers. All of us, including the retail army of HODLers, and “Buy The Dippers” who have been conditioned by their friends at the Fed to think that central bankers love them should hear Britney when they see the latest pivot:

*Oops, I did it again*

*I played with your heart, got lost in the game*

*Oops you think I am in love*

*That I'm sent from above*

*I'm not that innocent*

#freebonds

## A “Numble” Fed: What To Do When Random Flip-Flopping And Ambiguity Is The Strategy

February 1, 2022

I would like to invent a new portmanteau word “Numble” to describe how central banks now operate these days: it is a combination of the Fed’s new word-smithing twist “[humble and nimble](#)”, since “transitory” is so 2021.

The term perfectly describes the increasingly random (you can put lipstick on it and call it “nimble”) policy decisions of the Fed which are anything but humble. The markets are being slowly conditioned to become numb to their stumbles, albeit in a volatile way. But like a rogue trader gone amuck, “data dependent” “nimble” central banks have become bulls in a china shop, armed with shaky economic theories and



prognostications that at best are laughably silly and at worst seriously damaging to the long term financial health of the countries and economies they govern.



Let's recap before we dive into what actions investors can take. The Fed denied for almost a year that inflation was a problem and that it would go away; i.e. the famous “transitory” that we won't talk about anymore that I and many others wrote about being just out of touch with reality. This followed the “data-dependence” and “FAIT” (flexible average inflation targeting) paradigm that has pretty much been abandoned now. That of

course followed multiple policy pivots that have now become standard expectations of Jerome Powell and the Fed's erratic behavior.

In an interesting paper by a Cleveland Fed Economist titled "[Average Inflation Targeting: Time Inconsistency and Intentional Ambiguity](#)" which was presented at the recent American Economics Association annual conference, the authors discuss the "new policy framework of average inflation targeting and its ambiguous communication". They conclude that the central bank has the "incentive to deviate from its announced AIT and implement inflation targeting ex-post to maximize social welfare". And as the second motive for ambiguous communication they conclude that "ambiguous communication helps the central bank gain credibility". Yes, you read it right. By bumbling communication where the horizon is not communicated, the Fed, in the minds of these economists, gets more credibility, and thus can be justified in being "time-inconsistent" and pivot from being accommodative to being hawks, like they just did. I am a theoretical physicist by training, so the math did not scare me.

But the logical jumps did. "Nimble" basically means not being clear, according to this interpretation so there is maximum flexibility. Please read the paper so you can see how simple logic can be contorted into a pretzel via the mechanisms of idealized theory and simulations that defy common sense. It is like bit like saying that the next time your kids are being bad you should promise them one thing, but when they start behaving like you asked them to, you should do a 180 and change your mind completely since statistically that will build more credibility

for your process. By repeatedly following "time-inconsistency", if you believe this literature, your kids will think, after you test this strategy out a 1000 times that you are more credible if you are vague, random and inconsistent. The whole argument relies on the fact that the central banks can convince the private sector to believe it over and over again, even though it fumbles and flip-flops repeatedly.

But surely I must have something wrong. Inquiring minds want to know whether the current "humble and nimble" approach to policy making is actually part of a grand strategy to manipulate market expectations with "positive welfare", and us poor and unwashed participants just don't know the grand scheme that's actually good medicine for us if we only knew. But we cannot dismiss the approach altogether. Those of us who have watched movies like "Rebel Without A Cause" will understand that a strategy of credible irresponsibility can actually be a way to win in the Game of Chicken; e.g. take off the steering wheel before you start driving headlong into your adversary's oncoming vehicle.

In other words show that you can be irresponsible but believable. If the markets credibly believe now that the Fed will tighten aggressively to squash inflation — even at the cost of crashing the stock market — animal spirits will begin to calm down by themselves, and the liquidity fueled demand shock will just dissipate. The Fed can declare victory. Problem solved. The bazooka in reverse.

Alas, I don't think the Fed is that strategic at the moment. I think the simple answer is they really don't know what is going

on (and the ECB does not even want to distinguish facts from fiction), and will keep stumbling along. If inflation is such a big problem why else would they keep buying more bonds and pumping more money into the system until March of 2022? The strategy of pushing on the gas pedal and the brake at the same time is neither humble nor nimble – it burns more gas and also burns your brake pads. It does send confusing messages. But maybe sowing confusion is part of the strategy, huh?

Intelligent investors know that the Fed has three mandates, not two. They are, in a circular sequence: (A) minimize unemployment, (B) minimize inflation consistent with (A), and (C) minimize financial instability consistent with (A) and (B). The Fed thinks it can juggle all three at the same time, but they cannot. Right now the Fed has solved the unemployment problem (kudos for that), which has indirectly resulted in inflation, which they are now trying to solve. They can obviously bring inflation down the fastest by crashing the stock and bond markets (talk about throwing the baby out with the bath water), which they can rescue again in the future to go back to step (A).

So what is an investor supposed to do when faced with a flip-flopping central bank that pivots each time it gets economic data and markets wrong? Uncertainty breeds illiquidity. Evaporating liquidity makes the correct portfolio posture to (1) build convexity, (2) have access to liquidity. Convexity means building asymmetries in portfolios; i.e. limited potential losses, but less limited upside potential. AKA “optionality” in the broadest sense of the word – the choice to dictate decisions. Liquidity means not being forced to sell at the wrong time.

Just as we have to drive defensively to avoid other drivers on a slippery road we are again at a point where liquidity in the deepest hedging markets is rapidly evaporating. This results in forced sellers who can't get out all at the same time.

Coming back to the Fed – if inflation control is problem 1 of the “whack-a-mole” game right now, don't be shocked by a shock-and-awe overdo by the Fed and maybe a stunning pivot by the ECB. When that fumble happens, markets will likely become even more volatile than they are already. And when markets stumble, the numble Fed will have to extend credit again. I have no idea when this will happen, but you can bet on a not-so-humble and a not-so-nimble Fed doing what it has always done – put out the fires that it often starts in the first place by not thinking through things carefully through the lens of common sense.

## Ostriching Central Banks- And What Investors Can Do To Get Ahead Of The Stampede Of The Big Birds

February 16, 2022

**W**ith inflation globally running at almost 40-year highs, and the Fed having lost control of the narrative on inflation, one wonders what comes next, and what investors can do about it. Just to remind the readers who might have had their heads buried in sand for the last year and haven't visited a grocery store or filled their tank: inflation in the US as measured by the CPI (consumer price index) came in at 7.5%, and PPI (producer price index finished goods, non-seasonally adjusted) just came in at 12.2% (Source BLS). It's the same story around the world. Inflation is raging, while the central banks are still buying bonds and pumping more money into the system. Nominal bond yields in the US

are still under 3%, and real yields in intermediate maturities (as measured by TIPS) are negative. Yes, if we own these bonds we are paying 5% a year of purchasing power or so for the privilege. Time to take our heads out of the sand!



A good image to keep in mind while you read this is that of an ostrich. The ostrich has a small head on top of a very big body. Contrary to popular belief, it is not just a large, dumb chicken, who buries its head in the sand to hide itself. Because it buries its eggs in the sand, its small head is hidden from view when it rearranges said eggs. Hence the myth of burying its head.

The Fed and the ECB have indeed laid some really large eggs when it comes to forecasting economic conditions, and are now trying to rearrange them. Actually, take that back – they continue to lay new eggs by continuing to buy bonds;

i.e. putting billions of dollars of additional stimulus into the economy even as inflation fires rage, and sentiment of the common public falters with the rapid rise in prices. Not only does this ostrich continue to do more of what's not working, it tells everyone how and when it's going to do more of what is not working. [Here](#) is the New York Fed's purchase schedule just announced. Between 10:10 am and 10:30 am on designated dates, the Fed will come in and buy well-defined Treasury securities. Now why would they do that?

Let us go back to the three primary objectives of the Fed. They are, in a cyclical order: target unemployment, target inflation, and target financial instability. We now know that they have won the unemployment battle. We also know that they have lost the inflation battle, though one can always put lipstick on this bird and declare victory.





So the head moves naturally to the third egg: financial stability, which requires the banking sector as intermediary. A sudden stop to the Treasury purchases, in the face of accelerating inflation, will presumably create air pockets of illiquidity — i.e. financial instability — and upset the banks that own a lot of these bonds that they were planning to sell to the Fed. That's not a good way to keep friends. The writing, however, is on the wall. If you own bonds as a non-bank, this is basically THE last call to sell it to the Fed. After that, you are mostly on your own.

What comes next? Like a parent who has lost control of rowdy children, the next step will likely be an act of rash, credible irresponsibility — shock and awe, if you will, to show who's boss in this game of chicken. For the Fed, and perhaps for the ECB, this means an unexpected act that will put the market back in its place. And yes, there is precedent for that, though most people in the markets today may not have lived through it. Today, however, sticking it to the market for a short time might not be such a bad thing anyway, since the benefit is bringing back some fear of the Fed into the system.

There are three acts that would show the market today that the Fed means business. The first one is to simply renege on its promise to buy the bonds until March. Tough to do because the schedule is already published and the banks are likely already getting ready to sell the bonds back to the Fed; and yes, they will likely buy them back from the Fed later this year at a lower price when the Fed starts the “runoff”. The second option is to beat the market's expectations of a 50 basis point tightening in March and do 100 basis points instead. James Bullard of the St. Louis Fed has already floated that trial balloon ([here](#)), and

the equity markets only complained a bit. The third option is to do an inter-meeting tightening. This was last done in 1994, and I well remember trying to catch that falling bond knife. Fortunately, my feathers were only barely plucked the last time the Fed fell way behind the curve.

So given that the Fed is likely to try to earn lost credibility by acting somewhat rashly, what should investors consider doing to avoid becoming poultry at Chick-fil-A? Obviously one cannot completely bail out of bonds, since even cash is effectively an overnight bond; the value of the cash depends on the issuer (the US Treasury) making whole on the obligation. Even a one dollar bill is backed by the full faith and credit of the US government. But what one can consider is reducing duration quickly.

Duration reduction comes in many flavors. In the bond markets, it means exiting long duration bonds, both the nominal and the real kind, unless, of course, one needs to hold them for other, non-economic reasons or legal requirements. In equities, reducing duration means exiting growth stocks levered to low interest rates and bond yields, and moving into assets that pay back dividends sooner rather than later. Credit assets, both investment grade and high yield, are long duration at current level of yields. In real asset sectors, reducing duration means exiting assets that compete with real bonds; e.g. gold and other precious metals. And yes, TIPS are going to get socked hard if you buy them at negative real yields. The effect of rising yields on bonds is very non-linear, since the discount factor is an exponential function of those yields. When yields go from negative to positive, the discount factor goes through a phase

transition; i.e. think of heating water until it converts to steam. Lots of financial assets will indeed go up in smoke. Just observe what has happened to the universe of negatively yielding bonds globally in just a few months – they have dropped from almost twenty trillion to just a couple of trillion (Source: Bloomberg). And this despite the un-hinged buying of these bonds by the ECB and other central banks.



*Masai Ostrich, Struthio camelus, male running, Mara Triangle,  
Masai Mara Game Reserve, Kenya, Africa*

Back to ostriches. Did you know that not only are they the biggest birds on land, they are also the fastest birds on land? When central banks turn tail and run for the exits, investors will have absolutely no chance to get out of the stampeding bond markets in front of them. The best way to outrun the ostrich is to start running before it does.

## The Fed Is Ready To Break Things And Two Year Treasuries Are The Place To Be

March 28, 2022

**T**he message is clear to anyone filling their tank, or grocery shopping. Transitory is out, persistent inflation is in. The Fed is panicking, and investors who bet on the central bank propping up the bond market are trapped. The big elephant herd is running to get out of the keyhole. The year is already a debacle for the bond market. The stampede we called for has begun ([here](#)). The grand Modern Monetary Theory experiment is dead (for now), and inflation is here to put the gods of money printing back in their place ([here](#)). Central banks and commercial banks and funds who front run them gorged on these hot dogs ([here](#)) and now they are very very sick. The “misery index” is set to rise (the sum of

inflation and unemployment) as we discussed ([here](#)). Having lived through 1994, when the non-maestro Alan Greenspan delivered an intermeeting tightening and shocked the bond market, we also discussed why that year is a good model for a panicked Fed. Recently a Fed governor used the same year as a model of what might be coming ([here](#)).

Ok, so this commentator has been writing about exactly this sequence for roughly three years now. But you surely do not want to hear “I told you so”. So we will now talk about what we can expect in the months to come and what we can do about it.

Quite simply, the Fed, already a “data-dependent” trader, will now act like a born-again tech entrepreneur. Which means it will act to move fast and break things that it erroneously created. The days of financial market support from the central bank are gone for now, it seems. Certainly FAIT(H) is gone ([here](#)). If anyone believed that the TIPS “breakeven” inflation rate (I.e. the difference between the nominal and the real yield curves of the same maturity) was an indicator of inflation expectations (it is not anymore because the Fed owns a whopping twenty percent or more of all TIPS and bought all of the issuance and more last year), even that indicator has gone way past the Fed’s target of 2% on average. Currently the two year breakeven is at almost 5%, and the five year forward five year breakeven is drifting higher. Inflation expectations are un-anchored. How many times have you recently heard...”I bought this or that for x dollars just a few months ago, and I thought I was overpaying, but now I can sell it for 20% more”? The Fed has become a victim of being dependent on the same data that it has distorted by continuing to buy assets in the face of inflation, and now the

data is driving it, literally, to the edge of the precipice.

As we have discussed before, the Fed has three objectives: unemployment, inflation and financial stability. Right now inflation is THE problem. And yes, the Fed is a political creature, and has to show that it is following its “dual mandate”: price stability and maximum sustainable employment. And yes, breaking the economy and the markets is the only way to get inflation down. Like a deer caught in the headlights, Fed policymakers are looking at an angry Congress and an angrier mob ready to chase them out of their hallowed marble halls where they have gotten basically everything related to economic data 100% wrong. So this “numble” (nimble yet humble) Fed will talk about tightening 50 basis points each meeting until it catches up at least halfway to inflation. So short term rates of 3% to 4% by the end of the year? Possible. Inter-meeting tightening? Possible. And yes, they were stimulating by buying billions of bonds until last month. They still need to buy almost 100 billion each month just to keep the nine trillion balance sheet unchanged. So maybe stop recycling the maturity and coupons? Yes. How about selling the existing bond portfolio? Yes. Think about a crazy driver at the wheel of a semi driving at full speed with the handbrake on, and you get the picture of what is coming next...

Somewhere between here and the time the vehicle stops, the economy will likely fall into a recession, stocks will crater, unemployment will begin to rise. In other words financial and economic instability will come back to be issue number 1. Which means another round of stimulus, more bailouts, and perhaps outright purchases of the stock market by the

government.

So what should investors do to get set up for this? My own view is that this is the time to be safe while earning some yield and rolling down the front end of the yield curve which will be the first one to pancake when something breaks. As the big elephant herd tears the door down trying to slip out of that keyhole, I will be hiding out in Treasury two year notes. Yes, I will still be losing real money to inflation for the next two years, but at least I know the principal will be returned, and it gives me lots of optionality in the interim. With a yield of 2.25% today (Source: Bloomberg) and a duration of 2 years I will make about 3% for a year with roll-down and carry. Not fantastic returns, but at least it's guaranteed to be positive if held to maturity. The least of all other evils while a confused Fed breaks stuff to show who's boss. And when stuff actually breaks, these 2s will be likely better than gold because they will probably be the most liquid asset to use to buy stuff from the debris. And yes, if the Fed pivots again, as I suspect they will have to, these 2s will possibly see some nice price appreciation too.

## Moving The Goalposts: How The Fed Will Fix Distorted Perceptions It Created And What Investors Can Do To Score

April 7, 2022

**B**y now it is common knowledge that the Fed (and the ECB) have not only missed on their recent economic forecasts, but also acted aggressively on these wrong forecasts that they now have to unwind. Amongst the many distortions that faulty policy has created there are three that have distorted the signaling mechanism of financial markets.

As participants well know, market prices not only reflect demand and supply, but also signal what the market is thinking in aggregate about the future. Once the market “thermometer” is forced to stick to a preferred reading, it is impossible to tell



whether it is freezing cold outside or sweltering hot. Right now, Central Banks are in a zone of maximum confusion created by their own actions, and the market is in the zone of maximum uncertainty, and the traditional indicators are not helping point to a clear outcome. The resolution of this confusion won't be pretty, but as always there are opportunities that is presented in times of uncertainty and elevated risks.



The first and most important signal that the Fed has distorted is the shape of the yield curve. Yield curve inversions, in particular, are well known by market participants to be a reasonably good predictor of recessions. Historically, that is. Right now, the Fed owns so many Treasuries that it has the power to make the yield curve shape whatever it wants it to be. So when Powell says that he does not think there will be a recession in the economy, we know that he is basically pontificating about his hopes ("hope is not a good policy

strategy”), but he cannot really rely on the curve as a signaling mechanism, which the Fed basically owns via the trillions of Treasuries, to make that point.

No wonder that as the yield curve inverted sharply last week the vice chair (Lael Brainard), came out and indicated that the Fed might start running off its \$9 trillion balance sheet perhaps as soon as May ([here](#)), which was confirmed in the Fed minutes of the March-15-16 meeting! Now that’s a pivot that will make the yield curve twist like crazy. Bottom line – the Fed can and will sell as many long term bond holdings as it needs to so that the yield curve re-steepens. Indicator schmindicator. For all those folks wasting electricity searching “yield curve” on Google (see Google trend spike [here](#)), just forget about it. There, expectations fixed, recession fears solved.

The second most important signal to pay attention to is the “breakeven rate” between nominal bonds and inflation protected bonds (TIPS). In a free bond market this difference would be a reflection of market expectations of future inflation. But as I have written for over three years now, the Fed has bought up a large fraction of the TIPS market, and because there are only so very few of them, the TIPS prices and yields are all goosed up. The admittedly wonkish five year forward five year breakeven is the implied inflation rate five years forward using the four legged combination of nominal and TIPS ten and five year bonds. This indicator, as of today is at 2.5%, which is about half a percent higher than the long term inflation target, but just at the boundary of comfort for the Fed (source: Bloomberg).

To anchor inflation expectations, all the Fed has to do is to

manage this forward breakeven rate down towards 2%. Then they can say – “look, the forward breakevens are coming down to our long term target”. Yes, in a world of expectations manipulation this can and will happen. And to achieve this objective, the Fed can sell a few extra longer term TIPS relative to shorter term TIPS. Given the size of their balance sheet this is not a tough thing to achieve.

The third most important signal to watch is credit spreads. It should come as no surprise that credit spreads were compressed to an unprecedented level because the Fed and the ECB bought boatloads of corporate bonds. CFOs of the issuing corporations in turn used this free money transfer to buy back truckloads of their own stock. Tight corporate spreads mean (again through the wonkish “Merton model”) high equity prices. High equity prices mean loose financial conditions. IF the Fed wants to indicate that financial conditions are going to get tighter, a little nudge toward wider corporate spreads is all it will take. But not too much, because a stock market crash can easily occur, and that may throw cold water over everything.

To recap, here are the three indicators that have lost their time-honored signaling content: yield curve spreads, TIPS breakevens, and corporate spreads. But these three indicators of yesteryear are still potent tools for the Fed to paint its version of the future- the indicator is now a tool! And that is how they are likely to be used going forward- tools to move the goalposts.

What can investors do?

First, to bet with the Fed’s intent to steepen the curve, shorten

portfolio durations. As I wrote in my previous [post](#), I am hanging out in the short end of the yield curve; i.e. two year notes in particular, while the Fed's newfound aggression breaks the bond market. In the meantime I will settle for 3%-ish roll-down and carry per year, thank you very much.

Second, since we know the Fed can bring inflation expectations as measured by the TIPS market to whatever level it wants (it owns this "thermometer"), market participants might explore shorting longer term TIPS against nominals. Or, in wonkish terms, shorting longer term breakevens. My bet is that if the Fed really wants to put the inflation genie back in the bottle, it has to convince people that it has the resolve to do so, and so far the uber hawkish pivot of even the most dovish members shows that they have religion on this issue.

Finally, low quality credit exposure needs to be avoided and market participants might be best served by carrying a healthy skepticism of exposure to high flying equities.

To summarise: in order to declare victory and erase memories of the "transitory" inflation fiasco, the Fed is now on a mission to move the goalposts, even though this might mean roiling markets a bit. Investors who can anticipate this can switch their aims too and score a few easy goals in the interim.

## Getting Ready For The Dovish Pivot From The Fed

April 26, 2022

**I**n the last few days the chorus of Fed Officials talking about “getting to neutral” has reminded me of the famous Yogi Berra saying: “if you don’t know where you are going you might end up somewhere else”. The current state of affairs is probably more apropos of “Alice’s Adventures in Wonderland” author Lewis Carroll: “If you don’t know where you are going, any road will get you there”. The flip-flopping and apparently random decision making, under the guise of “data-dependence”, is going to inevitably lead us to high volatility and fat-tail moves, especially as the Fed is no longer buying massive amount of assets. That place, a world of financial instability, is where this new-found love of “neutral” is leading us. And in due course, because that neutral point is so far away, this new mantra will likely be met with a dovish pivot to squash the volatility and

unhinged markets. Investors should be getting ready for this pivot to happen sooner rather than later in my view.

Theoretically, the “neutral” rate is the rate at which the stance of Fed policy is neither accommodative nor restrictive (the “real” rate version of this is called “r star” and is part of the famous Taylor rule that prescribes monetary policy given economic potential, inflation and growth rates). It is the short term real interest rate consistent with the economy maintaining full employment with associated price stability (see Kaplan, Dallas Fed [here](#)). However, the Fed really does not know, and for that matter, *no one knows* where this mysterious “neutral” interest rate is that they are increasingly talking about.

What the officials who point to the neutral rate are referring to is an imaginary, make-believe number that reflects their own median forecast on the “dot-plots”. According to this consensus “model” the current neutral rate is 2.4% (see [here](#)). This way of getting to a credible (though very possibly inaccurate) result is a great example of what Charles Seife calls “proofiness”. His book of the same name opens with this statement: “If you want to get people to believe something really, really stupid, stick a number on it.” Seife further calls these types of numbers “Potemkin” numbers, or fabricated statistics, numerical facades that posture as real data, but just something that motivates the arguments that one is trying to make. And this is not the first time that the Fed has made up a number or a concept that justifies what it is trying to do. I am sure that the good, non-elected folks have the best interests of the economy at heart, but since they have no real skin in the game like investors do, they can basically make up terms and rationales as they go. And in the process

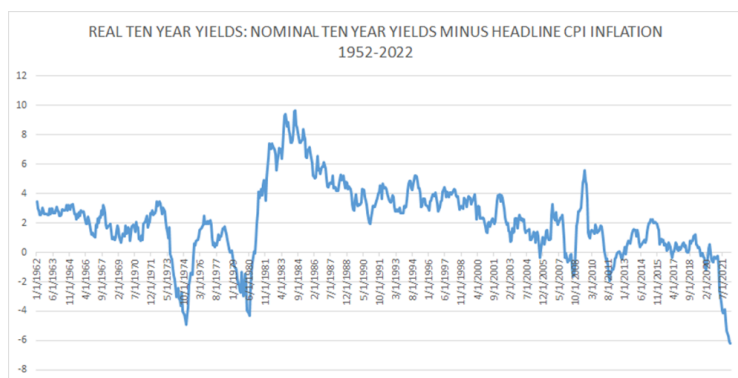
create volatility, and do I dare say, opportunity, for investors who can see the naked emperor.

The real problem with pinning a numerical value on a number such as the neutral funds rate is that we are in an environment that the economy has not seen in 50 years, and we are dealing with the consequences of actions that are incredibly path-dependent. The “equilibrium” concepts that result in the concept of neutral simply do not exist for an economy beset with massive externalities like COVID, war, inflation, helicopter money, negative yields...the list goes on.

Think about brake pressure used to stop a car (again the car analogy has been used by Kaplan, above, while Powell used the analogy of sailors navigating by the stars in using his metaphor for the elusive  $\alpha$  star almost four years ago at the Jackson Hole [symposium](#)). When moving on a flat surface, the average amount of brake pressure needed is quite predictable by solving the simple equations of physics. But when going uphill and downhill on mountains that one has never before driven on, the average amount of brake pressure means very little, since the acceleration and deceleration required is highly dependent on the local slope at the time. A flat-land driver in the mountains inevitably ends up riding the brakes too hard down hills.

Which is where the Fed is today. Their use of the term “getting to neutral” means that they will likely become too aggressive even as the economy is slowing. The real long term interest rates as measured by 10 year TIP [TIP S](#) (Treasury Inflation Protected Securities is still negative (-0.10%), but the Fed owns a large proportion of these TIPS.

The real yield as measured by the difference between nominal yields and headline inflation is still the most negative it has been in decades (10 year nominal Treasury is at 2.8%, and inflation is running at about 8.5% year over year rate, making the real ten year yield shown in the chart below minus 6%! Source: Bloomberg), the neutral real is far far away even if inflation moderates in the coming months. To recycle the quotes used above: “you can’t get there from here without breaking something”!



*The real yield as measured by the difference of the ten year nominal yield and the headline CPI inflation*

A large part of this predicament is due to the Fed falling very far behind the inflation problem (they literally just stopped buying assets a month ago, long after everyone got sticker shock at the grocery and gas pump!). For a levered economy not quite set up to take a sudden, sharp increase in interest rates, the most likely outcome is a sharper than expected slowdown if the Fed tries to stick to its goal of getting to the “neutral” that it



cannot forecast. With inflation running as high it is already and consumers beginning to slow down consumption, can rates get so high that it becomes even harder for consumers to consume? What if inflation does not go down much in the aftermath of rising rates, but the economy, stock markets and confidence all tank in a self-fulfilling prophecy?

As I mentioned in my previous posts on this forum, today we are at a point where the short term yield curve has already priced in multiple interest rate increases. The two-year nominal Treasury is at a yield of about 2.5% (Source: Bloomberg). With roll-down and carry this could translate to a 3% plus total return for a year and with little principal risk if held to maturity. Not bad given the liquidity it provides on top of all this. And if the Fed is forced to pivot to policy easier than what is priced in? Well, these short term Treasuries could see positive price gains as well.

As readers of my prior posts in this forum know, I have been concerned about negatively yielding bond markets now for a few years (see [here](#)). As rates rise and normalcy returns, we will start to find that good old bonds become attractive again as investments and hedges. We are definitely not at that point yet, but since all good things start with the first step, investors would be well served to consider dipping their toes in the short end of the US Treasury curve as we start to prepare for financial instability.

## Self-Inflicted Wounds: Dealing With The Powell Crash

July 1, 2022

**T**he numbers are out. The first six months of 2022 have been one of the worst on record for financial assets. When investors receive their quarterly statements and have the courage to read them, they will be shocked, and with good reason. It seems like a sick joke that we went from all-time highs on stocks in January to the most precipitous selloff of all asset categories in a matter of half a year. What happened to diversification, 60/40, bitcoin...? What about all the promises from financial advisers, bankers and money managers? Is it just a matter of what goes up must come down, or something more consequential?

The not-so-funny thing about this selloff is that it is almost entirely caused by the actions of policymakers, globally. To

recap – after declaring inflation “transitory”, and printing trillions of dollars, Euros and Yen, policymakers suddenly went “oops”, and now are climbing on the bandwagon of inflation worries that many market participants, economists, and this author have been writing about for years.

If you google “self-inflicted wounds”, you will find one definition to be “the act of intentionally harming one’s own body without meaning the injury to be fatal”. And the most important reason for self-harm is given as a coping reaction to feelings of inadequacy, anger, distress and other painful emotions. Central bank leaders and literally thousands of economics PhDs at these banks collectively have been exactly wrong in their forecasts and actions. The feeling of inadequacy is being dealt with not an admission of fault, but to go full tilt in the opposite direction to overcompensate for past mistakes. Like the guy who is on the phone at the stop light, and then guns his accelerator when he realizes he is holding up traffic.

My working hypothesis for the last three years has been that “data-dependent” central banks increasingly play a cyclical game of “whack-a-mole”, where they go from addressing unemployment, to inflation, to financial stability. Currently (see schematic below) they are in the middle of dealing with the inflation to (self-inflicted) financial instability transition. And the next big problem caused by aggressive tightening will be illiquidity, financial instability and the need for another string of bailouts. But the thing about self-inflicted wounds is that eventually it is possible to stop hurting yourself when you become aware. And that is where we are headed.



*Central Banks respond to the current, most-immediate problem, creating a cycle that repeats AUTHOR*

For now we are in a situation where inflation globally is running at about 9% (give or take, and depending on how precise you want to be, the measurement error can be a few percentage points on either side). Yields on nominal bonds are still in the 3% range in the US. So real yields are still very, very negative at -6% or so (Source: Bloomberg). Negative real yields result in a confiscatory tax via inflation, as many people whose wages are lagging prices of goods and services are finding out to their distress.

So wouldn't it make sense for the Fed and ECB and BOJ to keep tightening until inflation is conquered?

Recall that interest rates are only one way for the central banks to slow down the economy. The second way is the

management of expectations by jawboning, also known as “forward guidance”, which recently went out the window when the Fed reacted to a sudden rise in inflation expectations and raised 75 basis points instead of the expected 50 basis points.

The final way to tighten financial conditions is to sell the trillions of assets that they have accumulated. The Fed and ECBs own research stretches credibility in this dimension, which is perhaps one reason they were purchasing billions of assets until just a few months ago and increasingly high prices and low yields. But they are much more sanguine about the impact of a reduction of the balance sheet. For instance, a number of governors have recently been quoted as saying that quantitative tightening, the opposite of the quantitative easing, is worth maybe only 25 to 50 basis points of rate [increases](#). Huh?

One reason why financial assets sold off in such a correlated manner over the last quarter because of the impact of all the asset buying on the discount factor. As we all know, the price of all financial assets depends on three things and three things only. First, what is the cashflow that will be received in the future? Second, what is the probability of receiving the cashflow? And finally, what is the discount factor?

The discount factor is an exponential function of interest rates. By purchasing trillions of bonds, central banks drove interest rates to zero and even below zero. Now that inflation has gone to four times their target, central banks have had to abandon the low interest rate policy, and the discount factor is coming back to bite.

Witness the performance of the German thirty year “Bund” (DBR 0% of August 2050) that I previously have called the “God-Particle” of finance, since it was the first sovereign, real-life, long-maturity, pure zero coupon bond issued at negative yields. That security has fallen from a price of 103 in December of 2021 (negative yield) to about 65 today (yield of 1.5%) (Source: Bloomberg). If you apply this 40% decline to financial assets via the discounting effect, it is not hard to see why all financial assets are getting socked by the same common factor – rising interest yields. And the speed, as one should and did experience, is exponential. If central banks start to sell assets outright, as I suspect they might have to, they will likely accelerate the correlated selloff in asset prices.

Investors obviously want to know (1) when will all this stop, and (2) what to do in the interim? There is a saying on Wall Street that is too crass to repeat here in detail. But it involves a gorilla. And what it basically says is that things don’t stop when *you* want them to stop, but when the gorilla wants it to stop. Picture, if you can, the central banks today as panicked and headless gorillas. The market selloff will only stop when they want it to stop. And when will that be?

When they realize that asset prices are low enough to slow down demand and tip the economy into a deep recession and the political winds start blowing in the direction of bailing out what’s left of investment and pension fund portfolios. For now, airports and freeways are full, cars are being sold at 25% above asking, oil is making records – the signs of demand surge are nowhere close to abating; to be sure, there are some cracks in the speculative real-estate market. But by the time the signs of

a cratering economy are obvious, we will likely already be in a deep recession and the inflation-caused demand destruction will have done its damage. Self-inflicted.

In this environment, liquidity and safety is paramount. As I have written before, and perhaps advocated a bit too early, the front end of the yield curve is a prudent place to consider hiding out; e.g. two-year Treasury notes are the place where an investor can collect about 3% annual return with little risk to principal. In today's environment, these "twos" remain attractive, and the price is cheaper. The risk to this investment is that short term rates keep going up, the economy does not break, and inflation keeps rising. In which case an investor would have lost the opportunity cost relative to inflation.

Unlike the market selloff of COVID, or the crash when the XIV ETF blew up, or even the financial crisis and the Russian debt crisis in the late 90s, the current selloff in the market is almost entirely caused by grossly miscalculated monetary policy coupled with extremely stimulative fiscal policy; i.e. helicopter money.

But that is also the silver lining. As soon as the central banks own up to their mistakes and pay attention to the financial markets instead of distorting them, both the economy and the financial markets will get back to serving their function. For now, I am not so confident that central banks "get it". For example, the Bank of Japan is still defending the 0.25% "yield curve control" target even as Japanese inflation exceeds 2.5%.

Once the markets force the decision upon them, as they always

have, the central banks will pivot. And at some distant point in the future the last few years of central bank action will likely be taught in economics textbooks as what central banks should not to do. While their valiant action in 2020 certainly averted economic catastrophe, the inability to course-correct in time has certainly created the potential for the next one.



## Bloodletting And Central Bank Pseudoscience

September 23, 2022

I was recently reading a book on the life of Beethoven, the composer, and what caught my attention was that he almost lost his life when doctors of the time recommended his deafness be cured by bloodletting! Apparently Mozart, Charles II and many others were not so lucky. Even George Washington was “[bled](#)” until he died – supposedly as a cure for throat infection.

Bloodletting was a common medical practice for thousands of years until the 18<sup>th</sup> century for all types of ailments ([here](#)). Today, the technique is still used for some diseases, typically those related to an excess of iron in the red blood cells (the technique is called *phlebotomy*, and the diseases for which it is currently used are *hemochromatosis*, *polycythemia* and *porphyria*

*cutanea tarda* – I am not a doctor of medicine so you will have to look this up). So yes, bloodletting does make some sense for specific maladies. But to use it as a solution to everything, due to lack of understanding of biological mechanism seems outright crazy in retrospect. But we cannot read history backwards. Given what the doctors knew at the time, and given what the principles of medicine were based on (the four elements: earth, wind, water, fire), it was the optimal, perhaps the only solution known to the doctors of the day.



(Original Caption) France: *La Saignee*. Bloodletting scene at a Grecian sick bed. From ural in the Faculte de Medecin Paris.

Thankfully, we've progressed medically. By bleeding a patient to health, the technique relied on the (pseudo)-science of the day. In most cases, the swooning of the patient from loss of blood was considered to be the signal to stop, hopefully before the patient either dropped or perished. The cure really was worse than the disease in many cases.

One theory behind bloodletting was that many diseases were caused by a plethora (excess) in the blood, and these could be eliminated by removing the blood. The tools for bloodletting included “lancets”, “fleams”, and yes “leeches”. The practice was not limited to one culture or country – to the contrary it was considered established medicine since historic times. And of course academic papers and books were written in support of the practice. The practice persisted for centuries because of “the dynamic interaction of social, economic and intellectual pressures” ([here](#)).

Sound familiar?

Economic theory and Central Banking today seems to be re-running the story in parallel, because central banks hubris and economic dogma of the day makes people believe that excesses in the economy can be cured by asset price deflation, or financial bloodletting. The Fed, and other central bankers like the ECB who followed the Fed blindly over the edge in asset purchases and massive stimulus, now seem to have decided that the only way to restore “equilibrium” in the economic body is to let some blood flow, so to speak. Without admitting that they made a colossal mistake of judgment and decision making in the last few years, now they have pivoted 180 degrees from market friendly policies and embarked on a course of tightening conditions, come what may. As a matter of fact, they are now “happy” that markets fall when they tighten, and the bloodletting won’t stop until the market is close to fainting...which might happen sooner than most folks expect. A major crash in financial asset prices has already occurred in 2022, because a bubble was created by the excess stimulus of

the last few years. But since the patient is still looking healthy, the bloodletting cannot stop, yet. Is there more to come and if so, what can we do about this self-inflicted pain that is a consequence of policymaking pseudoscience?

How do we know that the central banks are engaged in “pseudoscience”? As a scientist by training, I can offer some suggestions (also see [this](#) excellent article).

First, pseudoscience displays a remarkable indifference to facts, and in many cases uses anecdotes and personal experience in place of facts. Second, pseudoscience starts with implausible but appealing hypotheses. Third, pseudoscience refuses to put its claims to a meaningful test. Fourth, it contradicts itself. Fifth, it creates deliberate mystery where no mystery exists. Sixth, it makes extraordinary claims. Seventh, it makes heavy use of an invented vocabulary where terms have no definitions, unambiguous definitions, or imprecise ones. Eighth, pseudoscience explanations are by scenario, rather than mechanism. Ninth, pseudoscience appeals to magical thinking. And finally, pseudoscience appeals to the criteria of the scientific method while simultaneously denying its validity in the current context. We can go on...but a quick review of speeches of Powell (Fed), Lagarde (ECB), and Kuroda (BOJ) demonstrates most of these facets.

Over time, and mercifully, the scientific method of creating testable hypotheses, collecting data, and using common sense resulted in the cessation of bloodletting as a solution to most diseases. It was replaced by scientific medicine by understanding the mechanics, the biology, the chemistry, and the functional

relationship of the components. An engineering solution, if I may. But many generations were bled to death to get to this point.

Next time you hear a central banker tell you that in order to control inflation they will do whatever it takes (raising rates and quantitative tightening), you are basically relying on their assurance that the symptom (inflation) is a complete description of the problem (structural imbalances), and if they raise rates enough, they will erase both the symptom and the cause. We know that neither human bodies nor economies work that way. You don't cure a cold by taking antihistamine, you only make the symptoms go away for a while.

And as it was for medicine two centuries ago, when barber-surgeons used to perform most bloodletting, the risk is that the credibility of the central banking edifice comes crashing down as people realize that the operational principle was based on pseudoscience.

If this is a risk, what should investors do?

As investors who cannot fight the dogma that is currently driving central bank behavior, the choices are clear. First, we can refuse to be buffeted by the decisions of pseudoscientists by taking less risk investing in instruments that have historically been supported by central banks, but now are targets for the bloodletting; e.g., liquid equities, bonds and perhaps housing. In other words, investors should refuse to become sick patients who will agree to bloodletting as the only solution. Second, where possible, insure against that sudden collapse in credibility

and the markets; i.e., hedge, while hedging is still affordable. And third and finally, be ready, with liquidity to invest, for the “pivot”, which of course, will be couched in new, mysterious language. For instance something to the effect of: “we are paying attention to market functioning”. That could very well be a signal that the bloodletting is coming to an end, i.e. the patient is almost dead.

For the first time in my memory, central bankers have conceded that asset price inflation does exist, and in order to bring actual inflation down, asset prices need to be deflated. As an asset owner, I would recommend getting your own, scientifically proven medicine of risk management, liquidity and hedging, before agreeing to become victims of financial bloodletting.

## Inflation Fighting Is Coming To An End, Financial Stability Concerns Are Here - The Bank Of England Pivoted And The Fed Is Next

September 28, 2022

**T**oday the Bank of England, just a few days before it was supposed to start running off the assets it had accumulated as part of the quantitative easing program, announced that it would buy unlimited amounts of UK sovereign bonds (Gilts) to support market functioning. Here is the [statement](#):

*“In line with its financial stability objective, the Bank of England stands ready to restore market functioning and reduce any risks from contagion to credit conditions for UK households and businesses.*

*To achieve this, the Bank will carry out temporary purchases of long-dated UK government bonds from 28 September. The purpose of these purchases will be to restore orderly market conditions. The purchases will be carried out on whatever scale is necessary to effect this outcome. The operation will be fully indemnified by HM Treasury.”*



*Central Banks respond to the current, most-immediate problem, creating a cycle that repeats AUTHOR*

I have discussed this natural cycle in previous posts. See the picture above. Just get used to living with a higher rate of inflation because the alternative is a breakage of the financial markets.

Over the last few days, these same bonds and the British Pound have seen a catastrophic loss of value. The catalytic event was a set of new measures announced by the new UK government that included massive unfunded tax cuts. The Bank of England



says that this measure to restore market liquidity is “temporary”. Sovereign bond liquidity is not only a mark of the credibility of a country and its central bank, it is also the high quality collateral by which financial leverage is facilitated, i.e. through “repos”, “reverse repos” and other secured lending and borrowing.

First, the move is unlikely to be temporary, because any attempt to remove the support of the gilt market will now result in a massive crash of UK government bonds, and will likely take the Bank of England with it, which obviously cannot be allowed. Second, as I have written in this forum, with the massive pile of debt that the global central banks have accumulated, there is all the incentive to look for any excuse to not sell at a “loss” (of course the financial “loss” is technical since theoretically a sovereign can print unlimited amounts of currency to make up the loss. There is economic loss from misallocation of resources, which I will address in a different note). And thirdly, and most importantly, this is a precursor to the de facto central bank of the world, the Fed, to pivot. As mentioned in previous notes, the Fed will now have room to “pivot” to buying more assets in the name of “restoring financial market functioning”. And who would argue with that? Given the choice between inflation of, say 4%-5%, or a total meltdown in the global bond and stock markets, most citizens will let the Fed have the wiggle room.

The Bank of England basically invented the concept of “debt monetization”, to support historic English wars, and this is now a staple of central banking. Since its formation in the late 1600s, its main goal has been to be the banker for the government of England, supporting, and financing its policies, good or bad. Today’s action is another one in a string of decisions that shows

that despite all the dog and pony shows of independence, the Bank of England is beholden to the government of today, and its policies.

So what should investors do?

First, if the gilt market is the new “protected” asset class, then investors should not fight the Bank of England, and buy gilts along with them. Yields of 4% for a 10 year sovereign bond with an implicit put from the central bank seems juicy enough. Yes, you might not like it, but as investors it seems to be the path of least resistance.

Second, debt monetization is never free. This means that the stress has to come out somewhere. So unless the UK government suspends its fiscal plans, the pound sterling has to depreciate, because foreign lenders will require some compensation to lend to a government who cannot balance its budget.

Third, and most importantly, if the original central bank of the central banks can get away with throwing out its inflation fighting creds, then so can all the others. Remember, central bankers are a herd, and they go to the same holiday spots in the mountains, speak the same language, and report to the same political overlords. Which means that the Fed is next. And that means the US Treasury market, especially the short end of the yield curve is a treat which would make my dogs drool. A two year Treasury note at 4.25% with Fed protection!

As expected by this author and the market, now central banks have the perfect excuse to pivot. In a highly levered bond

market, where sovereign bond prices are not only marks of credibility of the central banks, but also the lubrication for transactions and loans, this might be the pause in the great bond selloff of 2022. Inflation fighting over. Financial stability is the next battle the Fed will fight. And that means a Powell pivot. Again.

## It Ain't Over Until The Banks Cry Uncle

October 6, 2022

I would like to thank the New York Fed for inviting the public (virtually) to the [conference](#) last Friday on financial stability considerations for monetary policy, not the least because it allowed the masses to hear the “state of the art” on the interaction of markets and monetary policy. With two of the three of the FOMCs holy trinity attending (Lael Brainard and John Williams), I assume that the opinions of the researchers who spoke at the conference matter a little to the policymaking class.

As I have written previously, we are probably morphing from inflation as the primary objective of the Fed to financial stability (or instability) as the most immediate consideration. Recent actions of the Bank of England and the Reserve Bank of

Australia shows they are already in the middle of a soft pivot toward easier policy. Others are likely to follow when the banks squeal in pain.

Here are some high-level takeaways and then some action items for investors.

The first paper presented at the conference concluded that optimal monetary policy should always pay consideration to financial vulnerability in addition to the “classic” economic variables such as output gap, inflation and the natural rate of interest. Of course markets already know this, but thankfully economic researchers can now incorporate what is known as an obvious fact into optimal monetary policy. Better late than never. The paper notably ignores the feedback mechanism between markets and policy, focusing on banks’ risk constraints. It also ignores the importance of other entities, such as pension funds, who might be running levered “hedges”, as we recently found out in the UK.

We are probably still a few steps away from an explicit incorporation of financial stability into the rules of monetary policy, but I am sure there are researchers who have already been working on “Taylor” rules with financial stability and tail risk as variables. I know I have fruitfully used my own crude version of a non-linear “asymmetric” Taylor rule for investment decision making (see this paper from an econ journal a few years [ago](#)).

Let us talk about Taylor rules for another moment and the concept of “ $r^*$ ”.  $r^*$  is the ethereal “natural rate of interest”, at which actual GDP equals its potential in the absence of shocks.

This has been the topic of much debate in ivory tower policy circles, and indeed is one of NY Fed President Williams' claims to fame. The second paper at the conference introduced a shiny new concept called "r double star" ( $r^{**}$ ). This is the threshold above which there is increased likelihood of financial instability. The historical analysis in the paper confirms (again known to market participants for a long time), that if real interest rates are kept too low for too long, this instability threshold falls. As Minsky said: "financial stability begets financial instability". In other words, if you keep financial conditions too easy for too long, the market gets addicted to it and there is excessive levered risk taking, and this results in increased vulnerability when rates start to rise again.

Here is the punchline –  $r^{**}$  can be much less than  $r^*$  when the markets are vulnerable, because any large shock can result in banks net worth falling below zero, and thus constraining them from providing credit. While I could not obtain the latest reading on the value of  $r^{**}$ , eyeballing the charts in the paper it seems like this rate is probably right around 0%. So if we are already in one of these unstable regimes (feels like it) then real rates as measured by TIPS (at 2% or so real yields on the shortest maturities) are already above the point where financial instability should set in.

As an aside, I am seriously thinking of writing a paper introducing the concept of " $r^{***}$ " (r triple star), at which stock markets, especially banking stocks, start to fall out of bed. I think I can prove with some math the obvious fact that  $r^{***}$  is less than  $r^{**}$  and  $r^*$ , and real rates are already way above my  $r^{***}$ .

The final paper in the conference dealt with the cost-benefit tradeoff from monetary policy “leaning against the wind” versus macro-prudential policy (i.e., regulation). The paper concludes (though it was based on data that does not incorporate the recent inflation shock) that while macro-prudential policy can result in better outcomes, monetary policy is less effective in doing so.

So what does this all mean for investment?

Let us first note that the Fed is technically a “bank” of banks. I was not surprised that all the papers narrowly focused on the banking channel as the key to stability and instability. Central Bank academics like to use banks role as intermediaries to derive nice formulas for the kind of papers discussed in this conference, and unfortunately this ignores the impact of “helicopter money” that was showered on citizens over the last few years (much of which ended up in Vegas slot machines and on now-crumbling SPACs). That point aside, banks are much more than intermediaries. Commercial banks are the ones who actually create credit, and the Fed simply controls the price of credit through interest rates and asset purchases. Yes, the Fed can create a lot of reserves, but unless the reserves create more lending to the economy, no stability or instability is generated. If the banks use the reserves to speculate, leverage, and buy assets then we could have a problem. And when banks are in survival mode, the markets crater. The incredible illiquidity of the Treasury bond market is just one sign of it. The financial crisis of 2008 was another memorable example.

What all of this means is that the impending signs of the Fed’s

pivot will likely show up first in the price of bank stocks. Banks profited enormously front-running the Fed when it was buying assets (because the banks naturally marked them up and sold them to the Fed), and banks will likely get a whiff of changing Fed winds before the common public does because in the academic halls of the Fed, banks are the main medium through which money flows through the system.

As of this writing, the yield curve is sharply inverted, and since bank profits depend on lending long and borrowing short, this is like throwing sand in the working of banks. As short term interest rates rise, investors have chosen to move deposits away from bank checking accounts to treasury bills and notes and the rapidly ballooning Fed reverse repo facility. These provide a relatively hefty 3% plus yield, compared to nothing on bank deposits.

We might be getting close to a banking sector capitulation. Depending on which category of banks and financial services sectors we look at, the last 12 months have resulted in a wide range of outcomes for banks and financials. For example the 12 month total return on the financial services ETF IYG [IYG](#) is -25% , JPM is -33%, GS is -20%, MS is -16%, C is - 37% (Source: Bloomberg). European banks have fared much worse.

At some point the banks will cry uncle, and that is the point at which the Fed will pivot. Be ready.



## With A Little Help From My Friends

November 2, 2022

**I** recently listened to the angst filled cover version of the Beatles classic “With A Little Help From My Friends”, by bluesy crooner Joe Cocker. If you have not heard it recently, please quit reading right now and play it.

Here is how the chorus goes:

*Oh, I get by with a little help from my friends*

*Mm, gonna try with a little help from my friends*

*Oh, I get ... with a little help from my friends*

*Yes, I get by with a little help from my friends*

*With a little help from my friends*

Having been in the markets for over 30 years, when I asked my own friends the question of whether the Fed's "losses" on its bond holdings and cash-flows matter, I thought I saw eyes roll, as in – "that's a stupid question". Of course, according to conventional wisdom, the Fed's losses don't matter, because the Fed can literally print more money whenever it wants. From a simple accounting perspective, all the Fed has to do is to create an IOU – i.e., a "deferred asset" – which it will pay back in the future. So, we are assured, don't worry about it.

To channel my inner Andy Grove, "only the paranoid survive". And in my case, this is by expecting the unexpected. This frequently starts by asking the question: what if the conventional wisdom is not entirely correct? What if, in the present case, the Fed's losses actually become a BIG political problem, if not a pure economic problem? In this world of a very politicized Fed, can political pushback become a problem for markets? And if so, what can investors do to position for it?

As we all know by now, the Fed printed trillions of dollars over the last few years to buy bonds and prop up the pandemic economy. But as they raise interest rates from close to 0% to almost 4% this week (with a 0.75% increase baked in) in the most rapid pace of tightening in decades, the bond market has had one of the worst selloffs in history. As a result, the bond holdings that the Fed currently own have a "mark-to-market" loss of a few hundred billion dollars, and the Fed is paying more on its liabilities than it is earning on its bonds.

How did we get here? The Fed, as I have said before, works for its not-so-little friends — i.e., the commercial banks — and ensures their profitability, directly or indirectly. This is by symbiotic design, since in the Fed's rhetoric, banks are central for policy transmission. No banks, no Fed. Period. Right now, as anyone with a basic savings account knows, the banks are paying close to nothing on deposits. But because the trillions of dollars of reserves the banks were given as part of the Fed money printing earning a lot more on the interest on reserves (see [here](#)), the banks are arbitraging the public with the blessing of the Fed. On top of the \$3 trillion or so in the bank reserve facility, another \$2 trillion is in the bank reverse repo facility where the Fed pays interest to money market funds, and the money market funds also get paid hefty fees to recycle the money thanks to the taxpayers' generosity.

In trader lingo, the Fed is in a public-financed negative carry trade where it is losing money to hold on to its bond assets which are also losing money as their prices fall. Onetime Fed hopeful and gold bug Judy Shelton wrote up the math [here](#). The bottom line is the Fed will be running a negative cash-flow balance of tens of billions per year, which the taxpayer, via the Treasury, has to make up. And of course, if the Fed actually starts to sell off the bonds, as it might have to do with some of its mortgage bonds, it will "lock in" a loss.

As the Fed raises rates and slows the economy down, and possibly creates increases unemployment and a recession, the need to pay the banks and money market funds and foreign entities will require the Treasury to issue more bonds, for which eventually the US public is obviously responsible. And where

does this money come from? From taxes, current and/or future. This is stuff of which political nightmares are made.

Ever since I have been trading in the bond markets, it is well known that the Fed “leaks” controversial decisions to the press to help guide the markets. Market participants know who the Fed’s mouthpiece in the press is at any given time. The reason is simple – by engineering a news article “trial balloon”, the Fed can gauge the response of the markets without having to say anything themselves, especially during the self-imposed quiet period surrounding important FOMC meetings. A couple of days ago there was such an article in the Wall Street Journal by the current Fed proxy in the press ([here](#)). Anticipating congressional posturing, the article pre-empts the political impact of “losses”: *“If the Fed runs sustained losses, it won’t have to turn to Congress, hat in hand. Instead, it will simply create an IOU on its balance sheet called a deferred asset. When the Fed runs a surplus again in future years, it would first pay off the IOU before sending surpluses to the Treasury”.*

The Fed’s own analysis on the matter conveniently sweeps the concerns under the rug by acknowledging that while there will be a cash-flow loss, at some point in the future the liabilities will be paid off. They anticipate this return to profitability date to be in 2026, if the income from the assets it owns exceed the interest rates it has to pay. Note this forecast assumes the Fed will be successful in quashing inflation (fingers crossed), and short term rates will eventually start to come back down below the yield on the Fed’s assets (the yield is currently estimated to be around 2.3%). The inflation surge of 2022 was caused by easy monetary policy and helicopter drops of cash from

the government, which consumers in turn used to go on a spending spree. What makes us think raising interest rates alone, accompanied with a small amount of asset runoff, can bring inflation down that much and that quickly?

We do have to concede that the inability of the Fed to be “profitable”, from a purely economics point of view, is irrelevant. It’s not a company beholden to shareholders. The US can essentially print an infinite amount of dollars to pay its debt. In other words, the principal, in nominal terms, is not at risk. So I agree with the pundits – this is not an economics issue. But it will become a hot political issue. And because the Fed has lost a lot of credibility, I suspect politics will begin to play an important role in the perception of the Fed and hence its ability to make decisions, including making soft pivots, or the new “step-down” language to appease the political overlords.

When push comes to shove, the Fed will buckle under political pressure. There are many ways this can happen. The Fed could simply decide to reduce the interest it is paying on the reserves and on the reverse repo facility. This is unlikely to happen while the Fed is tightening. Any reduction of the rate paid on the reserves would be considered by the market to be an “ease”, which the Fed is probably not going to want to communicate. But if the Treasury bond market crashes further, the Fed might actually pivot to easier policy in the name of “financial instability concerns”, and be able to reduce both interest rates and the interest rate paid on reserves.

The Fed could also reduce the size of the reserve facility; i.e., force the banks and money market funds to buy actual

Treasuries and other bonds instead of paying them interest on reserves. It could achieve this by offering some of its own bonds for purchase. But in order to pull this off, the Fed would need to offer the banks a carrot, as in a reward for taking the bonds off its own balance sheet. Part of the reason is that the traditional “friends”, i.e. foreign central banks, are not buying too many Treasuries today, and might even be liquidating a few to generate much needed dollars. Indeed, if the Treasury actually underwrites a backstop facility for buybacks, as was recently proposed, this would give the banks a reason to buy the bonds, come as this will with a money-back guarantee of sorts from their friends in high places. This could also be done in “tiers”, as was done by the European Central Bank, where only a certain amount of assets would get the full interest on reserves. The limit could be linked to the banks passing some of the benefit through higher deposit rates to consumers. Honestly, I see the prospects of profit sharing with the public to be quite dim.

So we know the Fed is stuck. The current posture of running a negative cash-flow, negative carry trade on dissipating assets is a gamble. If the gamble does not pay off, there will be lots of political noise. You can count on it. And that noise will probably lead to a call for further supervision of the Fed. On balance, this will leave the Fed less flexibility to come to the rescue of risk markets the next time there is a stock market crash.

Faced with these choices, the path of least resistance seems to be leading to a compromise. In that world, more debt is incurred by the Treasury, and the Fed buys that debt to keep rates and

the cost of financing low. This also means inflation remains sticky and high for a while. Japan has done this for decades now, and they still rank third in global GDP. So I would hunker down for a steady state of inflation of 3%-4% for the next few years, and with a little help from some friends in DC, the Fed will be able to change its inflation goals. In a world where a political compromise is inevitable, the short end of the Treasury yield curve, in particular inflation-linked bonds, are to me the obvious places to invest while we wait for the dust to settle.

And with a little more help from our bank friends, you might even earn a few cents on that long-suffering savings account.

## What's Next For Investors After Silicon Valley Bank

March 12, 2023

**W**henever the yield curve inverts as much as it has inverted in recent days, things break. First crypto, then the UK financial system (and prime minister), and now a large regional bank with outsized influence. The dominoes seem to be falling on cue and there is probably more to come.

Beyond all the statistical “proofs” to the contrary, there is a reason for why finance does not work in a world of negative carry which results when yield curves are inverted and where there is no incentive to lend long by borrowing short. Just as in physics where one can concoct all kinds of experiments to demonstrate the failure of gravity, it still makes more sense to heed gravity than to bet on it not having its way.



Financial markets depend on yield curve “carry” to function: this is one important thing I learnt working with Bill Gross at PIMCO for many years. An inverted yield curve sucks the air out of the markets, and starts to expose who is running a lot of naked leverage. An inverted curve is literally sand in the gears of the engine of the modern financial system. And today there is more sand in the machine, thanks to the Fed, than any other time in the last forty-plus years.

Banks depend on yield curve “arbitrage” for most of their profits. Unless one has been keeping their money under a mattress for the last three years, it is obvious that banks have been enjoying the benefit of not paying much on their deposits. They basically took all the money the Fed printed, and all the money the Federal government sent via helicopter checks to the public, and deposited the windfall into Treasuries and other Fed-created interest-bearing accounts. For some banks, this led to massive risk-free profits indeed. The natural reaction was: If you could borrow from the depositing public at essentially 0%, and earn say 3% or more at the Fed even in short-term assets, why wouldn't you do it in a levered manner and amplify the returns, albeit at higher mark to market risk (but no hold to maturity risk)?

The problem is that you can fool some of the people some of the time, but not all of the people all of the time. As I have written before (see [here](#) and [here](#)), the public has gotten wise and started to move money out of low-yielding deposits. I have been telling my friends that I buy Treasuries Direct (see [here](#)) because I don't have to pay a broker or a bank anything for getting essentially the same yield I would get on a bank CD.

And as venture funding dried up, tech startups actually had to start spending the money that they had deposited at banks like SVB.

Let us do some simple math. Suppose you were a bank and paid nothing on deposits. Let us say you “invested” this money at an average yield of 2% on a bond with duration of 2 years. So you would be making 2% of “income” per year. Now 2022 happens, and two-year yields rise to say 4% over a year. A 200 basis point jump in yield results in a roughly 4% price loss (two times two equals four) minus the 2% yield you earned for the year to leave you with a net 2% loss. No big deal: since you are thinking if you hold the bond to maturity you will get your principal back and no one will know or care about the interim mark-to-market loss.

Now let us say you had levered up the same position by five times. So now you are looking at a loss of 10% on a mark-to-market basis on the holdings if yields rise by the same amount. If you are a typical bank and running a 10-to-1 leverage on your operations, this is enough to make you insolvent on a mark-to-market basis! If you had bought longer duration bonds, or mortgage backed securities whose duration extends as rates rise, or TIPS at negative yields, you don’t even need leverage to cause pain as yields rise sharply. The massive penalty from long duration creates a deep mark to market loss. But again, it seems there is no harm done, because if you can hold the position to maturity, you will be able to redeem the bonds at par. But only as long as your depositors don’t inconveniently cut you off by demanding their money back.

So the problem with this “free-money” levered carry strategy is that when you are over-levered, you don’t have the luxury of holding positions to maturity. Your lenders decide how long you get to hold the positions, and if they ask for their money back earlier you get a “bank run”. And there is nothing wrong with a lender getting scared and asking to be made whole so they don’t suffer permanent loss of capital. In the case of Silicon Valley Bank, sudden death came because depositors large and small decided they needed the money – and when it became obvious the deposits could not support the leverage, the bank was forced to sell their bond holdings and lock in losses, and basically put the nail in the coffin for the bank. What was “latent insolvency” became all too real.

There is evidence that folks in general have run out of the COVID money they received, and are now going back into hock to meet the high cost of living. So even if they don’t move money from the banks to the Treasury market, the amount of low yielding deposits that banks can enjoy is likely to vanish rapidly.

So what can we do as investors?

Let me repeat my conclusion from the first article referenced above:

*“What all of this means is that the impending signs of the Fed’s pivot will likely show up first in the price of bank stocks. Banks profited enormously front-running the Fed when it was buying assets (because the banks naturally marked them up and sold them to the Fed), and banks will likely get a whiff of changing Fed winds before the common*

*public does because in the academic halls of the Fed, banks are the main medium through which money flows through the system.”*

My conclusion was simple: when the banks cry uncle, be ready for the Fed pivot. No wonder that last Friday the 2 year Treasury had one of its largest rallies since the 2008 financial crisis (source: Bloomberg).

Having observed this type of de-leveraging dynamic now for three decades, I would advise investors against catching a falling knife. Yes, banks might look “cheap”, but note they still own trillions of dollars of bonds, and there still has not been an en-masse exodus out of bank deposits and bank stocks.

The situation is even more dire for European banks who were forced by the ECB to inhale negatively yielding bonds, and for Japanese banks, who have been forced by the BOJ to eat the same. Meanwhile the Fed, ECB and BOJ have also gorged on bonds (see [here](#)) and have barely started to get rid of them. In other words, everyone is suffering from bond overeating syndrome.

As long as inflation remains elevated, it would be tough for the Fed to pivot and start easing; but if the breakage starts to migrate inward to the larger commercial banks that are central to the Fed’s model of how the financial system works, all bets are off. Keep a close eye on bank stock prices and default swap spreads.

If the banking sector comes under more stress, the Fed will simply have to throw out the 2% inflation target and agree on a

compromise between tolerable inflation (3%-4%) and financial stability. And in this environment, investors would likely do well by holding short term Treasury Bills and T-Notes and short term TIPS and having enough protection against their risky assets like stocks so that they don't have to force sell assets at the wrong time and at the wrong price. Better to let that falling knife hit the ground.



# II

## Part Two

*“Regime Shifts”: New Regimes Require New  
Analytical Frameworks*





## Part 2: “Regime Shifts” — New Regimes Require New Analytical Frameworks

**N**ature does not exhibit smoothness, and nor do financial markets. Historically physics and many other sciences have approached problems by assuming continuity and smoothness, and this approach has carried over to the professions of economics and financial modeling. But any person living in the real world, and any investor who is actually investing in the markets will tell us that this smoothness assumption is just that, an assumption.

However, when jumps can happen, and the world is jagged and dirty, many of these smoothness assumptions fail miserably. The underlying problem is simply this: can one trust history to repeat in the future in a clean and deterministic manner? Further, will the probability distributions of the future look like the statistical distributions of the past that can be fitted by collecting a bunch of data?

When there are unanticipated regime shifts it is impossible to have confidence in extrapolating to the future from the past. Thus one cannot really form expectations based on history, which are the probability weighted average of all future outcomes, if one does not know what the possibilities in the future are likely to be.

But not all is lost. We can use simple logical arguments to narrow down the possibilities and probabilities that are likely to occur. In mathematics, this approach is called “Bayesian”; i.e. using history as a guide to form baseline expectations, but then updating the future distribution based on new data and inputs, including intuition. The new intuition could come from hard quantitative tools, or can be as simple as the discovery of new conceptual drivers of investor actions. The important thing to remember is that the world is more complex than the tools that we can invent to explain it, and new factors continuously come into play. The biggest risk one can make is to get accustomed to the current state of affairs, i.e. accept the “normalcy of deviance”, and assume that what is in front of us is the most normal and will continue to be so.

In the following chapters I discuss how the conditions of low volatility, negative yields and guaranteed liquidity can all change sharply and without warning, and robust portfolio construction requires being prepared for the unexpected shift in these conditions that are taken to be stable and permanent.

## The Normalcy of Deviance Means Markets Will Be Volatile Before They Stabilize

January 25, 2016

I recently attended a talk by Charlie Precourt, a 2012 inductee of the U.S. Astronaut Hall of Fame, and a pilot on four space shuttle flights. The topic was “Normalcy of Deviance”, a phrase he borrowed from sociologist and author Diane Vaughan to explain two tragic space shuttle disasters. Normalcy of deviance signifies the condition in which “...people become accustomed to deviant behavior to the point that they no longer see it as deviant. They no longer see what is clearly visible...”

There are five interrelated and evolving events that I have been monitoring that signify a significant change in our perception

of what is normal, and which are likely to cause markets to move rapidly in both up and down directions.

First, after almost a decade the Federal Reserve is raising rates. Market participants have become accustomed to low or negative yields globally for a long period of time. This condition of cheap capital, which is “deviant” from the perspective of appropriate long term valuation of the cost of capital, can breed complacency for which markets are ill prepared. By beginning to raise rates, the Fed is implicitly removing the insurance that it has provided for increasingly bold risk taking. However, since the Fed is “data dependent”, and is certainly paying attention to market gyrations, I expect signaling from them that is likely to create more volatility.

Second, cracks are showing up in emergent economies like China and are exposing the limits of another deviance. We have assumed that markets (and by some accounts economic data) can be controlled infinitely by fiat or by government action. A set of actions, such as the devaluation of the Chinese currency or the installation and removal of circuit breakers has limited efficacy when executed too late. I expect policy in emerging economies to also react to new information and data as it arrives, especially the signals emerging from heightened market risk.

Third, we have become so accustomed to the existence of cartels and coordination in commodity markets over four decades that we have possibly forgotten that in the end normalcy requires supply to meet demand. The behavior of oil producers in the face of competition and massive inventory is to do what is

natural and short term optimal, i.e. “each on the lookout for himself”. This has shown up in unexpected and sharp declines in the price of oil and other commodities. At some point in the near future, when this race to the bottom strategy has exhausted itself, we should expect to see reaction from producers that will reflect their adjustment to the new reality of cheap oil.

Fourth, the slow but definite increase of algorithms and computerized investment programs has permanently changed the ecology of markets. These algorithms are not necessarily versed in the same type of metrics or process of valuation that human investors have evolved over time. The well covered shuttering of many investment management firms last year signifies that trading today is very different than it used to be a decade ago. The proliferation of such algorithmic trading, good or bad, makes it close to impossible to identify what is normal trading versus what is a deviation from the norm. I expect many macro and value investors to continue to throw in the towel as they become even more confused with the speed and illiquidity of market movements.

Fifth, we have to admit that seven years after the last significant financial crisis, the majority of traders manning trading desks today have not experienced major illiquid bear markets. The perception of liquidity in a rising bull market that they have experienced over the last seven years is not what one should think of as normal. The frequent sharp reversals in markets will challenge the new crop of traders with trading conditions that are anything but normal.

The one common theme amongst the five here is exposed by

asking: Is what we have observed since the massive introduction of money into the system in the aftermath of the crisis really normal, or have we just gotten used to deviant behavior of markets and policy through seven years of conditioning?

I visualize the behavior of markets in three distinct phases.

The first phase is one in which deviations of markets from a fair level self-corrects due to common and correct beliefs. In this phase mean-reversion participants flourish. This is where value investors do well.

In the second phase, as markets move further away from fair value, well-held beliefs are exposed as nothing but deviations that have been normalized and markets start to trend, breaking previous bounds. This is the zone in which momentum traders or trend followers do well. Witness the sharp fall of oil from fifty dollars a barrel to below thirty just last week.

Beyond this phase, as the old normal behavior is abandoned as being clearly deviant, a new set of assumptions begins to take hold, and markets enter the zone of capitulation, which is where we are now. This is a zone in which both value investors and trend-followers are exposed to sharp and unexplainable movements, and those with liquidity to take advantage of distress do well. We should expect markets in this phase to react more to investor positioning than to fundamental economics.

Such is the power and speed of recalibration in such markets that what was unexpected becomes the expected. This is the point where we are today, and we should expect that the changes

underfoot will be seen as a major inflection point, and markets will adjust, through capitulation or repositioning, to these new realities. Opportunities will arise from re-normalization of long-term deviance, and there will be plenty of time to take advantage of market distortions.

## Evidence Is Piling Up That Markets Are Recalibrating To New Realities

January 29, 2016

Japan's action last night to adopt a negative interest rate stance on certain deposits is another in the line of what used to be unexpected events that are quickly becoming closer to normal expectation. The first question that pops into people's minds is whether negative short term rates are in store for the United States?

A headline that caught my eye last weekend from a completely different but obviously related market was the [posting](#) (later corrected), that a particular type of low-quality crude oil (North-Dakota Sour) was being offered at a negative price. While it might initially seem strange to receive something tangible and also receive cash, upon further analysis this situation reveals itself to be not so strange at all.



The explanation lies in three factors: first, the quality of the oil trading at this low or negative price is lower than regular old normal-quality oil. Second, lower quality oil has to be transported to special facilities for processing that require special equipment, which adds cost that does not make sense when higher quality substitutes are cheaply available. Third, there is so much excess supply of all types of oil that for a pipeline it probably makes more sense to use its transport capacity for more profitable higher quality oil.

We are seeing a similar dynamic for interest rates. In most of the developed world, interest rates are either very low, or in many cases very negative. For example, in Switzerland rates are negative for deposits out to the next ten years. Just like for oil, we can explain this in terms of excess supply of money from quantitative easing by central banks, (and not enough demand), the need for safety of principal, and the lack of quality investment alternatives for that money.

Now let's be clear that there is nothing fundamentally wrong with a negative price of oil, or negative interest rates. To quote [Harvard University](#) economist [N. Gregory Mankiw](#): "*Early mathematicians thought the idea of a negative number was absurd [too]*". Over time we realized that negative numbers were essential to balance arithmetic equations. In the same way, negative prices for oil or interest rates might be necessary today to balance the supply and demand equation when all the frictions of the [markets](#) are factored in, such as storage and transportation costs, safety, and long-term economic objectives.

But it makes me queasy, I have to admit, and somehow seems like I am being cheated when I pay money and also part with goods or services. The reason it makes me queasy is that this act “locks in” a loss, without the chance of getting anything tangible in return. It is hard to think of a sustainable equilibrium in which everyone is permanently willing to part with goods and services and with cash, and capitalism to function like it has for centuries.

Risk-transfer for a price is what drives capital markets and investments. If the world is awash with money and risk-transfer has no price or negative price, it is not hard to see the market feedback working in a way that creates a vicious cycle of risk-aversion, which in its final state has to be seriously deflationary. Whether we are already there or on the way there remains to be seen. But as snippets of negative commodity prices and negative interest rates become more common in the news, it will be hard to reconcile traditional concepts of value with an upside-down behavior of markets.

The evidence seems to be piling up that we are going through a recalibration of markets to new realities. In this environment, investors should pay close attention to signs of capitulation from participants who have positioned with traditional metrics of value in their toolkit. Capitulation does not pay attention to value: a spike down in oil prices, or even further negative rates in countries already negative, or countries not yet negative but very close to the threshold could create serious havoc with economies, markets, and the ability to take risk. Certainly it will play havoc with portfolios that consider zero the lower bound for long term rates.

EVIDENCE IS PILING UP THAT MARKETS ARE RECALIBRATING TO NEW...

One could look back and call these anomalies unreasonable, but it would make sense to pay attention to the old Keynesian adage that markets can remain irrational for longer than you can remain solvent.

## The Yin and Yang Of Investment Approaches

April 27, 2016

**S**ummer seems to have arrived early in California, and with it warm temperatures and, given our El Nino year this year, lots of tall grass, and....rattlesnakes!

As a long-time trail runner, I am prepared for the occasional hazard of the trail (I have never seen a mountain lion in the wild, but know the long term statistics of fatalities from mountain lion attacks), and one of the scariest hazards are rattlesnakes. Last week, I almost stepped on one (for the second time in my life), as it warned me with its rattle and the “I am ready to attack” coil.

Ever since my close encounter with that rattlesnake, my level of fear has increased on each run, perhaps irrationally. Every

bent stick in the trail now looks like a rattler, and I intuitively jumped off the trail yesterday when I saw a rope. I slow my gait down at the bend in the trail where I saw it, my adrenalin shoots up, and my attention and awareness heighten. I have never seen a rattler in the same place but I know each place where I have seen one is still very fresh in my mind. Statistically the chance of seeing a rattler in the same place is almost close to zero...but try convincing my primordial survival mechanism of that statistical truth! Memory recall is proportional to repetition and also to the intensity of the experience felt.



In a recent paper by Nobel prize-winning economist Robert Shiller and his colleagues, they document a similar occurrence in the markets. Based on survey data that Shiller has collected for the last 25 years, they demonstrate that investors overstate the likelihood of a crash akin to the 1929 or 1987 crash many times higher than the historical realized probability of such a crash happening.

More importantly, the impact of recent events, and even news, can skew this overestimation. Even more interestingly, if a person is living in a zip-code where there is a large earthquake, they are likely to overestimate the probability of the crash even more, hence correlating events that at first blush have nothing to do with each other.

So the *availability* of recent data that somehow primes the system to be more “crash-aware” is likely to create a larger subjective probability of crashes. In the language of option markets, such crash phobia can cause a large rise in the “implied volatilities” and “skew” of options on which market pricing is based.

As we have observed before, it is impossible, however, to say with 100% certainty whether this phobia is actually so wrong that a rational, fearless investor could make riskless profits from it. Sometimes, as I very well know, the rattlers really are there; and sometimes as my poor dog found out, they actually do bite! And dry, hot days increase the likelihood of them being out on the trail.

The fact that volatility itself is volatile (the technical word

for this is “stochastic volatility” or “vol of vol” in trader’s parlance), can create interesting opportunities for investors who can manage their exposure to volatility dynamically and in a diversified manner. In simplest terms, this means creating a portfolio that is balanced between “mean-reversion” and “trend”, or between assets that provide insurance (such as treasury bonds, and assets that provide investment value, such as equities).

In Chinese philosophy, Yin and Yang (dark and bright) describes how opposite or contrary forces are actually complementary and interdependent. This “duality” — like fire and water, action and reaction, cold and hot, hard and soft etc. — also describes simple truths about investment techniques that have had a long history as “styles”. Investors are tempted to pick one of the two sides of the same coin, but by doing so they might literally be “leaving money on the table”. Investment styles do not have to be black and white, but some shade of grey that results from an optimal, dynamic mix of the dual alternatives.

There are option sellers and option buyers. There are momentum traders and mean-reversion traders. There are top-down (macro) investors and bottom-up (“arbitrage”) investors, and there are directional investment styles and relative value investment styles.

Depending on what has worked in the recent past, or based on our own conditioning from experience or readily available data, we are tempted by heuristics to make quick decisions that might expose rigid biases. For instance, we might take either a stance that things will mean-revert, i.e. what has worked will not work in the future. Or the opposite stance: what has

worked, will continue to work. Alas, many an investor has found that forecasting the future phase of markets is almost as impossible as forecasting the weather a few weeks out.

What the dual nature of markets shows us is that for robust portfolio construction, we need a mix of each style so we can benefit from style diversification. The diversification emerges because the time scales and driving forces between the two sides of each duality emerge from different types of investment decisions. The “frequency” or time-scale at which investment styles work is equally as important as the skill of the investor.

The best investors are those who have realized the coherence between their own frequency of active decision making and the natural frequency of the markets they invest in. In other words, the “resonance” between investment style and active decision making is as critical as forecasting expertise. Its for this reason that in the same market, value and momentum can coexist, as can trend and carry, or short and long volatility, or macro and arbitrage.

The trick is not to fixate on any one style or approach, but to practice flexibility and reduce frictions and institutional impediments to taking the approach that is most likely to work.

Archimedes is quoted as saying: “Give me a place to stand and with a lever I will move the whole world”. Of course if one does the computation, the length of said lever would be about 10 to the 23<sup>rd</sup> power in meters. So this is a theoretical exercise at best. Similarly, the only thing I need to know to be profitable year after year is to know if the market will trend or mean-revert,



but this question is also almost completely theoretical.

By combining the dualities of investment styles that emerge from ever-changing fear and greed, and careful risk management and capital control that matches the natural rhythms of the markets, we can hope to do better than picking just one approach. And yes, some of this requires that we look beyond our immediate experience and the mental grooves created by intense market or real-life experiences.

And while risk markets might have erred on the side of too much fear in the first quarter (which set up an almost perfect scenario for a massive rally), we need to be aware that not much fundamentally has changed. As we flirt with all-time highs on the equity indices, any sharp or sustained selloff could quickly bring fear and memories of that selloff back into investors' minds.

Not unlike the fear of that rattler that I still watch for on my trail runs.

*With Frank Jones, San Jose State University*

## Unexpect The Expected To Uncover Opportunities

June 15, 2016

**S**ince the financial crisis, the two major asset classes — stocks and government bonds — have shown a wonderful diversification effect. When stocks fell, yields on bonds generally fell (i.e. bond prices rose); as stocks rose, yields on bond rose (i.e. bond prices fell). We expect this inverse correlation relationship between the prices of the two main asset classes to generally hold, and so does the market. Yet as yields plumb to new lows, in many cases negative, it might be time to “un-expect” this and see what lies beyond.

Using the S&P 500 as proxy for the stock market as a whole and the US 10-year yield as proxy for the government bond market, the correlation between returns on stocks and bond yields has been around 0.50. What has been somewhat of a

surprise for investors is that despite the diversification effect, both stocks and bonds have delivered significant cumulative positive returns over this period.

So investors got the ultimate free lunch: positive returns on the two major asset classes, with built in diversification as well. Things turned out to be much better than expected. This windfall certainly was not expected back in 2009, and most pundits would have said that either stocks would have gone up or bonds, but not both at the same time, and certainly not by the magnitude they have. It's been a great time to own financial assets.



Now the most direct explanation of this behavior that has benefited investors across both asset classes (and hurt those who fought the two massive bull markets – in stocks and bonds) of the last decade is that as all rates have been brought down globally by central banks, the effect on the present value of all

cash-flows — real or imagined — has been bid up, hence raising asset values across the board.

It was thought that theoretically rates and yields could not, or should not, go negative and this bidding up of asset prices would meet a natural barrier as we got to the zero bound. But yields are negative on over \$10 trillion of bonds, and today the 10 year German government bond yield went negative for the first time in history. The net present value calculation that is fundamental to all asset valuation gets turbocharged as yields go more and more negative.

So in principle if there is no limit to the “negativity” in yields, then there is no limit to how much asset prices can be bid up in a positively correlated manner due to this technical and purely mathematical property of present value calculations (of course ultimately there has to be a limit on how negative yields can get, but we could still be pretty far from it while US yields are still positive).

This raises the question that if the proverbial mattress (where investors would rather park money instead of paying for the privilege of lending) did not exist in ample quantity, could we be looking at another leg up, or should I say “melt-up” in asset prices after another bout of overdue volatility and market correction?

Of course we know that even if this were to happen, it could well turn out to be a short-lived mirage, an act of borrowing from the future value of cash flows through the mechanism of the discount factor. This has been, and continues to be

the most hated bond AND equity rally in a long time, and there are ample signals that investors are becoming increasingly sidelined, waiting for better “value”. This is a perfect recipe for an unexpected rally in both risky and riskless assets.

But the reversals can be just as vicious since things that go up rapidly tend to come down just as rapidly. And what if they did in a correlated fashion where diversification between risky and riskless assets did not help? Is there a way to participate in the upside by actually being long risk assets such as stocks, while cheaply buying some sort of downside protection? Can unexpected changes in correlation come to rescue us from our indecision?

And what does the market think? As an exercise I computed the theoretical cost of a “put” option that protects against a decline of 5% or more in the S&P500 in a year. This option based market insurance costs about 5.5% (so to protect the value of a million dollar portfolio for losses beyond the first \$50,000 in losses would theoretically cost about \$55,000 a year).

How about the same put option which is contingent on yields rising? Remember we said above that the market prices the correlation between yields and stocks to be positive, i.e. if stocks fall, the market expects that yields will fall as well. But what if the unexpected happens, i.e. yields rise as stocks fall, or maybe stocks fall because yields rise (probably after the last shorts in the bond market capitulate, or a sovereign credit crisis, or a central bank mistake)?

Well, the market will today pay you to take the other side of

the correlation risk. A “hybrid” option that relates the equity market and the government bond market with the same equity market strike as the put option above has a theoretical price of 25% of the price of the plain vanilla put (i.e. \$12,500 on a \$1MM portfolio of stocks) as long as in 1 year yields on 10 year US government bonds are above their current (almost a record) level of about 1.6%.

So if stocks fall and yields rise, you could possibly get yourself protection at a large discount. Not everyone can and should look at investing in these types of “exotic” options (there are numerous problems such as illiquidity, lack of transparency in pricing etc.), but the fact remains that the correlation market is very one-sided today, and quite unprepared for an unexpected breakdown in correlation.

Which is to say that when we run out of ways to expect the unexpected, a good idea is to flip the analysis on its head and “un-expect the expected”. The positive correlation between stocks and bond yields is what is expected by the markets through decades of conditioning. If we momentarily shake off our biases and preconceived notions on such “historically true and tested relationships” between asset classes and investments, we might find ourselves looking at some interesting opportunities that we can easily overlook otherwise.

## Today's Bond Market Is Insurance, Not Investment

July 14, 2016

A few days ago over five billion dollars worth of Zero Coupon German government [bonds](#) (“Bunds”) were auctioned at a yield of minus five basis points. For me, as for many others, bonds with negative nominal yields hold a fascination – they are no longer unicorns, but nonetheless a rather rare animal in the history of money. Are they investments? Or as I see it – insurance?

From a pure finance point of view, what is remarkable about the recent Bund auction is the pureness of its information content for what investors are willing to pay for “insurance” against economic stress. Mathematically a zero coupon bond is the purest financial instrument there is. We multiply any future cash-flow by the price of the zero-coupon bond to compute the

net present value (NPV) of the cash-flow - this is the foundation of all finance. Zero coupon bonds are the “quarks” of the financial marketplace. They are indivisible, and they form the basis for the time value of money, which today of-course seems upside down!



This zero coupon bond price today looks like insurance, smells like insurance, and walks like insurance. The 10Y maturity bund (technically the DBR 0% 08/15/2026) will pay no coupon to the holder, ever! But since it was issued at a negative yield (which would require the investor to pay to the German government), the investors who bought it paid 100.48 to receive 100 at maturity in August of 2026. So on issuance date, the investor is locking in a sure loss of 0.48 Euros, or 0.48 Euros of insurance premium.

As time passes, the value of the insurance will fluctuate with



demand, and can even go up. But at maturity, the holder will get no more than 100. Insurance, as we know, is an option contract, and like other option contracts, when this Bund pulls to par, the value of the option premium will go to zero. For the first time in my memory, we can measure this long term option premium in the bond markets without any calculations – just look up the price of the zero coupon Bund and subtract 100 from it. Since the “duration” of a zero coupon bond is almost exactly its maturity, we can also figure out the risk in our heads. For a 10 year zero coupon Bund, the duration is 10 years, so a 1% rise or fall in yield is approximately a loss or gain of 10% in price!

A bond (or Bund) where you pay a premium to own it and receive no coupon income is not an investment asset, it is an insurance asset. The immediate question is: insurance against what exactly? While I do not know with certainty, one reason could be an anticipation of a drastic slow-down in future growth prospects, which would be accompanied not only by garden variety corporate defaults, but more alarmingly defaults by sovereigns who are not issuers of the bond in question.

Now there are also German Bunds maturing in 2018 and in 2021 that carry zero coupons, which trade well above par. We can see two things: first, the price of insurance has gone up since earlier this year as yields have gone more negative (which makes sense given Brexit). Second, investors are willing to pay a higher premium for the shorter maturity securities than the longer ones.

This suggests that market participants expect more risk in the

short term than in the long term (an alternative interpretation which ultimately leads to the same conclusion is that investors are in need of a larger amount of short term securities which are rapidly disappearing due to Central Bank buying, which is reflected in shorter term yields being more negative). This “term-structure” of insurance might mean that the market expects more turbulence in the near future, and conditional on us coming through this period unscathed, less turbulence further out (but turbulence nonetheless).

From the lens of where we think of bonds as investments and not insurance, the situation is indeed perverse. But before we jump to conclusions, let’s recap the history of how we got here. GCBs (Global Central Banks) reacted with a flood of money to the GFC (Global Financial Crisis) and when that seemed to quit working, expectations were managed by assuring the markets that rates would not rise if the market got into trouble (we have seen at least three such events where the Fed changed its mind in the last year).

From an investor perspective, it made eminent sense to hold risk assets given this implicit protection (i.e. buy equities), but also hold insurance against that risk (i.e. hold bonds or protective put options). The net result since the financial crisis has been incredibly profitable for asset owners - but predictable. Holding equities and bonds (pretty much of any kind), has been “having your cake and eating it too”. Both stocks and bonds went up in value, by a huge amount, while still providing diversification on days when it was needed. It truly has been an asset owner’s paradise.

I hasten to add that buy and hold investors did really well in this environment, while the “smart money” struggled, since it thought (and continues to think) of bonds as only investments, forgetting their insurance-like characteristics. No wonder fees have come under attack. It's like the local high school team beating the world champions.

From a purely mathematical point of view this simultaneous rally in both stocks and bonds is not a surprise, right? The discount factor was boosted up above par, so all asset prices rose since the present value of all asset prices has the same discount factor. The argument that this dynamic of all asset prices going up should stop when yields get close to zero also has lost some of its appeal, since in the short term, at-least, yields can go even more negative. Though we suspect that at least in Euroland, to “hedge” the risks of the equity market fully, yields would have to be minus two percent. Possible? Yes. Probable? Less so.

So should we worry?

Yes, we should worry not only about the risks from standing in the face of a “demand surge” in the need for the bond market as insurance. We should also worry that once the last bond pessimist has thrown in the towel and capitulated to the recognition of bonds as instruments of safety, and yields breach new lows, cross-market pricing will bring forward other substitutes to the insurance benefits bonds provide. Then bonds will certainly be orphans, and then, yields, look out above!

But until that happens, Bonds, and Bunds, are fine insurance policies, and one simply does not know what the limits of risk-aversion driven demand are. Just don't think of them as investments.

Whatever the outcome, for the first time in this author's experience, we can just look at the price of long term zero coupon bonds to figure out what the market is willing to pay for economic catastrophe insurance.

## How to Beat the Machines Before They Beat You

October 13, 2016

**A**lgorithms and trading “machines” are everywhere. Indeed, I have to confess that I have created and managed several investment programs that are almost purely algorithmic, so I feel like I am betraying the confidence of the cult of systematic traders when I write a column on how to tackle the machines. But having recently watched the first few of the Terminator movies (again) where machines run amuck and try to terminate the humans that created them, I thought maybe us human investors need a helping hand to even the odds a bit.

So let’s get to it. Basically there are three ways to deal with the machines.

First, you can simply give up and hide, go underground, and wait until the machines have devoured each other.

Second, you can build a better machine. This requires skill, resources and time.

Third, you can try to anticipate what the machines are going to do, and beat them to it.



I cannot opine on the first option, though it is true that many old school investors have thrown in the towel and are likely waiting to pounce as soon as the barriers to entry to algorithmic warfare become more surmountable. If you are a professional, your investors may not allow you to wait, however.

Regarding the second option, there is clearly a mad dash by a number of large, old-school investors to now invest heavily in technology and algorithmic trading, but it remains to be seen

whether the newcomers can catch up and maybe even exceed the ability of the incumbents.

So, we will focus on the third option to counter and possibly beat the machines – to understand and anticipate what they are most likely to do, and get there first in a way that favors us, not the machines.

But before we can talk about how to implement this strategy, we need to understand what gives algorithms their power, and possibly their Achilles heel. First, algorithms are built on patterns, and the ability to recognize these patterns extremely quickly. But the patterns, complex as they may be, that are used to train the algorithms are necessarily extracted from observed history, whether at very high, or very low frequency.

Second, machines in general have perfect discipline, are perfectly rational within the bounds of their programs, do not have emotion, and do not get tired. In other words, machines are relentless and do not get attached to their positions; they keep doing what they are supposed to do.

Third, machines are fast, and this raw speed is both a strength and a weakness.

And fourth, machines and algorithms are designed and maintained by their human designers, and hence, for the time being, may have flaws, which will likely diminish when machines can design and build better machines (thankfully we are not there yet for trading algorithms).

Clearly, taking a machine head-on in any of the dimensions

which is their strong suit is folly, e.g. trying to day trade against them. Humans are emotional, humans are irrational, humans get tired, and cannot stick to the plan under stress.

Right?

Almost.

There is no better example of how human weakness can be turned to strength than watching the ending of the first Terminator movie (I won't remind you of the ending). The very fact that machines cannot think outside of the box and are relentlessly persistent can be used to counter their power. But this requires some knowledge of the rules that they follow, and pre-empting the next move they are likely to take. Since I won't spoil the ending of the movie I will tell you the principle: the relentless pursuit of the objectives programmed by the designer is actually what makes the machine vulnerable, because it depends on assumptions or programmed responses.

Let us look at the financial markets to provide a couple of examples.

The resurgence of "trend-following" algorithms in the aftermath of the financial crisis, combined with the ease of implementing such algorithms in practice, has changed the landscape of futures trading. Today, a kid with a computer and access to a broker account can patch together a few lines of "python" code and implement a trading algorithm in a few days. Seriously. The way these new designers of machines work is the following: get some historical data, test an idea for trading



using a “back-test”, compute some risk-reward statistics like the “Sharpe ratio”, and implement in real-time on real markets.

Now anyone familiar with financial history knows that the last 30 years have experienced a massive bull market in bonds, as yields have fallen to new lows. But the budding algorithmic designer’s back-test only sees that buying bonds (if the signals say so) is likely to be profitable. Of course they have received ample help from the central banks of the world who are also doing the same, and this reinforces the model’s predictability and the designer’s reliance on the algorithm. Since everyone has the same historical data and comes to the same conclusions, the algorithms of many acting at different time scales and different sizes take the buying of bonds into their logical extreme, i.e. buy them beyond zero or even negative yields!

You can almost hear the algorithm laughing at the shorts who sold bonds since they thought yields would not go so low or negative – it’s clear who the winner was so far. Technically nothing irrational with this, or with winning, and you can expect the rule to work until it doesn’t. Like it did not work last month, or around the 2013 “taper tantrum”.

The important feature to remember is that algorithms will likely do the opposite of what humans are expected to do when it comes to extremes. Algorithms will buy more when yields fall, and sell when yields rise. Humans will bet on mean-reversion – it’s just how humans think. But if every trend follower’s machine is doing the opposite of the humans, the machines are likely to win out in the short run, forcing the humans to close shop, unless they can pick their fights carefully.

A second example, not entirely unrelated, comes from “volatility-based” strategies. There has been a lot written on this, so I will not repeat it all, but let’s just summarize by saying that volatility-targeting algorithms sell when implied or realized volatility rises, and buy when volatility falls. This is also a form of trend following, and increases the overall momentum in markets, which machines are faster to take advantage of than humans.

What we have seen over the last decade since the financial crisis is (1) yields falling, and (2) volatility falling. So what is a well-trained machine going to do? Buy! Certainly there have been short spurts of rising yields and increasing volatility, and in most of these cases the markets have dropped into air pockets as all the machines sell simultaneously. But they recover quickly and front-run the humans as soon as the central banks step in to provide support.

So how does one beat the machines?

First, you have to anticipate what the machines are likely to do, and get there first, and then get out first. Easier said than done if you are competing on the same time scale, but not impossible if your time scale is different. If you can come up with prescient indicators on what the most likely action of the algorithms are, then you can get there first since the designer is not likely to change the core algorithm that makes the machine tick. For example, watch levels of implied volatility, e.g. the VIX, and especially sharp rises in it, which can trigger algorithmic selling.

Second, pick your battles and be disciplined. It’s better to

change your time horizon and invest when investing in the liquid markets where the barriers to entry are low and machines can out-trade humans, rather than trade with the machines. Sell the noise where noise is expensive, and buy the tails where machines have no data with which to calibrate themselves.

Third, slow it down. If you can slow down the investment decision process, you start to regain an edge over algorithms. This is not least due to the fact that in the short time scale, the best way to win over a machine is to use a machine. If you can do this with the assistance of your own algorithms, even better. As is true in the game of chess, the best combination of intelligence is human plus machine – known as augmented intelligence and what beat Deep Blue, at least the first time, until the machine was upgraded. If you don't have one, stay away from short term trading!

Finally, think outside the box. Most algorithms today been through a period of sustained rising yields or rising volatilities. When that happens, it will take time for the machines and their designers to adjust, especially since these kind of shocks in the bond markets have not happened for a very long time. We are probably getting close to that inflection point, and when that happens, you will get a great shot at winning...for a short while, at least. Alas, the designers, and the machines will also learn, and we will be back to where we started when they come back with their upgraded versions. We just have to get used to it.

On to the next sequel of Terminator.

## How Should We Invest When Forecasting Becomes Tough? A Case For Protected U.S. Dollar Assets

January 30, 2017

**W**hen we look back at 2016, some very strange and counter-intuitive things happened in sequence. We believe this phenomenon will repeat in the years to come, and market participants just have to get used to investing with decreasing certainty in the background.

First, both with Brexit and the U.S. elections it became clear that forecasting political events is hard, if not outright impossible. Second, even if we had been able to forecast the political outcomes correctly, we would not have been able to forecast market reactions to the events with a high degree of confidence. And finally, even if we had been able to get the first two right, we

would not have been able to forecast the speed and magnitude of the market reaction.

To me, this trifecta of failures to anticipate and properly position is a sign of the times. Probabilistic computations are everywhere, and they get updated in real-time. We see survey results and “odds” through many election websites and on “markets” where we can bet on outcomes. We can also extract probabilities of expected market outcomes from option prices, which are available in real-time. Given all this information, participants rationally discount the probability weighted information, position portfolios based on expectations from this information, and when the facts are actually revealed, rapidly rebalance their portfolios in light of this new information. Actual (yet unknown) probabilities probably do not change much, but information and perception can change a lot. And in a fine-tuned and tightly coupled world primed to react to new information with speed, counter-intuitive market reactions are going to be the norm.

A simple thought experiment will make this clearer. Suppose we have a bucket with two balls, one black and one white. We remove one ball, but do not look at it. What is the probability that this ball is black? Clearly, given the information so far, the probability is 50%. Now suppose we remove the other ball, and find that its color is white. Now we ask the same question, what is the probability that the first ball we took out is black? Clearly, the answer now is 100%. The only thing that has changed is the amount of information. The actual, physical world has not changed at all! But in an instant, the probability estimates have changed in light of new information.

This simple example highlights the subtle nature of probability as it applies to the markets. If probability is a measure of the actual state of affairs in the world, then the probability of the first ball being black should not change when the second ball is revealed. On the other hand, if probability is information, then it should change as new information becomes available. Given the plethora of data we are inundated with, our estimates of probability (and hence pricing) in the markets is basically a summary of the information available to us at any given time. There is no guarantee that this information is accurate, or in any way a true reflection of the underlying state of affairs – it could possibly be accurate, but until new information is revealed, we just don't know. In other words, probability when viewed in this way is something attributed by the participant rather than being a property of the real world. And because it is a perception, it can change quickly.

So short of turning off our news sources and market data feeds, what can we do?

Given the difficulty in forecasting, we can, instead, focus on building a portfolio with structure that is more resilient to information shocks. In simple terms, this means three things: (1) try to be on the right side of the market, (2) try to earn yield while we are at it, and (3) try to build sufficient downside protection for the portfolio. In more technical terms, this means to generally follow the trend (or at least not to fight it unless there is a really good reason), if possible earn “carry” (or at least not pay too much negative “carry”), and spend a small sum to protect the portfolio to stay invested (as long as the cost of the protection is reasonably small).

As an example, there is one investment today that has all three of these elements – investing in the U.S. dollar and dollar assets.

To understand this, the most important thing to recognize is that what is driving the dollar is the interest rate differential between U.S. rates and other developed foreign rates; this provides a long dollar position with positive carry. The level of the interest rate differential, of course, is being driven by economic policy and politics. While U.S. yields have risen sharply since the election, other major markets (Europe, Japan etc.) are mostly pegged with very low or even negative interest rates. Repeating one of our original theses published in this forum a few months ago – it is as if the U.S. bond market has become an investment market again (positive yields with potential of price gain), whereas Europe and Japan bond markets are still very much “insurance” markets with negative yields. The U.S. vs. Europe differential over the next five years is almost 2.5% per year (and is the highest since the inception of the Euro). So the simple math is that if you can move your investments from Europe to the U.S., and you can take the currency risk, you can possibly make 10% cumulative extra return over the five year horizon. To take the other side of this trade, you need very good reasons why paying the negative carry is a good idea (while still taking currency risk). On the other hand, the trend is towards yields continuing to rise from all-time lows, so it might be premature to invest in longer duration bonds, where the yield advantage can quickly be overwhelmed by price losses if the rising yield trend continues. So we look for shorter duration relative value opportunities.

As an example of relative value across regions for shorter

duration investments consider the impact of interest rates on exchange rates. If the spot currency exchange rate is 1.07 dollars to the Euro, due to the interest rate differential the forward exchange rate out five years is almost at 1.20 dollars to the Euro. So the interest rate differential implies that we can buy the dollar at a 13 cent discount to its current exchange rate for delivery in five years. The reason is that the foreign exchange markets price the forward exchange rate taking into account the interest rate differential due to interest rate parity. The second part of structural portfolio construction is the trend. While the dollar has already strengthened almost 25% over the last five years, the trend is still strong, and there is still plenty of room for it to get even stronger. The promised fiscal stimulus, talk of border taxes and the potential for a rapid and aggressive tightening path by the Fed are likely to create conditions for this trend to persist. Finally, implied volatility in currency markets is extremely low, which allows one to build enough protection in a dollar overweight portfolio in case there is a sharp and unpredictable reversal in the dollar as new news comes out.

No discussion would be complete without a mention about the equity markets. While from a pure valuation point of view, equities in the U.S. are on the richer side of what has been historically considered fair, as investors know very well from past events when animal spirits awaken, markets can overshoot (e.g. the massive rally in 2000 before the dotcom bubble burst). In the short run equity markets in the U.S. should be supported by the massive fiscal promises of the new administration, and even if a small portion of the money flowing into dollars goes into risky assets, current valuation levels could be well justified. But given the extremely low



levels of implied volatility and the price of protection, modest dividend yield and positive momentum, it would be hard to argue against a long equity bias protected on the downside, just in case something unforecastable occurs.

To be sure, there are many political events on the horizon over the next few months, especially elections in many European countries, which are going to be hard to forecast. And even if we can get the political results right, we might not know with a high degree of confidence what the market might do and how quickly. For example, if the tail event of the European Union disintegration turns into reality, will the Euro weaken or strengthen? While the Euro weakening case is clear, one can make the case that the Euro will be the currency of the “core” countries like Germany, which may make it stronger. We can make equally probable cases for both. We are again faced with a conundrum of having to invest when we have really very little forecasting ability about politics, the market reaction to the politics, and about the speed of markets getting from one point to another. But we can be sure of one thing, that despite our lack of confidence in forecasting, if we can build structurally sound portfolios, we are likely to be able to weather and maybe even benefit from the lack of information. Investing in dollar assets, to wit short term bonds and downside protected equities is one such strategy for the day.

## How To Position After This Market Surge? Follow Logic

March 2, 2017

**W**hy is it that oftentimes markets move first and the economic justification (and punditry rationalizing the outcomes) follows?

It is well known in the psychological literature that humans tend to favor consistent narratives. I am not a psychologist so will not dig deeper here. But if you scan the writings of so-called market experts, you will find a few things: (1) they all declare victory regardless of whether they are right or wrong, (2) when they admit they were wrong they will qualify it, i.e. “yes we got it wrong, but...”, (3) they tend to make even stronger predictions going forward. Again, there are beautiful models in the psychological literature on why this happens, but I have neither the expertise nor the space to delve into it. We do know

that experts will come out of the woodwork to justify every bull market and every bear market, and usually right around the inflection point. Buyer beware.



So at the risk of making the same mistake of selecting our “good calls” vs forgetting the “bad calls” (I actually had none, but yeah the one I did was actually not so bad because...but here is a better one...), we called the latest “[bull market in equities](#)”. Now there are two ways to go about analyzing this “greatest and absolutely fantastic” call. First, we could have a crystal ball, and second, we could simply look back and say that the current outcome was so remote in the minds of other pundits that we simply could not lose by taking a contrarian view.

The first approach is the “causal” approach, which basically says that A results in B, and B results in C etc. Hence if you can identify the probability of A, then you can with some degree of

certainty identify the probability of B and with a slightly lower degree of confidence identify the probability of C. The other approach is more akin to “diagnostics”. The way this proceeds is by putting yourself in the situation where C occurs, and turning the computation on its head and saying what conditions could have been the proximate cause of C occurring. This leads to a spectrum of possibilities that one is forced to imagine about B, and hence A.

The mathematics of diagnostics follows the simple but confounding Bayes rule that we discussed last month in this forum, i.e. the probability of something happening conditional on something else is proportional to the probability of something else happening conditional on something else times the unconditional probability of something happening. So knowing what happened allows you to go backwards and identify whether or not the conditions were right for said something to happen. I am still waiting for some strategist or analyst to come back and admit that “oops, we got this wrong, but in retrospect it should have been obvious”. The usual explanation is “oops we got this wrong, but it was not obvious at all because...”.

The Bayesian technology is familiar to most probabilists. If we think of probability not as the statistic of things happening, but as information, then even outsized, rare events can be evaluated with the toolkit of mathematics and two simple rules: the sum rule and the product rule of probability. In financial markets, probability is not accumulating simply historical statistics, it is logic! To repeat another way – the rules of logic are the same rules of probability, and as investors, we know markets don’t repeat or maybe even rhyme, but they still have to follow the

rules of logic. And that differentiates the great investors from the got-lucky folks.

To bring it to the case today. Equity and risk markets have defied all statistical odds as they make new, record, nosebleed high levels. The bears have turned into reluctant bulls (I know quite a few). “Upside tails” are now in vogue, and rising markets and rising vols are the buzzword of the day. But have they defied logic? I don’t think so. Whatever your political leanings, we have an administration that has the means to receive the baton from monetary stimulus of the last decade, and certainly the desire to do so.

And there are technicals in the market such as the negative convexity positions from being short upside optionality in equities (eg. Covered call writing and the famous 1x5 call spread trade that set the derivatives nerds abuzz last month) that can propel the market higher before any “fundamentals” take hold. Then there is the peer effect – of seeing your neighbor kill it with a 12% return since the election as you sit by the wayside. The market was simply too bearish to justify the low price of upside, and that should have signaled something.

What next? Many of us witnessed the Nasdaq bubble and crash. Many of us saw IPOs of money-losing companies rise to stratospheric levels before the bubble imploded. For life, and for safety of principal, one has to be careful not to be too contrarian too soon. But do get ready for the aftermath of the reversal as the consensus switches to unabated optimism. The economics of this nation are based on bigger and bigger bubbles and bigger and bigger busts. The trick is really not to fight the

freight train, but wait until the time is nigh to board it again. In the meantime, start looking for safe places that you might need when the herd changes its mind, which will in hindsight be all too obvious. Again.

## Why Is Volatility So Low And What Should We Do Now?

May 1, 2017

**L**ast week, the VIX closed at one of its lowest levels in recent history. Why? And what can we do about it? In my view, there are a number of inter-related reasons why option prices and option implied volatility are so low, and they might suggest some ideas for portfolio construction.

To make sure we are using the correct terms, note that implied volatility is the volatility that is used to price an option using a formula like Black-Scholes. And this is what the VIX tries to capture. On the other hand, the actual measured volatility, which is computed using the standard deviation of returns over a prescribed horizon is termed the realized volatility. The two are connected. So, the first and most obvious reason why the VIX is so low is that realized volatility is so very low. Over

the last six months, realized volatility has averaged below eight percent, so the VIX right around ten percent does not look particularly low when seen in the context of historically low realized volatility.



Second, there has been a very substantial flow into equities – retail flows last week into SPY ETFs were the largest on record since the election last November. Both data and anecdotes illustrate that retail investors who have been waiting have finally decided to move into equities in a big way as they look back and see the market’s upward move despite all the prognostications of chaos from Brexit, Italy, and US and French elections, which never materialized. A rallying market generally drives volatility lower.

Third, there are a number of strategies in the markets that are all collectively what I will call “inverse volatility” strategies that



have been winners and hence attracted more capital. Here are some examples. The inverse volatility ETN XIV has been a star performer since the financial crisis and has generated a few thousand percent of cumulative return with one hundred percent return just since the US elections – and it basically follows the simple strategy of selling VIX futures and “rolling down” to the spot value of the VIX.

There are “volatility targeting” algorithmic strategies that look at the level of realized or implied volatility to take positions in S&P futures. When volatility falls, they increase their exposure, and when volatility rises, they reduce their exposure. There are “risk-parity” type strategies that do essentially the same, but which in addition are also driven partially by the correlation between equities and other asset classes. Finally, there are “trend-following” strategies that systematically target a specific portfolio volatility and also add to the inverse volatility crowd.

Fourth, selling options or volatility has historically been a profitable strategy for generating yield if an investor has a long enough time horizon and can hold the position through the inevitable fat tail events. In a world of very low interest rates, ease of execution, ample capital and no fat tails, this “yield enhancement” from option selling has become almost a religion. Across all asset classes, the “carry” trade is simply another form of volatility selling, and the carry trade in all back-tests looks like a persistent, structural phenomenon.

Fifth, when options are sold, the intermediate buyers of those options are Wall Street dealer desks. As the size of their books swell, and given that they cannot warehouse large amounts of

risk in the current regulatory climate, they have three choices: First, they can sell those options to other buyers, further pressuring the prices of options and hence implied volatility. Second, they can sell something else, i.e. options of other expiries or on other asset classes, thus creating correlations between options in disparate markets. Finally, they can hedge the options by trading in the underlying instruments such as index futures contracts. Since having a long option position is hedged by selling the underlying instrument when it rises and buying when it falls, this locally creates a dynamic of mean-reversion, and hence of further declines in realized volatility. However, this is only locally stable. For large shocks, the mean-reversion is likely to break down.

Speaking with market participants over the last few days, a few things stand out: First, the leverage from volatility targeting funds is at all-time highs, and a sharp rise in the VIX now could result in deleveraging or selling of futures from many of the inverse volatility participants all at the same time and on all-time scales. Second, option selling has moved into shorter expiries. By some measures, close to a third of the volatility selling is in options on equity indices inside of two weeks and struck within a couple of percent of the current levels of the equity markets. This raises the question of what the dynamics are likely to be if we have a moderately sharp move in the markets in the short term with a sharp rise in volatility. It is possible that those who are long volatility liquidate their options and the markets revert to being quiet. Or, it is possible that the collective activity of the inverse volatility participants drives the markets and brings in others (trend followers, for example), thus amplifying the market moves. It is impossible

to tell with certainty, since we just don't know the balance of positions with complete accuracy and how the various market participants will behave. But we do know that the balance has shifted as the number and amounts of volatility selling activity has increased over the last few months. It has been one of the only games in town that has resulted in persistent performance and hence attracted other investors from the sidelines. For the same unit of option selling income, sellers have to sell larger and larger notionals, thus exposing themselves to market fluctuations.

All of which is to say that some care is warranted. Over a long enough holding period, the equity market tends to go up – it is a “biased coin”, since generally over a long enough horizon we should expect the S&P to track GDP. But in the short run, market ecology and increased leverage can and should result in large de-leveraging corrections. I have been trading in the options markets since 1990, and this is not the first time we have seen the dynamic we see today. In most cases historically, it has paid to replace outright risk with cheap options, or to perhaps build in some cheap downside protection, even without knowing accurately the timing of the correction. While it is almost impossible to time the corrections, it is equally unwise to be superstitiously short volatility when the dissonance between common sense and market behavior becomes so wide. When everyone begins to sing the short volatility song, something is likely to give. In Stevie Wonder's words:

*When you believe in things that you don't understand,*

*Then you suffer,*

*Superstition ain't the way*

## The Perils Of Selling Volatility When Volatility Is So Low

May 2, 2017

Once the piece I wrote yesterday went online ([“Why Is Volatility So Low and What Should We Do Now?”](#)), I received a number of questions on why now is the time to quit selling volatility and be careful. Couldn’t we have said the same thing a few months, or maybe a few years ago? The straight answer is that I don’t really know, but the risk vs reward of being short volatility now is immensely skewed in the wrong direction. The answer boils down to option arithmetic and participant behavior.

Let us illustrate this with some calculations of the purest form of volatility selling, the option straddle. A straddle sells a call option and a put option simultaneously at the same strike and for the same expiration. To be very concrete, let us assume that

this is a one year straddle on the S&P 500. Please indulge me with some option “Greeks”, so that we can make the point.

When option implied volatility is at 30%, the price of this one year straddle is 23%. The “delta” or rate of change of the option price with respect to the underlying is close to zero, since the delta of the put and the call cancel out. However, and this will be important in a moment, the rate of change of the delta, or “gamma” is 2.5. In other words, the delta itself changes by 2.5% if the underlying asset, in this case the S&P 500, moves by 1% either way.

When option implied volatility falls to 20%, which is close to the long term average for the S&P 500, the price of the straddle falls from 23% to 15%, which is a 33% reduction of premium. In order to generate the same “yield” from option selling, the seller now has to sell 33% more straddles. Now note that the gamma at this lower volatility increases from 2.5 to 4. So for the same income, increasing the position size results in a total gamma of more than double than what it was for the 30% volatility case.

Now fast forward to today. When volatility is at 10%, the price of the straddle falls from 15% to 7.5%, a 50% reduction in price. So to get the same income as in the 20% volatility case, a doubling of the notional sale of straddles is needed. The gamma of the straddle at 10% volatility is 7.5, so with the doubled notional, the gamma of the equal yielding position is 15!

Compare this to where we started. While the yield earned is the same due to increasing the notional proportionately to the reduction in premiums, the gamma has increased six fold

relative to the original starting point of 30% implied volatility! Put this in the back of your mind for a second, and we will come back to it.

Next, assume that when volatility was 30%, a few brave souls (as in the aftermath of the financial crisis when volatility hit 50% or higher with almost 40% premium for the straddle) started a strategy of selling volatility, which was a pretty decent risk-reward. By the time volatility got to 50%, most of the investors who had gotten burned selling options had thrown in the towel, leaving a new crop of traders with fresh capital, who had been waiting and who saw how exciting and easy income was from selling options.

Nothing brings in imitation like success, so by the time volatility got back down to its long term average of 20% after late 2010, most sophisticated investors are lured back in the trade of selling volatility. By this time there is likely a three year or longer track record of making excess returns from selling options from the early sellers. This naturally finds its way into the broader marketplace, and the financial industry obliges happily by creating products (e.g. XIV started in November of 2010 and SVXY in October 2011), that allow anyone to sell volatility by “buying” a security. Actually the XIV and SVXY sell volatility using the VIX futures, but the VIX futures themselves are the market’s forecast of implied volatility of options, so there is no fundamental difference between selling volatility through purchase of the XIV or by just selling straddles.

At this stage volatility selling is institutionalized and everyone is in the volatility selling game and can trade the inverse

of volatility like a stock. Volatility selling now is religion - regardless of price, and this is where risks begin to build up.

What happens next is rather forecastable. Remember that gamma increase of six fold? Here is how it comes into play. The market fluctuates like it always does. At high implied volatility there are fewer sellers of volatility, and the need to “hedge” is less (since gamma is lower), the market is not really exposed to the behavior of the hedgers. In contrast, when volatility is very low, and the market fluctuates, the six fold increase in sensitivity to the movements of the underlying along with the now significantly larger number of participants (including some who sold volatility simply based on historical returns, without holding power and not really well versed in volatility dynamics) can easily trip the markets into a cascade. Once the hedgers begin to hedge, the outstanding amount of hedge instruments might not be able to accommodate everyone’s needs, at least not with the same liquidity that they had been expecting.

Ultimately the inability to hedge results in capitulation, which basically means buying back the short volatility positions from others, who have been waiting patiently, but at a much higher level of volatility. Time passes, and as memories fade, the cycle starts again. Advice to the wise – given the risks today be careful selling volatility today.



## Sell Duration To Hedge Equities

November 17, 2017

**Y**es, you read that right. The risk asset market today is one very highly levered yield trade. Whether you look at FAANGs, Nasdaq, EM equities, High Yield, short volatility strategies or even long Treasury bonds, the juice that keeps asset price appreciation going is the low level of yields. Common sense tells us that as yields fell over the last decade, all asset prices went up due to both the discounting effect and the stimulus effect. The discounting game is likely played out. The converse is also true, i.e as yields go up, all asset prices should go down. We can certainly overthink this and say yes and come up with nuances, but the question right now is less about the nuances and more about getting the fundamental direction of the markets right.

Let us come back to why we think selling bonds may be

a better hedge for managing equity risk today than selling equities outright. First, selling equities, which probably have a significant amount of embedded capital gains, is not tax efficient. Second, and as I have written before, both from a fundamental and technical perspective we have not seen the euphoric blow-off top rally in stocks which is the culmination of a bull market. This is a euphoric rally in equity markets that converts even the perma-bears into bulls, and not unlike the behavior observed in the Nikkei last week that brought out commentators calling for a doubling of that market. It is very hard to time equity market reversals, and since valuation effects take time to play out, fighting the market rally is dangerous even though valuation metrics such as the CAPE (Cyclically Adjusted Price to Earnings Ratio) is quite elevated in the US markets, at least. Third, the main reason to hold bonds, i.e. for capital preservation purposes, is so very “financial crisis-like”. Today, holding bonds is buying insurance against a non-event, while taking the risk of an actual soft default event, and by that I mean inflation, which perniciously steals purchasing power.

Financial analysts have been taught to trust diversification between stocks and bonds, and indeed the historical correlation on which much of this analysis is based has resulted in an incredible freebie over the last decade. Even though the correlation metric based on returns of stocks and bonds has been negative, on a cumulative basis both stocks and bonds have gone up. But the fundamental difference between stocks and bonds is that even though stocks can keep going higher without limit, bonds can only go up to a certain point. And when global yields are negative due to fiat from Central Banks, e.g. the European Central Bank and the Bank of Japan common

sense tells us that it is close to the time to bail out.

Shorting bonds produces negative carry, and in a world of low interest rates and steep yield curves, this carry can be expensive, which is why some investors still own negatively yielding assets. But yield curves are drastically flat today relative to last year and certainly in the aftermath of the crisis. Therefore, the increasingly miniscule negative carry is no longer an excuse to maintain the status quo in bonds.

There are a couple of valid fundamental arguments for holding bonds over the long run, and indeed they should be held at the right price. The first is the possibility of Japanification of global economies, which simply means that an aging population wants safety and security, and will give up the potential for capital gains by investing in a security that guarantees some income and safety of principal. At current yield levels and with rising inflation, it is hard to argue that there is much real yield left in the bond markets. Maybe at 3.5% on the US treasury and 4.5% on the long bond there is some cushion. But that's 100 basis points away. Second, relative to other bond markets, where yields are even lower, US yields look very high. But as investors well know, this "carry" by moving capital across countries comes with currency risk, and trade wars are all about increasing currency risk.

The Fed is in the process of taking away the punch bowl that presented markets with the sugar high which was much needed post the financial crisis. The Fed, however, is no longer the residual buyer of last resort. And the kindness of strangers, i.e. foreign investors from China and Japan, is fleeting at best in

the current geopolitical climate of trade wars.

Also note that whether or not the current tax plan in front of Congress passes as proposed, it is a radical departure from the status quo and to fund it requires at least another \$1.5 trillion of deficits. The only way the deficit will likely be financed is through more issuance, which means more borrowing. It is silly to imagine a magic bullet that creates a tax break without higher borrowing costs for the US government in the medium term.

Investing is always a matter of price. At today's prices, bonds are neither insurance nor an investment. At best they are hedges, but not by owning them, but by selling them.

## Securities, Structures And Strategies: Making Choices Between The Best Hedging Approaches Today

November 28, 2017

**T**here are always multiple ways to manage risk, and a simple, multi-faceted framework that can be applied consistently is important for robust portfolio construction. In today's environment, a dynamic framework is critical, to say the least, and paying attention to relative pricing is more important than ever.

Securities, such as stocks and bonds, are the simplest investments, and are essentially packages of future cash-flows. As an example of a good hedging security, take a close look at the short end of the yield curve. The 2-year treasury note has taken the brunt of the selling on the back of a hawkish Fed and

flattening yield curve. At 1.75% yield, the 2 year treasury is back in the zone of an attractive positive carry hedge. With a duration of close to 2 years, yields have to rise over 100 basis points, or over the current 30 year bond yield (at 2.75%), for the holder of a two year note to lose capital. On the other hand, if there is a sharp meltdown in stocks, the two year is going to out-perform, as the spectre of sharp policy easing and rate cuts enter investor consciousness. The short end of the yield curve is also self-liquidating, i.e. an investor has to do nothing but to wait to get principal and income back. And if inflation rises, which from many perspectives is the biggest unknown risk out there, the short end of the yield curve barely suffers. Finally, for those running overlays and derivatives based hedges, the short duration securities offer good value as collateral.

Next, look for structures. Structures are combinations of securities that allow an investor to extract relative value. What sticks out today in the volatility markets is a multi-decadal low in volatility, and also a multi-decadal high in the volatility skew. In other words, there is excess demand for vanilla deeply out of the money puts, but not enough demand for closer to at the money puts. An option put-spread is a structure that simply and in a very liquid manner takes advantage of the high volatility and low skew. The caveat is that it has to be actively managed. But this is an example of a relatively vanilla liquid structure that any investor with an option trading account can use to add value and downside protection to their portfolio at minimal transactional cost.

Finally, look for good strategies. Strategies are longer term positions that look through the short term fluctuations and

express a long term view on emerging but not yet apparent market conditions. Like the frog in the slowly boiling pot of water, it is easy to miss the large changes that accumulate from small changes if they happen gradually. A long term protective strategy is to look to long term absolute return to evaluate good investments from not so good investments. The low level of yields we see today coinciding with the greatest bull market in equities in a generation tells us that a good strategy is to be underweight bonds, not overweight them. Corporations are selling bonds to lock in the lowest funding cost in decades to buy back their ownership in their companies. Those lending money at the current levels of yields to enable this capital structure arbitrage are slowly being boiled alive. A good strategy to hedge risk at the portfolio level is to reduce interest rate duration.

Security, structure and strategy. It is really not that complicated.

## The Machines Are Not Playing Nice — So Be Very Careful

February 9, 2018

**I**t is Humans-1, Machines-0 in 2018. And machines don't like losing. So be very careful.

I have been trading these markets for almost 30 years now, and once in a while I sense a hidden panic lurking under the surface, as it is now. The panic is showing up in many markets, but perhaps most surprisingly in one of the deepest markets in the world – the S&P E-Mini futures contracts, which is popularly used by investors of all kinds to hedge, manage equity exposures, overlays etc. From my own observation over the last few days, the depth and liquidity of the markets seem to be about 50% to 80% less than what we saw just last month. At one point on Monday and today, it was almost non-existent for an institutional portfolio. This is important for all asset classes, not



just equities. The mirage of liquidity has evaporated. Models meet real markets.



At the same time, the open interest in this particular contract, and many other derivatives contracts used by various popular strategies, has reached all-time highs and has increased multi-fold over the last decade as these strategies have gone from the hedge fund world to popular mutual fund products that run lots of leverage, and even retail ETFs. The spectacular

implosion of the XIV ETF has unfortunately played out just as some thought it would. I might sound Pollyanna-ish if I say that the XIV blow-up was only the tip of the iceberg. Just as good financial innovations in the past have been taken to their logical extreme, and then “retailized,” unfortunately the short volatility problem is today’s incarnation of a market that is abused and has unfortunately permeated the very fabric of portfolio construction.

For every buyer of a futures contract there is a seller. But as the owners of the E-mini futures contract are finding out, the exit is much harder than the entry, and to induce new buyers they have to agree to liquidate at much lower prices. It seems as if everyone is eyeing the exit doors at the same time.

The problem is not that investors do not know this. The problem now is that everyone knows it, and everyone is trying to get out at the same time. The other problem is that the rules that many of these strategies follow don’t allow for a firebreak, or a “time-out” so to speak, due to various contractual reasons. And the rules are implemented by algorithms – in many cases “machines.” As I have previously written, machines have not necessarily seen the kind of fat tailed events we are witnessing today. Maybe they have seen some iterations of it, but these events are so rare that the machines don’t know how to do statistical analysis on them. When faced with a lack of data and statistical information, a human generally makes something up and plays the game any way. An unimaginative machine does exactly the opposite – it shuts down and refuses to play! Actually it might be worse – when machines do play, they play to amplify the pre-existing trend, which in this case means more

indiscriminate liquidation. They certainly won't play nice.

There is of course, no free lunch. Option prices today are multiples of what they were just a couple of weeks ago. Unfortunately, when hedging was cheap no one wanted to hedge. Now that hedging is expensive, everyone wants to hedge all at the same time. Which is why the VIX curve is inverted and the market is tanking.

Be patient. Don't be a hero. Don't try to catch a falling knife. Focus on managing risk and cash. There will be plenty of time to step up once the market is a bit cheaper. These are important adages for investors to remember today. Let the machines clean each other out first.

## How To Ride A Bucking Bull: Stay Calm And Hang On...For Now

September 19, 2018

**T**his bull market in U.S. stocks is now the longest, and by many measures the most hated in history. After almost quintupling since the global financial crisis of 2008, I look back and see an incredible rally that has never been totally convincing. Behind the bull market lurk apparent culprits such as “corporate buybacks,” “easy central banks,” “tax cuts,” “lax regulation,” “systematic strategies,” “passive investors,” “ETFs,” “king dollar,” and of course the more favorable “earnings revisions.” So let us not pass judgment on this bull. As a friend recently said: “Don’t do good or bad, do bullish or bearish.”

Defying all odds, a simple strategy has worked so far in this bull market: “buy the dip and hold.” Even after February’s 10% correction, the S&P 500 is up more than 9% this year. Other

global markets have not done so well: emerging markets have sunk close to 20% with no end in sight. Buying the dip there has obviously not been a good strategy for copycats in other markets. Frustrated money, like water, flows quickly through the biggest pipe to the biggest receptacle, and the one leading back to the U.S. from the rest of the world is the largest one out there.



The best strategy in hindsight has been to ride the U.S. stock market bull without being thrown off, while for emerging markets the secret has been to get off the bull early and stay off. Will this ride continue with U.S. equities at record highs? Does

it make sense now to pivot and mount the emerging market bull?

The first rule, my rodeo expert friend Brad (Horner) tells me, is to know the bull and be prepared for anything. To stay on the bull one has to get real familiar with the beast: “Before you get on the bull you need to know how to read that bull. Does it pull to the left, pull to the right, or pull straight up or down”?

In rodeo bull riding, the rules call for the rider to stay on the bucking, spinning, kicking bull for a total of eight of the “most dangerous seconds in sports.” The bull gets scored for the difficulty it offers, and the rider gets scored for staying on the bull.

Everyone likes a good game, and certainly the U.S. stock market bull gets a perfect score for giving us a great show so far, climbing worry after worry : Brexit, Elections, Tariffs, Sanctions, North Korea... For us riders there is still time to learn. Here are some general principles:

Fade the noise: This bull, it rallies hard on bad news, but as soon as the sentiment and news gets too good, it sells off to take the hot money off the market. Pundits have loved to call both tops and bottoms in this market, and everyone has become a market technician (alas, a favorite fundamental analyst recently sent me a piece that forecasts markets based on Japanese Ichimoku clouds!). By listening to the noise, it has been easy to miss the secular rally by getting in and out of the market frequently, which as we all know only creates churn and transactions costs. Many struggle to admit that they have fallen victim to

this themselves when running different portfolios, including levered ones. Passive rightly has trounced active this time around.

Have a long horizon and hang on: In this bull market, the approach that has worked is to stay calm and hang on, which requires taking exactly the right amount of risk (discussed below). Taking the right amount of risk is a very hard job, especially when barraged by news all day and night. It is just human tendency to focus on the most recent news and react to it. Combine this with the disposition effect, i.e. the tendency to sell winners too early and ride losers too long and you have buy and hold beating active trading most of the time.

Take measured risk: If the exposure or leverage to the market is too large (greed), then the pullbacks have the potential of taking us out of the market (i.e. fear). If the risk is too small, then the returns are not large enough. A good rule of thumb is to scale the risk large enough where being wrong does not create permanent capital loss. When it is impossible to time turning points, and staying invested is the only alternative, then it follows that permanent loss management is the key ingredient for staying on the bull.

A numerical example might help. Suppose we expect the equity market to deliver an annualized volatility (standard deviation of returns) of fifteen percent. Then any given day we expect the volatility to be roughly one percent. For a portfolio that has half of its risk budget invested in equities, we can then expect a daily volatility of about half a percent coming from equities. At least once a month one should expect the portfolio to make

or lose roughly a percent or more (or two standard deviations). In raw dollars and cents, suppose one has \$100,000 to invest. This means a daily volatility of about \$1000 if fully invested in stocks. So once every few days, one should expect to lose over \$2000. So scale the exposures to be able to stomach this risk. That's what it takes to ride the bull. Else, better to watch the rodeo from the stands.

Use all tools available: The trick, in bull-markets, as in bull-riding, is to "ride the buck, not the bull". Or, anticipate what might happen next and position for it. What this means in practical terms is to use all the markets and the alternatives available. What goes up will eventually come down, so being long the market via strategies that don't lose too much is one way to stay on the bull.

One example, which is further discussed in detail in a recent *Journal of Portfolio Management* article I wrote titled "Right Tail Hedging: How to Manage Risks When Markets Melt Up," is to use cheap, liquid call options on market indices to obtain long exposure with a finite maximum loss potential. When markets, like bucking bulls, can jump up, call options can provide an exposure to the un-priced up jumps efficiently.

The reason such call options are cheap arises from the excess supply of these call options, from yield enhancing strategies such as volatility selling and covered call writing. Call options can allow investors to hang on to positions rather than reacting to the latest tweet.

Of course, this optionality, like everything else in the market,



is not free, and the price is not always very low. Also, if the markets don't jump enough, then the investor loses all the premium paid for the call options. So a cost-benefit tradeoff of the value added obviously needs to be performed before delving into options. Today they happen to be cheap given the true risks of market "melt-ups." Just as an example: for the SPY ETF a call option struck at the money, to year end 2018 costs about 2.25%. This means that the S&P 500 has to finish above roughly 2975 for the option to go in the money. No guarantee that it will, but for someone riding the bull into year end this price could be cheap enough to take the risk of getting bucked off the table. Of course one can just keep the exposure to equities as is, and buy put options for protection as well, but that requires monitoring two different things.

Plan now for the dismount: Finally, it is important to not get "married" to the bull. In bull-riding, once the eight seconds are up, there is no glory in staying on the bull. Likewise, when the bull market extends euphorically, as it did earlier this year, it is time to start planning the dismount. There will be other bulls to ride. If nothing else, one should have an "exit strategy" in mind before mounting the bull.

A great example of a bull that has been ridden for almost three decades now is the bull market in developed market bonds. As we speak, this bond market is starting a multi-year correction. Market participants have ridden this bull, and many now realize it is time to get off. The Central Banks of the world are getting off the bond bull. With QE ending, rates rising, and wage inflation picking up, one doesn't want to be the last one holding expensive long term government bonds. And when developed

market yields are rising, proxies for yield such as junk bonds and even emerging market assets (equities, bonds and currencies), are competing for investment dollars. There may be more room for emerging assets to fall before they will be as enticing as say, low risk Treasury notes with a guaranteed principal. And yes, the equity bull market will also eventually end, and it won't be pretty if there is a mass exodus. For the immediate here and now, the fear might be worse than the reality.

Having been in the financial market rodeo for almost three decades, a lot of what I read many years ago makes sense: You have to be in the game to win the game, which, in bull markets means to take just enough risk not to be knocked out too early. Fortunately the market has plenty of tools to implement simple risk management strategies to keep you invested with the right amount of exposure. This bull market will continue to buck, so hanging on won't be easy. If one doesn't get bucked off the bull, there might be a chance to outlast the wildness.

## Latent Illiquidity: One Important Reason To Own Optionality

December 7, 2018

**O**n Wednesday afternoon this week (the cash market was closed) I saw something that I have not seen in a while... at 3PM, when electronic futures opened (after the closure for the day of mourning for President George H.W. Bush), the S&P 500 futures market dropped almost 50 points. That was interesting and not totally out of the ordinary for 2018, but what was really spooky was that no one could seem to get any orders in to buy or sell. There are many theories of why there was an oversupply of selling. One primary explanation could be that given the recent announcement of the market closure, many algorithms that are programmed to transact a certain amount every hour were not adjusted, so they flooded the market at the open to “catch-up”, and likely tripped various circuit breakers.

Orders, even in the E-mini futures contracts, were rejected for a few seconds (which seemed more like an eternity). Due to their presumed readily accessible liquidity, it is important to note that E-mini futures are typically the instrument of choice for delta hedgers of options on the S&P 500 index options and their related instruments in the ETF space.



I did a deep dive into the “Velocity Logic” algorithm of the CME and found that market participants should consider getting this particular circuit breaker on their radar screens. The [video](#) shows how the market can shut down if not only a price band is breached, but also if more new orders come in that move the price beyond a certain point in a given amount of time.

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closed) I saw something that I have not seen in a while... at 3PM, when electronic futures opened (after the closure for the day of mourning for President George H.W. Bush), the S&P 500 futures market dropped almost 50 points. That was interesting and not totally out of the ordinary for 2018, but what was really spooky was that no one could seem to get any orders in to buy or sell. There are many theories of why there was an oversupply of selling. One primary explanation could be that given the recent announcement of the market closure, many algorithms that are programmed to transact a certain amount every hour were not adjusted, so they flooded the market at the open to “catch-up”, and likely tripped various circuit breakers.

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Why does this concern me? Some of you remember 1987 – the act of everyone trying to delta hedge under the “portfolio insurance” program which resulted in a meltdown. Today, the delta hedging algorithms are still there and might even be larger

due to the “short volatility ecosystem” that I have written about in the Financial Analysts Journal with Larry Harris of USC ([FAJ Paper](#)). Most everyone counts on being able to use delta hedging of E-minis to hedge their deltas, and most algos do this on autopilot. Many of these strategies are now in mutual funds and even ETFs so the rules have to be followed by prospectus.

The potential problem is pretty clear, isn't it? If everyone tries to do it all at the same time, the market can keep opening and shutting down and the price adjusts down (or “up”). Not a pretty picture if no one is able to hedge and the “negative gamma”, or the rate of change of the delta of the options rises a lot (note that the delta itself is a function of the reference underlying price, so if the reference price moves the delta changes). According to our own observations and also confirmed by brokers and banks, the liquidity of the E-mini futures contract is already tracking the lowest since the 2008 crisis.

This is probably not something to panic about yet because the most likely outcome is that the market will adjust itself for the lower liquidity, and leverage by smart participants will be limited by risk management discipline. But just in case the estimates of liquidity needs by market participants are off by an order of magnitude, the argument for owning (or at least considering owning) explicit optionality resonates quite loudly. If this happens (and I hope not), the XIV debacle of February will likely look like a walk in the park. That was mostly retail, and we just don't know what happens when all the “smart money” institutional investors try to exit at the same time because they cannot hedge themselves. I wonder how many people who count on being able to continuously delta hedge know about

all the circuit breakers that can potentially bring trading to a screeching halt.

## Racing Ahead Of Market Avalanches

January 5, 2020

I am sure that like me, the reader of this column was inundated between the beginning of November and the end of December by letters and economic outlooks from all variety of financial pundits. Let me be the first one to offer my condolences, since it is highly likely that none of those pundits called for the massive bull market in equities and bonds, and indeed for all assets at the end of December 2018, when the markets were in panic mode. The rhetoric is a lot less bearish today, and in some cases even bullish. With the “Longest, Calmest Bull Market Ever” being celebrated (Bloomberg Business Week Dec. 23, 2019), the skies look clear, the weather ahead looks friendly, and the risks of last year have all but faded from memory.





We all know the Fed pivoted from tightening to easing in the face of an imminent stock market meltdown, the ECB went deeper into negative rate territory, and despite a presidential impeachment in the U.S. and chaos on the trade front, the equity markets kept climbing even as buybacks from corporations continued at record pace. Every time a melt-down seemed imminent, Central Banks pre-emptively pumped in more money into the system, which resulted in “melt-ups” and required “right-tail” hedging rather than the more popular “left-tail” hedging. The melt-ups in the stock indices trounced almost all active managers, and not surprisingly, retail investors were largely left licking their (relative) wounds in cash and bonds, with an incredible amount of ammunition left now to buy stocks. The “wedge”, according to Goldman Sachs research between flows into bonds and money market funds, and money out of equities, grew to a record of over \$1.2 trillion in 2019

(GS Tactical Flows Daily Report).

There are indeed now calls for retail investors to fall back in love with stocks this year as the bull market continues to defy the expectations of most experts. From a purely statistical perspective, the last decade has been one where the Sharpe ratio of the stock market has exceeded 1 for perhaps the first time (Source: Bloomberg), i.e. for each unit of risk taken the return has been higher than 1. That is incredible indeed, since delivering a Sharpe ratio of 1 over a decade by a lot of deep thought (and high fees?) and immaculate execution is almost the holy grail for many active managers. To have delivered passively for a decade is just mind blowing. It's a case of the proverbial turtle comfortably beating the hare in a decade long race. Will this continue? If the answer is yes, then one should simply do more of what has worked over the last decade, i.e. buy and hold. If not, then what is the best strategy?

While I do not have an answer, I would like to address this question obliquely from the perspective of risk-reward tradeoffs.

I spent the last week of December reading some excellent books (to be discussed below), from widely different areas, and generally spending a few good hours every day in the snow, going both down some gnarly runs, and this year also training "uphill" (using climbing skins on my split snowboard) in the back-country, where avalanches can be a real risk. This gave me time to reflect on the year, but more importantly forced me to learn a lot about how to stay alive in avalanches. While not even close to being an expert, my reading of avalanche risk in the wild backcountry resulted in the confluence of a few ideas

from three different books that stood out and might have a special relevance for markets in the next few years.

The first book that I read was Robert Shiller's new "Narrative Economics". The book highlights that perhaps more important than aggregate economic statistics are stories that catch the imagination of people and go "viral". Even more important, the cold hard truth is not always a remedy against false narratives until, perhaps it is too late. When the cascade starts, old stories simply get washed away by new stories. People abandon their well-thought-out plans in the light of stories that seem to have immediate relevance. And this happens faster than one expects and with more force than anticipated.

For personal preservation, the second important book I read was "Staying Alive in Avalanche Terrain" by Bruce Tremper, who, unlike me, is a renowned avalanche expert. In my opinion, what he says about having a "plan", and a "method" to avoid being buried alive under thousands of tons of snow has eerie parallels and analogies to financial markets, especially when they are under a manic or depressive spell. The risk management strategy in this book has parallels to risk management strategies in other fields, e.g. the OODA (Observe/Orient/Decide/Act) loop that the Marines use, or similar rules that aviators have used for decades.

The third book I picked up was Mark Douglas's twenty-year-old book on trading psychology appropriately called "Trading in the Zone". The book's primary conclusion is that market forecasting is for fools, and in the short run, anything can happen. The consequence of this observation is that over time,

investing in the markets is a numbers game, or a game of using favorable odds in a statistically replicable manner. Critical in this observation, again, is to have a plan, and once the plan is implemented, to follow it and accept the consequences. To change the plan based on short term outcomes can only result in having no plan in the long run.

Let me now bring these themes together. As any avalanche expert will confirm, it is almost impossible to predict whether the next precarious run in avalanche territory may result in a disastrous outcome. But what matters for risk is not the probability of the disastrous outcome, but the product of the probability, the consequence (together the “hazard”) times the exposure, times the vulnerability. Remove or drive any of these factors to zero, and the risk goes down to nothing. However, and this is important, the risk of an avalanche is not random. It depends much on certain factors (terrain, weather, and human factors), which might not be exactly predictable in isolation, but where we can make intelligent judgment calls to control our risks.

For instance, humans cause most of the deadly avalanches. In other words, just a small amount of additional weight at the wrong place can result in a slab of snow sliding over a weak layer and creating havoc. So what we do when faced with precarious terrain and other conditions does matter.

Humans also cause market melt-ups and melt-downs. Narrative Economics echoes this. The “economy”, whatever it means, does not by itself cause market bubbles and crashes. Human participants in the markets do by collectively spinning stories

and acting upon them.

When investors realize the bull market of the last decade slipped past them, the fear of missing out on the next bull market will be like venturing out on a beautiful, sunny day after a massive snowfall – setting up perfect conditions for an avalanche in the markets. If 2010-2019 was the decade when investors hated the bull market in equities, 2020-2029 could very well be the decade where investors fall back in love with asset markets, and could be severely disappointed by the potentially precarious conditions lurking just beneath the surface that are a consequence of elevated prices and extreme faith in central banks.

To deal with such euphoria and panics psychologically is not easy. One only has to look at the asymmetry of the potential outcomes to see that venturing out on an off-piste steep slope after a massive snow dump is asking for trouble. Yes, you might (and probably will) survive, but paraphrasing Joel Greenblatt, it is like “running in a dynamite factory with a burning match – you might live, but you are still an idiot”. Buying negatively yielding bonds (I have a whole paper on this topic, and many posts in this forum), is not much different. Pity the investor who bought the German 30-year bond in August of 2019 at a negative yield of -0.12% and is now sitting on more than 15% of losses without ever earning a “coupon” (most likely this bond is in some bond-focused ETF, and the ultimate owner does not even know or care that he is spending part of his investment on a bond that will never pay him a coupon!).

Such unprecedented anomalies aside, the beginning of the new

decade and the new year is full of sunshine and fresh “pow” on the slopes. Things are good, the economy is purring along, inflation is low, the Fed is supportive of asset prices, and there is plenty of money to go around. It is hard not to follow other brave investors into the wild world of speculation when the last decade has created unprecedented wealth for the brave (and patient). The markets have responded in kind with an almost vertical ascent. The forecast of the weather, at least as measured by economic policy uncertainty, continues to send warning signals, even though all looks sunny right now.

However, embedded in this pristine set of conditions are the elements that cause market avalanches. Any unexpected change in the “narrative” or the “story” can trigger a cascade without warning. Watch out for it as you go riding the slopes or markets this year. Once an avalanche is triggered, it is almost impossible to race away from it. To use a quote from Dornbusch “In economics (and markets, my addition), things take longer to happen than you think they will, and then they happen faster than you thought they could”.

## TSLA: “Beauty Happens”

February 3, 2020

**T**he stunning rise of Tesla (“TSLA”) stock price in the last three months, has made Tesla fans (yours truly being one of them) jump for joy, while creating, as Elon Musk promised, the “short burn” of the century for the “haters”.

Whether or not you like Mr. Musk or his grandiose plans, once you drive a Tesla, you realize, as I did, that what you are driving is car 2.0 (and yes, to fans even the best internal combustion car is only 1.x). Reluctantly, but inevitably, many analysts steeped in traditional metrics for the valuation of companies have thrown in the towel, and in some cases even doubled or tripled their price target after advising their clients just a few months ago to the contrary.

Last week’s earnings release from TSLA, once you dig into

them, weren't all that amazing from an absolute, traditional point of view. But the earnings and second quarterly profit in a row was way better than the still pessimistic prognostications of some experts, and overnight the stock was up over 10%! (Source: Bloomberg, January 30, 2020) . But we all know that stock prices respond to such surprises, so what's so different about Tesla that the stock gains keep accelerating?

If, as Keynes said, the price of a stock is a beauty contest, then we need to apply an entirely different metric to the pricing of Tesla and other similar companies. In a world of ample liquidity and an easy Fed, when beauty happens, stock prices can indeed reach for the moon. In short, it's the phenomenon of "Beauty Happens", a term used by Professor Richard Prum of Yale.

In his fascinating book titled "The Evolution of Beauty: How Darwin's Forgotten Theory of Mate Choice Shapes the Animal World and US", we find some parallels. His view is that in addition to the many features that species evolve due to pure Darwinian natural selection, Darwin's other, dangerous and forgotten theory of "sexual selection" also expresses itself through "The Taste for The Beautiful".

If we apply this theory to the automotive industry, it seems that the extant ecosystem of "car 1.0" has evolved primarily due to natural selection, i.e. car companies battle it out on price, traditional quality, value, profitability etc. etc. and the winner of the evolutionary battle survives. On the other hand, and what has shocked the car 1.0 manufacturers and has vaulted Tesla into the second most valuable car company in the world (with a market capitalization of over \$115 Billion as per Bloomberg,



January 30, 2020) is the beauty of its cars to its customers.

Despite making only a fraction of the cars that traditional automakers manufacture every year, and barely turning a profit, for aficionados one ride in a Tesla can make these statistics irrelevant. It happened to me about five years ago, and a 3 minute test drive converted me to "I have to have one" (really). Like the peacock's feathers, a fully electric car five years ago was not only impractical, but also a hindrance for long distance driving. For fans this fully electric feature was an "ornament", not unlike the male peacock's long tail feather. But it was also very much a handicap. However, this very handicap resulted in its attractiveness, and resulted in the evolution of an ecosystem that has made the impractical practical and expected. For instance, before Tesla who would have expected "free" supercharging for some models. The fact that Tesla survived the handicap and the test has proved to its fans that despite the handicap it was so much superior to the less handicapped car 1.0. And out here in Southern California, Teslas are now everywhere, as many believe they will be in China once they start to roll out the cheap model 3s from the Shanghai factory.

This aesthetic evolution theory also proposes that species co-evolve once this process gets under way. In other words, once the object is perceived as beautiful, a positive feedback loop between the "ornament" and the preference for it begins. Just the presence of a fully electric car in the global ecosystem can amplify the mechanism of co-evolution and result in the kind of evolutionary runaway that we see in nature.

As this feedback results in a run-away, we will find other

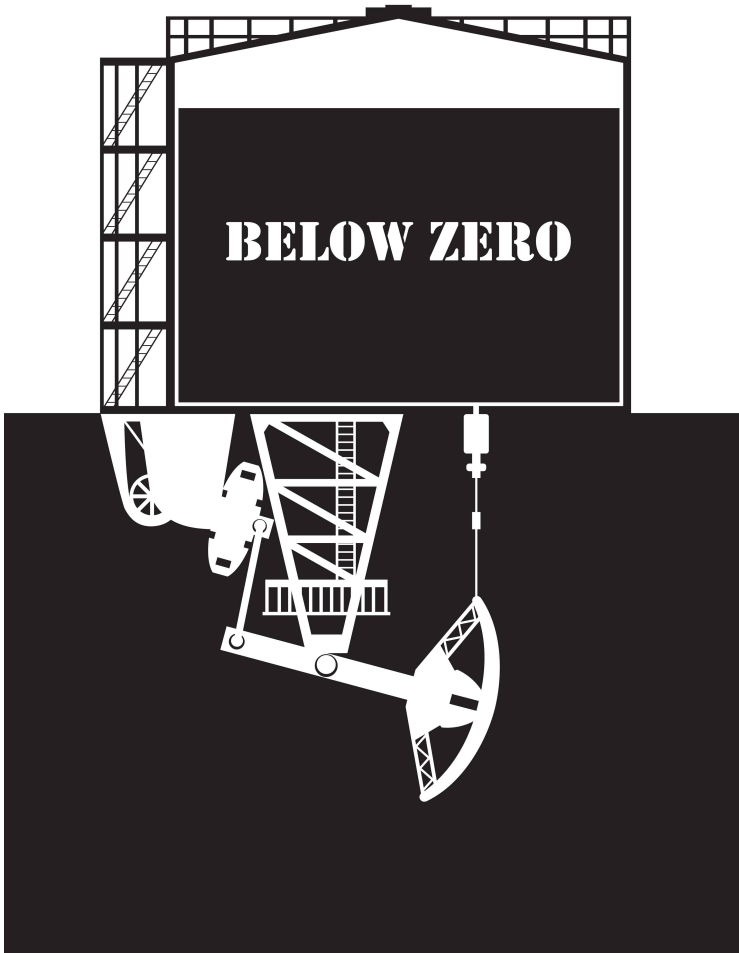
companies (yes, I mean the auto giants around the world), see that the evolution of the auto industry does not simply mean optimizing on tangible metrics. They have started to reluctantly adopt fully electric technology. But given their roots are in traditional technologies, they cannot completely abandon the old for the new without cannibalizing themselves. And the muddled middle is likely going to be the siren song for a majority of them. Some, like Volvo, have abandoned the fully gasoline cars, trying to straddle between fully electric and electric-gas hybrids. Natural evolution is generally not kind to these me-too strategies.

How does this apply to broader financial markets? In a nutshell, modeling financial markets (and stock prices), using purely quantitative statistics such as price to earnings ratios, profitability, current market share, distribution etc. argues that maximizing such metrics is critical, and the dominant feature for companies whose stocks should be owned. And in a purely adaptive market it certainly is. As such, it is akin to the pure Darwinian theory of Natural Selection, i.e. survival of the fittest. But as Tesla shows, Darwin's other, forgotten theory, shows that aesthetics, or "beauty", which of course is in the eye of the beholder, is equally responsible for evolution. Many Tesla enthusiasts believe that its pioneering battery technology and driving performance further enhance this perception. If such a parallel, aesthetic theory applies to financial markets, as we suspect it should, then don't be shocked if market participants believe that Tesla's stock price is not only "right", but could continue to surprise.

## Negative Price of Oil Is Telling Us That Something Else Will Break Next

April 21, 2020

**J**ust when we thought that Central Banks' trillions of fresh money off the printing press had stabilized the financial markets, the price of May WTI Crude oil fell to -\$40 a barrel on Monday. The proximate cause was the excess supply of oil and no storage for the oil glut in Cushing Oklahoma. The afternoon announcement by the CME that negative oil futures prices were allowed accelerated the selloff of the contract to that unthinkable intraday level of -\$40 per barrel (Source: Bloomberg). Not unlike the XIV debacle of early 2018, could this portend the implosion of derivatives based oil ETFs?



One contract of oil futures buys 1000 barrels of oil, so what a negative price of \$-40 means is that one could theoretically

receive the rights to 1000 barrels of oil and at the same time receive a payment of \$40,000. Converting this to gallons, one could receive approximately 42,000 gallons of crude oil and get paid \$40,000 in addition to the oil! Think about that – for each gallon of crude oil you could get the crude oil and also get a dollar, only if you could officially store it somewhere.

Lest one jump up and down and say this is crazy, know that this is not the first time that we have gotten used to paying for the privilege of parting with something of value. In the case of oil, the culprit has been the incredible oversupply, combined with little spare storage in the face of a decimation of demand connected with the sudden COVID-19 economic stop. However, in Europe and Japan, bond yields have been negative for a few years now, and investors have been already willingly parting with cash and paying for the privilege for doing so. This “normalcy of deviance” is becoming all too common now across many asset classes. The excess supply of liquidity drove bond yields below zero. The excess supply of oil has driven its price below zero.

Could these two disparate facts, one from the real economy (oil), and the other from the paper financial economy (bond markets) be connected?

I think that not only are they deeply connected, but they carry signs of stranger things to follow, and the way this story unfolds will likely not be pretty for retail investors in derivatives based ETFs that are the crack cocaine of passive investing.

To understand the evolution of where we are today, we have to

look back not just twenty years, but perhaps the last century. Following the great depression of the 1930s, governments engaged in an unprecedented drive to increase production so that economic security via consistently high employment could be guaranteed. As production for production's sake became paramount in the US economy, the goods that were produced had to be consumed. In the words of John Kenneth Galbraith ("The Affluent Society"), where there were no needs, needs had to be manufactured via marketing and advertising of products that were graduated from luxuries to necessities. In order to enable consumption for those who could not comfortably purchase the goods, borrowing had to be made easy and affordable.

As borrowing became easy, an enormous amount of debt was created and securitized. This debt explosion has resulted in debt-driven booms and busts, or the credit cycle, as witnessed by the global financial crisis of 2008-2009 and more recently the sudden and sharp deleveraging of March 2020. And the debt debacles have been solved with more debt. The Fed stepped in this last time, promising to backstop corporate and junk credit. Perhaps the negative-returning financial and real assets are the natural endgame of decades of accumulated leverage and a glut of money and credit.

So how does cheap money and leverage relate to the negative price of oil?

In a debt driven market, everything is financialized to generate total returns. Total returns depend on returns from increasing prices and also from "carry" or yield. In the energy markets,

financial market participants can create a synthetic “refinery” by buying crude oil futures, and selling refined product futures, such as gasoline or heating oil. They can also play the backwardation, i.e. sell a contract closer to maturity, and buy one further out, or contango, which does the reverse. This, of course, is not a free lunch. When there is a supply shock the commodity curve becomes more backwardated, and when there is a demand shock, like we are seeing now, the curve becomes more steep or super-contangoed. While twenty years ago these curve trades were done via OTC (“over the counter”) swap arrangements limited to professionals, today the democratized access to the futures markets makes building a synthetic refinery, or trading the curve as simple as opening a futures account. A futures account, or an ETF based on futures can be highly leveraged, since the futures contracts are highly leveraged.

Futures based synthetic products such as ETFs and ETNs make the speculative access to the derivatives markets convenient for retail investors. For example, the US Oil Fund (USO) is a fund that provides exposure to the oil market in an exchange traded form, but uses futures contracts as its underlying holdings. When new fund shares are created, the fund has to buy futures contracts. As the fund rolls futures contracts forward, for instance selling the May contract to buy the June contract, it does so in a fairly price insensitive way. This is of course by design, and follows the prospectus underlying the product that anyone can read. The true risk to the fund’s agents is not a price collapse, but the legal risk from not executing on the terms specified in the prospectus.

Two years ago the inverse VIX ETN (XIV) which was also

an agent implementing short volatility trades, spectacularly imploded when volatility spiked. The fund, which was based on shorting VIX futures contracts, had to buy them in the market, thus setting off a cycle where it devoured itself and many of its peers.

Get the gist? In a financial economy we have subtly evolved from consuming real products to financial products that are being produced to satisfy the speculative demand of investors. The lower the yield on traditional investments, the more the need to lever up products and make them available to retail investors. This author [anticipated](#) the debacle in the VIX ETP market, but did not expect its collateral damage to show up in something as real as the oil market.

What the COVID disaster and sudden economic shock has done is to expose the embedded widespread vulnerability of a highly levered financial system with products created to sate the need for return. On the surface the fact that the price of oil went negative seems to only reflect the fact that there is no storage for oil at any price. However, the fact that financial futures contracts on oil went so far below the cost of storage tells us that the constraints and leverage created by the commoditized financial system has amplified these frictions to unthinkable levels.

The mantra to remember as the levered financial system unravels under repeated shocks is that “anything can happen” and no “price is sacred”. First bond yields, then the VIX, and now oil. What financial asset’s value will go negative next? In this unraveling world of leverage, no asset class or security is



safe. For investors this is a sobering thought indeed.

*Author's Update as of Wednesday April 22, 2020:*

Subsequent to the article above, The USO ETF changed its structure to now look more like an actively managed exchange traded discretionary hedge fund than a passive, rules based vehicle. As per the disclosures (Source: [www.uscfinvestments.com/uso](http://www.uscfinvestments.com/uso)), commencing on April 22, 2020, USO may invest in NYMEX or ICE Futures in any month available or in varying percentages or in any other permitted investments in its prospectus without further disclosure.

In other news, VelocityShares Daily 3x Inverse Crude ETN (DWTIF) was de-listed. Note that the XIV ETF mentioned above (Daily Inverse VIX Short-Term ETN) was liquidated in 2018 when the VIX spiked (Source: Bloomberg).

## TSLA: Can There Be Too Much Of A Beautiful Thing?

July 13, 2020

**I**n February I wrote a piece in this forum called “TSLA” “Beauty Happens” ([here](#)). I gushed about what an amazing piece of engineering a Tesla is (the car, not the stock). I concluded with the comment that *“If ... aesthetic theory applies to financial markets, as we suspect it should, then don’t be shocked if market participants believe that Tesla’s stock price is not only ‘right’, but could continue to surprise.”*

Tesla aside, Mr. Musk has delivered on his promise with SpaceX, and his fans feel that he can execute upon a future of tech innovations that are only limited by the imagination. When I wrote the last piece on February 3<sup>rd</sup>, the price of TSLA had reached \$780 a share. As of today (July 13<sup>th</sup>, 2020), the share price went over \$1,750 (Source: Bloomberg). The market value

of the company exceeded \$325 Billion Dollars! Elon Musk's wealth at one point exceeded Warren Buffett's as per CNBC (Reported July 13, 2020).

In addition to the amazing technology and the dreams of autonomy that TSLA has the best chance of delivering in the near future, we have to also think about what other factors might have propelled the market value. TSLA is a "story" stock, and it attracts retail investors and adoring Musk "fanboys". With fractional shares trading, the retail market has been a major participant armed with the massive amount of stimulus the Fed and the federal government has sent in the mail. Just take a quick look at the number of new Robinhood accounts that have been opened and are being traded directly, and according to a report on Bloomberg, Robintrack.net showed almost 40,000 new accounts added Tesla stock today alone! Across the pond, the ECB is likely going to take rates further below zero, and buying assets like there is no tomorrow. Money is basically free, and speculation is encouraged; and as we know, with such guarantees many market participants and the like believe it makes sense to speculate wildly.

The second factor is China. As the beauty of a Tesla hits the Chinese markets, where they are now produced in a new plant near Shanghai, the speculative frenzy in the stock has become turbo-charged as a large portion of the population of the world has discovered what car 2.0 looks and drives like. Beauty, once discovered, is adopted, and mimicked and becomes the new-normal. Tesla's inclusion in the S&P 500, which apparently is driving the most recent rally, would be proof of this.

Third, competitors to Tesla's technology have fallen by the wayside for the most part, and this includes heavyweights of yester-years. Even the new Porsche Taycan, which many touted as a competitor (and is a truly spectacular car by any metric) has half the battery endurance of a Tesla. So it is not likely that Tesla owners will swap any time soon. The battery technology, power and autonomy (and electric car tax credits) of a Tesla make it special and un-catchable in the eyes of many. Finally, there is over \$25 billion in short interest (source: Bloomberg), which, one would expect are "smart-money", "not-so-smart-money", "dumb-money", and just plain simple hedgers. Some might be caught off-sides because they sold too many out-of-the-money call options, or lottery tickets, to one of these categories. Oh, and by the way, just to show how wrong expert opinion has been, Wall Street has capitulated en-masse on its bearish call on the company's prospects.

But can there be anything of too much of a really, really good thing?

I am an unabashed Tesla bull, but I am also a market participant. And experience shows me that we might be reaching a point where the stock price might have to catch down to a company which is trying to catch up to the price. There is much room for a healthy correction in the price of the stock without changing the positive news about the company.

Let us talk about the auto industry for a moment. While Ford has been saddled with terrible management decisions, it is another iconic company. Porsche makes fantastic cars as well. Ford has a market value of \$25 billion, and its share price is

down 35% for the year (Source: Bloomberg). Same thing with Porsche (market cap about Euro 16 billion and stock down 20% for the year (Source: Bloomberg). Electric truck maker Rivian (full disclosure: I am a big fan and neighbor of Founder & Chief Executive Officer RJ Scaringe) has the technology and the backing of Ford, Amazon and others to perhaps sell its power-train technology to these other competitors. Amazon is already trying to help Porsche create a charging ecology (in my humble opinion Tesla owns the charging landscape and can extract rents if it chose to do so; which it probably won't because it does not need to).

So just think about it: Tesla can likely “eat” Porsche and Ford for less than 10% of its stock value. For now, the cheeky “short shorts” are still sold out on the Tesla store (retailing for \$69.42 apiece – “Run like the wind or entertain like Liberace...”), and the stock market shorts are beginning to cover their shorts. Which, with a forward price to earnings ratio of almost 400 (Source: Bloomberg), and using history as a rough guide, might be marking the moment to cash in part of the TSLA lottery ticket.

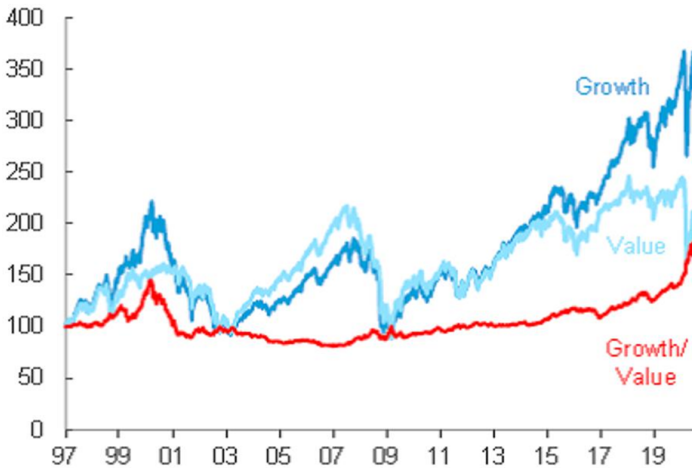
# Elon Musk's SEXY Models Vs. Warren Buffett's Fruit Of The Loom Underwear

July 20, 2020

One of the headlines that flashed on TV last week was how Elon Musk had surpassed Warren Buffett in net worth. Now both of these men to me are heroes of capitalism, entrepreneurs, and game-changers. I consume their products, and thank them both for making them available. But their styles and their companies could not be more different. The performance of the stock prices of TSLA and BRK in 2020 speaks volumes about the environment we have been forced to invest in. While Tesla stock is up 285% YTD, Berkshire stock (both the A and the B classes) is down almost 15% for the year. This is also representative of growth, e.g. the Nasdaq 100 up almost 25% for the year and the Russell 2000 down almost 12%

for the year (Source: Bloomberg).

MSCI World Growth vs. Value Factors, 1997=100



Source: MSCI, Datastream

If Berkshire stock was a currency, we might want to know how many Berkshire B shares would it take to buy one Tesla share. At the beginning of this year the number was roughly 3. Today it would take 8 Berkshires to buy one Tesla share. So clearly something has devalued Berkshires vs. Teslas [TSLA -2.5%](#).

There is no question, as discussed in my previous posts ([here](#) and [here](#)) that Tesla makes incredible cars, and as per design, is rolling out models S, E, X, Y in, ahem, succession. Berkshire, on the other hand, does not really have a product that titillates the senses like a Model S, or the fantasy turned reality of a Cybertruck. Unless, of course, we think BNSF freight trains, the gecko of GEICO, Duracell batteries, or Fruit of The Loom

underwear deserve to be called sexy too.

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On the other hand, if rates were *minus* half a percent (-0.5%), the dollar receivable next year would be worth just a little over a dollar today, but the dollar receivable in thirty years would be worth \$1.16 today. In other words, when rates become negative, for the same cash-flow, you would prefer me to delay paying you! And as we know, rates are negative on over \$20 trillion of bonds globally, though the longest bonds are still flirting with 0%.

In many countries, with out-of-control central banks throwing more gasoline of low rates and asset purchases at an inflation fire that refuses to burn, investors have gotten the message. It has become preferable, the lower yields go, to receive cash-flows later, rather than sooner. This increases demand for long



duration assets, and what's longer duration than a promise that pays way out into the infinite future? Of course, the European Central Bank (ECB), for one, fanatically believes that it should take rates even further negative in order to hit an objective that is as fleeting as the ability to achieve it. Santayana famously said that fanaticism consists of redoubling your effort when you've forgotten your aim. By creating a disincentive to consume and defer returns into the future, negative yields are magnifying the problems that they are trying to solve in the first place, so they are doing fanatically more of what is not working.

So what, you ask, should we do as investors?

Let us assume that everyone collectively decides that the delayed cash-flow is better than a cash-flow next year. In other words, in this world a bird in hand is worth less than two in the bush. No one should rationally want to invest in assets that have an immediate benefit, opting to get the same benefit later as long as yields stay low enough. Companies in this twilight zone world will decide to invest when, given the same prospect, the fruits of labor are delivered later. In this world, everyone is playing for moon-shots, which is why Tesla is so much more valuable than any other auto company in the world.

The existing disconnect between growth and value will correct itself in due course. Most likely it will happen if and when global yields start to rise again. But for yields to rise, we need to either see actual inflation in products that we consume routinely, or for the market to collectively realize that asset prices have gone high enough. Neither event will happen with a lot of warning. But since the Fed is explicitly supporting asset prices (see the

June 10 Powell testimony, page 7, [here](#), where the Fed chair's Freudian slip about targeting asset prices is very revealing), it is unlikely that asset prices will be allowed to correct much until the Fed thinks it is safe to do so. So for now, the only risk many market participants see is inflation (excluding asset price inflation), and investors have to keep doing the uncomfortable; i.e. keep buying growth assets, with the hopes that they will be able to exit before we have a crash (good luck!).

Second, investors should realize that the growth vs. value disconnect is a mathematical mirage caused by low yields. In other words, investors betting on the mirage disappearing on the next bend in the road should prefer stocks that are paying cash dividends because they can always re-invest these dividends into growth stocks next quarter if the mirage for some reason re-appears. The best dividends are to be had in sectors that have been beaten down, such as energy.

Third, investors should realize that at some point asset price inflation will have to result in actual inflation. The exact mechanism by which this happens is hard to forecast. But one way this could happen is by the demand from rising asset prices outstripping supply of real stuff that needs to be consumed. When the economy re-opens, as it certainly will at some point, there will be fewer restaurant seats, fewer airline flights, and fewer movie tickets, all in the name of "the Coronavirus". Cyclical sectors that will be able to raise prices in this environment will be the net beneficiaries. I have already had my own experience of trying to get an outdoor table at a restaurant with plenty of seating but no open seats due to social distancing guidelines. So much money for the consumer but no

where to spend it, unless you are somehow willing to out-pay the next person!

For now, investors just need to compare today's stock market growth giants with yesterday's growth leaders to see the impact of the discounting effect from low yields in action. NVidia is more valuable than Intel, Netflix is more valuable than Disney, PayPal is more valuable than Bank of America, and Salesforce is more valuable than Oracle (Source: Bloomberg). The first entries in each comparison pay almost no dividend, the second entries do. Dividends are so out of fashion.

For investors with a long term horizon who refuse to lend at negative yields, the conclusion is simple: buying growth stocks over value stocks today is a bet on global bond markets continuing to march toward lower and lower yields. To use a polite version of Joel Greenblatt's quote once again, "it's like running through an explosive factory with a lit match: you might survive, but it is still not a great idea to do so".

## What Locust Swarms Tell Us About Robinhood, Kodak Moments And COVID Mania In The Stock Market

July 29, 2020

**N**ot too long ago, before digital camera phones made photos all too commonplace, we used to savor “Kodak moments”, which TechCrunch calls “a rare, one-time moment that is captured by a picture, or should have been captured by a picture”.

Well, pine no more, because the Kodak moment is back. And this time it comes with the subject, Eastman Kodak, as also being the object. The stock has skyrocketed from just a little over \$2 a share last week, to a more than 20-fold gain, currently trading at over \$40 a share. Move over TSLA, there is a new popularity contest in town, but for a company most millennials have barely

heard of. Not unlike the dotcom mania of the early 2000s, blockchain mania of last year, or electric car mania of earlier this year, we see companies like Kodak who can create market value out of thin air by doing something, anything, related to COVID. Last week, once-bankrupt Kodak had a market cap of \$100 million. Today it is reaching \$2 Billion. One George Karfunkel, identified as an independent director, has seen his stake reach hundreds of millions of dollars in a few days (Source for all data: Bloomberg). Such overnight riches encourage speculation via imitation.

The proximate cause of this rally in the stock is Kodak obtaining, via the Defense Production Act, a loan of \$765 million to pivot into pharmaceuticals. I am no expert at passing judgment on whether or not Kodak can actually manufacture the ingredients necessary for the US to fight COVID-19 within its own shores, but certainly legions of Robinhood traders think the stock is worth buying even after a 1,000% surge. Based on the recent popularity surge, there has been an almost 500% spike in holders of KODK (Source: Robintrack.net). If you are tempted to take the other side, fight these swarms at your own risk.

To understand this, let me discuss what we know about locust swarms.

Typically the desert locust, which is found in the poorest regions of the world, spends a largely lonely life. But occasionally conditions are such that there is a massive explosion in the population. During this “gregarious” period, typically correlated with heavy rainfalls, swarms of locusts appear as dark clouds and descend to devour everything in their tracks (see [here](#)). These swarms

can consist of tens of billions of bugs and envelope hundreds of square miles.

Though there is a lot of academic research on the origin of swarms, it is almost impossible to forecast when such swarms develop. Scientists who model such swarms resort to a technique called “agent based modeling”. In this approach, it is assumed that each individual locust is driven by some force that is identical across all the locusts, and there is some degree of repulsion and attraction between the individual locusts. This simple recipe is put into a mathematical blender called a simulation, and voila, swarms can develop under certain scenarios, out of nowhere without warning. These types of systems are generally labelled “self-organized” systems.

There are at least three conditions that are important in order to have locust swarms, or what we are interested in; i.e. stock market swarms to originate and grow.

First, the external environmental conditions have to be right – in Africa a long period of drought followed by lots of rain this year is conducive to the swarm population exploding. In the speculative stock markets, a massive liquidity drought followed by money raining down from the Fed and the Federal government in the form of helicopter cash and loans has created very similar environmental conditions.

Second, there have to be forces so that each locust replicates across a large population, and at the same time interaction with other locusts via forces of attraction and repulsion through some sort of automatic and implicit communication. We have

the exact same situation in tech stocks, with each small day-trader trying to take some money out of the stock market, quickly, using cash that has rained upon him or her, by cooperating with other traders implicitly. Free trading on Robinhood with real time data on who is buying might be thought of as this implicit signaling mechanism. With the aforesaid liquidity from the government, ease of trading, and a promise of bailouts if there are losses, no wonder day traders are following the locust model.

Finally, for locust swarms to survive and grow, the situation has to be such that competing priorities, politics and lack of government coordination can allow the situation to get out of hand. In Africa, unfortunately, the decades of military and political conflict has left any hope of fighting the swarms in disarray. But things are not very different when we look at monetary, fiscal and regulatory policy in the US. There is little, if any, control over day trading speculation in a COVID-19 hobbled economy. In a news cycle buffeted by inconsistent messaging, there is very little chance, yet, that anyone would put a stop to this speculative activity.

Thus, both locust swarms and the swarms of Robinhood day traders are doing exactly what is in their individual best interest in the short term given the external conditions and the lack of constraints that restore equilibrium. Locust swarms have been known since ancient times, just as speculative bubbles and busts have.

Pesticides are the only effective way to deal with locust swarms. High rates and tight credit are the only way to deal with

speculative swarms. It is not likely that any central bank today will spray its version of pesticides — i.e. higher rates — any time soon. Which means the swarms will likely get bigger before they cannibalize themselves.

The risk is that before it is all over, the swarms devour any remaining signs of value in the markets. Like locusts that respect no boundaries, speculative swarms can spill over from one region to another region, from one market to another market, and indeed from the market to the economy.

Until that happens, be prepared to be amazed at increasingly frequent market melt-ups and Kodak moments. Like negative interest rates and negative oil prices, we are living in a world that few market participants have imagined, let alone experienced. In such an environment, the possible becomes probable. It is possible that collectively the market reverts to normalcy by itself, but to quote Aristotle, “probable impossibilities are to be preferred to improbable possibilities”.



## NKLA: Beauty By Imitation Is In The Eye Of The Beholder

September 14, 2020

**I**n my piece [“TSLA: Beauty Happens”](#), I concluded with the comment that if the aesthetic theory of evolution as discussed in Richard Prum’s book “The Evolution of Beauty: How Darwin’s Forgotten Theory of Mate Choice Shapes the Animal World and Us” applies to markets (as I think it does), then TSLA’s price could continue to surprise on the upside. Since that writing, the price of TSLA has gone from \$149 on a split adjusted basis to almost that famous number \$420 today (Source for all market data: Bloomberg).

But the most important facet of the “Beauty Happens” theory is that it invites imitation and copycats. To quote from the last article:

*“(The) aesthetic evolution theory also proposes that species co-evolve once this process gets under way. In other words, once the object is perceived as beautiful, a positive feedback loop between the ‘ornament’ and the preference for it begins. Just the presence of a fully electric car in the global ecosystem can amplify the mechanism of co-evolution and result in the kind of evolutionary runaway that we see in nature.”*

By now Tesla’s cars and its stock price have captured imaginations worldwide and launched it to the most valuable car company in the world based on market capitalization. Not unlike what happened to newspapers when the internet exploded, traditional car companies seem to have no idea what hit them, and they are panicking, as expected. GM, Ford and others are scrambling to find solutions by forming shotgun weddings with upstarts as they see existential threats on the horizon. To top it off, GM announced a partnership with NKLA only a day before a bombshell accusation by short seller Hindenburg Research that NKLA was a big fraud.

To convince you there is something to the imitation theory just note that NKLA stands for Nikola, which is the first name of the great inventor Nikola, ahem, Tesla. This invited the comment that if he had a middle name, then a quick path to billions would be to start an electric vehicle company under that name. (Unfortunately both Nikola and Tesla are taken, and the inventor does not have a middle name.)

When I first saw the news that NKLA admitted in their video “Nikola One in motion” that their semi was rolled down an incline rather than driven under its own power, I was a bit shocked. But I am in no position to gauge the validity or

invalidity of the allegations or the defenses mounted against it. What I do know is that success, especially runaway success, does invite fraud and imitation. An almost 100-fold increase in the TSLA stock price in ten years has created a great sense of unease for investors that maybe anything is possible, and maybe, just maybe, NKLA is that next big thing. In a world of easy money and no-cost leverage, maybe it does make sense to buy the NKLA lottery ticket. The higher the uncertainty of future outcomes, the more likely a gamble is to favor highly unlikely, positive payoff outcomes.

One can summarize all of this by the simple proposition that NKLA stock price is a call option. Since uncertainty (aka volatility) is good for the price of call options, then we want to know how the market is pricing this uncertainty today in NKLA stock and is it worth betting on the lottery ticket.

The best way to answer this question is to obtain the price of option “straddles”, whose price reflects the implied volatility of a stock, which is closely related to the perceived uncertainty in the stock price. A straddle is simply a call and a put option at the same strike price. So for a NKLA stock price of \$35 a share, the premium for a one year option straddle struck at \$35 is 100% or \$35 in premium! What this means is that even if the stock price dropped to zero, the seller of the option would not lose money by selling the straddle because he has collected enough premium to make him whole. On the other hand, the seller of the option can lose an unlimited amount of money once the stock price exceeds the breakeven on the upside; i.e. more than 100% or doubling of the stock price or above (approximately \$70 as of today’s closing price). NKLA stock price was above

\$70 just a few months ago, so clearly this can happen again. Buying volatility on NKLA at these levels is a bet on it thriving, not just surviving.

To put this calculus in perspective, and while it might at first blush seem irrational, let us see why one might be willing to bet on this outsized gain by looking at the object of the imitation: TSLA. Exactly one year ago TSLA stock option straddles for one year were being priced at 40% premium, and guess what – they turned out to be quite cheap in retrospect! Given that the stock price has almost increased eight fold in the interim, buyers of the straddle not only paid for the premium of the option, but actually made a huge profit. This fact makes any argument against “expensive” NKLA straddles moot in the minds of many speculators who believe the playing field is large enough for NKLA and TSLA to dominate at the expense of hobbled traditional car manufacturers. Of course there is no guarantee that NKLA will do what TSLA did, but when money is cheap, it does not cost much to buy a collection of lottery tickets in the name of investment. Yes, many will turn out to be duds, but it only takes one or two big winners...

In this world of cheap money and electric vehicle fandom, the mantra is that anything can happen. What makes lottery tickets attractive to everyone else is that someone, somewhere, has hit the jackpot once, and the more recent the more influential its affect. When money is free and speculation is being encouraged, don't be too surprised to see NKLA stock price at either zero or at say, five or ten times its current price in a year's time. Either outcome is technically a “tail-event”. But what negative yields, negative oil prices and a 100% percent round turn in the

stock market has demonstrated is that anything is possible, and tails are the norm today, not the exception. The only rational way to invest today is to know and understand that lots of traditional metrics for valuation don't work in such an environment, and the only way to survive is to adapt and evolve to the new realities.

Maybe the English actress Dame Joan Collins was more prophetic than she knew when she was quoted as saying, "The problem with beauty is that it's like being born rich and getting poorer." But only time will tell if this also applies to TSLA and NKLA and all the other copycats who want to join the stock price party now.

## Why The GameStop Phenomenon Is Not Surprising

January 18, 2021

**I**t is quite remarkable that GameStop (GME) has become the poster child of the current speculative fervor, one might even call “gamification”, in the stock market. This is not the first time, and not the last time these events have happened or will happen, and a careful look at the environment we are in could help dispel the generally held view this is irrational. One could argue that given the macro environment, level of interest rates, retail trading access, and democratization of derivatives, this outcome might actually be the most optimal collective response to those conditions.

First, the market has become a self-organized system in which communication between social media participants can move much more rapidly than traditional television and print can.

Any asset can become the focus of communication, coordination and execution. Even a mall-based video game retailer, of all things. In the case of GME, it appears to be a self-organized, coordinated “hunt” against short-sellers. Like a locust swarm, this system can devour large objects (see my article in Forbes [here](#) from last year’s Kodak experience).



Second, many participants (please see the Reddit “[WallStreetBets](#)” [WSB] feed) believe that it is them against the establishment. In the spirit of the times, they believe their coordinated actions are justified from a basic social equality point of view and they express this solidarity by urging others to hold their profitable

longs and not to sell. They have found heroes, like Elon Musk, in this endeavor. These heroes have credibility, deep pockets and have shown that they can succeed by challenging the establishment. Nothing encourages religious behavior like having an icon who has overcome massive challenges. When it has an undertone of a crusade against increasing inequality, market vigilantism is often the natural outcome.

Third, by using short-dated call options on stocks with limited liquidity, the “bros” have isolated very efficiently, without much formal training (but lots of street smarts), the key elements of what a call option provides: leverage, upside asymmetry, exposure to jump risk, and exposure to volatility. If a cheap stock is a call option on the underlying firm, then the actual call option on the stock price is a compound call option – a massively levered bet. I wrote a [paper](#) on this mispricing phenomenon when melt-ups are possible in the *Journal of Portfolio Management* a couple of years ago, but certainly had no idea how important the concept would become in real life in such a short time.

Fourth, macro-economic policy has never been more supportive of this leverage enhancing strategy and now handcuffed. The Fed, ECB, BOJ are printing money, and the US government is sending checks in the mail to support the speculation. They are trapped because they cannot even hint at more regulation or tighter policy for the risk of killing the broader stock market.

Fifth, underlying valuation seemingly means nothing. Before we jump into making a judgment on retail investors buying call options on companies that might not survive, we have to



note that when bond yields and interest rates are negative on almost thirty trillion dollars' worth of global bonds, valuation means little in most markets today. This valuation debacle is a natural consequence of economic dogma gone hyperbolic with turbo-charged money printing. So don't blame retail for being valuation ignoramuses.

Thus, we can see that the coordinated strategy of the Reddit WSB group, at least in the short run, has been almost optimally executed, perhaps accidentally given the environmental conditions. It has limited risk, it is massively levered, orchestrated via real time communication, and has a religious flavor to it. The participants have collectively turned out to be more rational in the current environment than academic theory or Wall Street pundits give them credit for, especially if rationality in the financial markets can be equated with profits.

So how should investors deal with it going forward?

First, unless you have a long enough holding horizon, it's best to just stay out of this game, and a game it is. This specific game may stop (excuse the pun), but others will take its place. For most people this should be no more than entertainment to watch in the time of COVID-19 lockdown, a break from Netflix binging.

If one has a strong view, capital and the holding power, an investor can try to sell a small, diversified basket of the call options that the retail market is buying, as long as one doesn't get forced out or forced to hedge. The timing and future evolution of this strategy is unpredictable. At Black-Scholes

implied volatilities of close to 1,000% on the shortest expiry options, there is no formula that is even remotely close to providing the “greeks” for hedging. This is un-hedgeable, and a trade, if you want to call it that, that is almost all psychology. Do not rely on any quant analysis or textbook theory that suggests otherwise. Once the dust is settled, there will be, like there are always, folks who claim they knew and forecast the ending.

Which brings us to the natural cycle of evolution of this glorified game. If you are a video game follower, in multi-player games the game never ends, it just moves from one venue to another. The fun is the process itself. It will just move to other names and tickers. Insiders of the companies who have seen their stock go up hundred fold in a matter of months, who have now seen their holdings become worth billions, may monetize, or authorize issuance of more stock, or split the stock price to encourage even more participation, or there will be a break in the coordination and someone will decide to exit. This has the potential of starting a cascade if they hold a consequential amount of stock. Or, which is more unpredictable, some sort of regulatory action or a stop on the trading of options or the stock itself leaves the latecomers holding the bag. This could result in trapped longs who may not be able to monetize all their paper gains in time. Or brokers might gang up and refuse to execute retail call option trades in the short term, eventually succumbing to the temptation of transactions and churning trades for the next level in the game.

Personally, I would not bet on any of these possibilities with too much of my own capital. In a world of massive central bank created distortions, democratization of trading via online

platforms, and a need for entertainment and volatility for a crowd of trapped people, anything can happen.

## Acclimating To Potentially Lower Liquidity Means It Is Time To Own Optionality

August 26, 2021

**T**wo years ago I attempted to run the [Leadville 100 Trail Run](#) with very little training at altitude. For a sea-level, warm-weather, flatlander like me, the outcome of running on cold, 10,000-foot-high, steep and uneven mountain terrain with little acclimation was predictable. An experienced ultra-runner with many “100s” under my well-worn soles, I still fell behind my planned schedule and had to drop out two-thirds of the way in (this was only the second time in over 50 races that I have had to drop).

The key, as it became clear, was to get used to the primary variable that was different — altitude — and the consequent

lack of oxygen. It brought the importance of specific training for altitude into painful sharp focus.

Last weekend I took care of the unfinished business, and got the monkey off my back. I returned to Leadville with the singular goal of completing the race comfortably and got it done – no heroics, no drama, no stress... just a comfortable finish due to good preparation for the one factor that mattered. Of the 680 starters, 324 finished (47.6%).

And this time, the main difference was that I made it a point to get to 10,000 feet almost two weeks in advance to let my body get used to the lack of oxygen. I fed the body what it needed – high iron content food, water, lots of rest, etc. so it could make more red blood cells. Within a week my blood oxygenation level rose from 85% to almost 95%, and more important it stabilized, a big difference from the wild volatility in the concentration when I first got there (see picture below).

Still not 100% like it is at sea level, but good enough to feel more or less at home even at 14,400 feet on Mount Elbert, the highest peak in Colorado and second highest in the lower 48 states.

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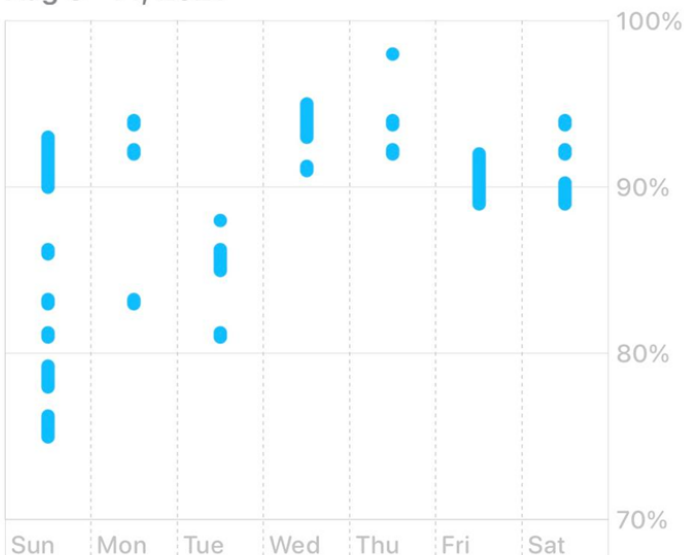
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Over the last decade and a half or more, investors have gotten to their own version of easy sea level conditions. Liquidity has been plentiful and central banks have supported markets and economies. The twenty five trillion dollars or so of money printing and credit extension just in the last few years has therefore resulted in economies and markets being unprepared for their version of high altitude exposure: a gradual reduction in liquidity. The Fed is buying about four billion of assets daily, and the risk markets are seeing about the same amount of inflows daily (Source: Federal Reserve, Goldman Sachs [GS](#)). Coincidence?

Starting tomorrow morning, various central bank speakers and economists will start to express their views about asset purchases, cheap money, and the expanding responsibility of monetary policy to make up for fiscal policy shortfalls. This happens annually at the Jackson Hole conference organized by the Kansas City Fed and this year is about policy in an uneven economy ([agenda](#)). But given that investors are generally not acclimated to the absence of government support of markets, central bankers will have to choose their words very carefully. Any talk of asset purchases that seems tone deaf to the market can quickly result in panic for a market habituated to government support. And from current levels in asset markets, the speed and depth of the fall can be sharp and precipitous, which obviously they will have to mop up, yet again.

When running a difficult race in unfamiliar and potentially volatile and uneven conditions, every long distance runner knows the key to success is to maintain a very fine balance between running too fast, which results in prematurely burning

up stores of energy, or running too slow, which results in missing cutoffs (and embarrassment for losing to the guy in the Elmo suit). Pacing is critical. For central bankers, the task is similar, as they plan the unwind of an unprecedented era of easy policy. Taper or tighten too fast, and a market crash – or “taper tantrum” — can result, which can reverse the gains in investor psychology of last year. On the other hand, going too slow can result in big asset bubbles that pop, misallocation of resources, and inflation, which can sow the seeds of a cycle of increasingly market unfriendly policies.

Runners, faced with the two choices, build some cushion by running just as fast as needed to have enough room for unforeseen error, but not too fast to “blow” themselves up. This is the runner’s version of building optionality by allowing for a wider range of choices if reality is not going according to plan. The cushion allows the runner to have some reserve for the unforeseen periods. And this reserve is what allows them to speed up toward the finish line.

With volatility levels skimming multi-decadal lows, investors not accustomed to a sudden withdrawal of extremely liquid conditions should pay close attention to the cheap cost of hedging. Whether it is melt-ups or melt-downs that are in the cards, faced with conditions that have not been observed for almost two decades, investors can benefit today by sacrificing a small amount of prospective return to make their portfolios more robust for their version of sudden oxygen deprivation, i.e. a sharper than expected withdrawal of liquidity. Central banks can make pacing mistakes, like the rest of us. And yes, there are many other factors that will drive markets; but as I



ACCLIMATING TO POTENTIALLY LOWER LIQUIDITY MEANS IT IS TIME...

found out, focusing on the one factor that can pose the most risk to the plan, and acclimating to it, is the best way to turn potential disaster into a manageable situation.

## Don't Be That Turkey!

November 25, 2021

**W**hen I first came to the United States as a 17-year old college freshman, I was invited to the home of my Caltech biology professor for Thanksgiving, along with many other foreign students who had nowhere else to go. I immediately fell in love with this holiday. First, it comes on a Thursday leading into a long weekend. Second, you get to eat infinite amounts of food. Finally, after eating large quantities of food you get to lounge on the couch, unabashedly, with others, as you watch reruns of old Hollywood classics and football. My favorite was to binge on the *Twilight Zone* reruns, where strange things always seemed to happen under the veneer of normalcy. The weekend that followed was usually spent recovering from the food gluttony.

DON'T BE THAT TURKEY!



## HAPPY THANKSGIVING

Sometime today, if it hasn't already happened, a sort of grim Twilight Zone will also happen to many turkeys. This has been called the "turkey problem", a parable that Nassim Taleb of "Black Swan" fame eloquently cited in his books. Here is that quote verbatim:

*Consider a turkey that is fed every day, every single feeding will firm up the bird's belief that it is the general rule of life to be fed every day by friendly members of the human race 'looking out for its best interests,' as a politician would say. On the afternoon of the Wednesday before Thanksgiving, something unexpected will happen*

*to the turkey. It will incur a revision of belief.*

The turkeys extrapolate the most recent history of what has happened to forecast that things will be just as wonderful in the future. They are provided a lot of food to fatten them up, they roam freely, and every day become more confident that things will be just...great.

The problem is that Thanksgiving comes around every year, and a hundred million turkeys except maybe a couple pardoned by the President are slaughtered. This year “Peanut Butter” and “Jelly” will be pardoned and might live out their life in [relative happiness](#). For all the other turkeys the “revision of belief” is quickly accompanied by a sudden death.

Investors in the bond markets have similarly become used to central banks providing a back-stop. Even as inflation rages wild and the “transitory” camp is now changing its tune, folks insist on buying government bonds. Both Jerome Powell and Janet Yellen are now talking about inflation perhaps being more persistent than they thought, but more important, now they are talking more about what they will do if they are wrong in this assessment. In other words, they are getting ready to give the markets a shock – or to use Taleb’s words, “a revision of belief” in easy monetary policy.

In 1994, another Fed Chair, now the fallen from grace “non-maestro” Alan Greenspan, shocked the bond markets by tightening policy suddenly on Feb. 4, 1994. Rates had been pinned low, stock markets had been on fire since the 1987 crash. A couple months later the Fed tightened again between meetings.

Then in May of 1994 the Fed accelerated the pace of rate hikes by 0.50%! In order to play catch-up to the markets, the Fed hiked rates by 2.5% in 1994. Two year Treasuries went from 4% at the beginning of the year to over 7.5% at the end of the year (Source: Bloomberg). Amongst other levered investors who suffered, Orange County, CA, the county I call home now, went bankrupt. Turkeys.

I was then a young trader, and tried many times to catch the falling knife, literally. My education was swift and painful, and I, like the turkeys, felt how the markets can revise beliefs without much warning. I was that overstuffed turkey too.

Today, the Fed is in a similar situation, having fallen behind due to its own hubris and belief in its economic forecasts that have been plain wrong. Since government officials will never admit they are wrong, the markets will have to prepare to deal with the falling knife on their own. With real yields in deeply negative territory globally even as stock markets make records daily, bond markets are at the mercy of non-elected officials making ad hoc decisions. And when the revision of belief happens, there will be few places to hide in liquid asset markets.

Going back to my Caltech days there is one other thing I am not so proud of. Us undergraduates used to call the graduate students “grad turkeys”, presumably because surviving the math and physics courses designed for an undergrad at Caltech was considered too hard for graduate students who had gone to other schools as undergrads. With their ungainly figures, inability to fly, the “gobble-gobble” sounds, and most important the tryptophan overdose that puts you to sleep, turkeys have

become a symbol of stupidity. Of course all of this bad press about turkeys is likely a myth. But we just can't be sure.

True or false, turkey day reminds us of the fact that when you are in the markets, you don't want to be the last turkey thinking everything will be ok forever. We are surely in the Twilight Zone of central bank-driven markets, and the hangover from the gluttony won't be pretty for the bond markets.

## Absolute Or Relative: Why Focusing On The Right Thing Matters More Than Ever

August 25, 2022

**L**ast week I completed my first self-supported, multi-stage, [ultra-marathon “race” in Lapland](#), above the Arctic Circle. After more than 50 previous ultras, none of which have lasted more than a couple days, I spent almost a week in the swamps of Northern Finland, carrying a 25-pound pack (freeze dried food, energy bars, sleeping bag – in total 37 required survival items plus some optional ones). Almost 250 kilometers (155 miles) later, I made a few observations while as I ate handfuls of fresh blueberries along the way.

The first observation is that in purely *absolute* terms one does not need much to survive. As long as there are plenty of calories

(yes – lots of sugary foods), water to drink and cook, no injuries or bad health, and some shelter (I had a small single person tent) and warmth, humans can actually be very comfortable and sleep really well. At least well enough to run 20-25 miles each day and one 50-mile day aptly called the “long march”. You also don’t need that much experience either to complete the distance, just resilience. I was impressed by the 70-year-old gentleman from Japan who finished, and also the young couple from Mexico who spent their precious honeymoon running through the swamps. I presume they’re still married because she won the under 29 age group after placing responsibility for the trip on him. But *relatively* speaking, a comfortable bed, fresh food and a hot shower is absolutely great to have in life.

The second, and more important observation is that even though we were all moving in the same direction, checkpoint to checkpoint, and spending nights in the same camps, the element of “relative” ranking based on the total cumulative time crept into the psyche. Each of the six “stages” has its rankings and the winner of the race is the one with the lowest cumulative time over all six stages. Even though in absolute terms the route and the destination is the same, as humans I could not but pay attention to the time-based hierarchy or “ranking”, irrelevant as it may be in the bigger picture.

After settling into my quartile of runners, I actually found myself running faster to go up just another notch, even though I had no chance of winning the overall race. I finished the first day at 45<sup>th</sup>, eased into 35<sup>th</sup> the next day, and then into 26<sup>th</sup>, and then on the last day into 24<sup>th</sup> overall. As I made the effort to go up a notch, I wondered why rankings and hierarchy are so



important to us even though the competition is pretty irrelevant to the world at large.

Anthropologists who have looked at this question answer that having rankings establishes a pecking order and thus allows for structure within a group or society, whether for animals or humans. Having this structure somehow optimally conserves the resources of society at large by preventing chaos through order, arbitrary as it may be. For the higher-ranking individuals in ape society, more food and reproductive success is usually the result, even though maintaining the highest rank requires a lot of effort and can result in threats, real and imagined. For those who cannot rise to the very top of the heap, the local comparison to the ones around them establishes them in the ranking.

It seems that what I was doing, once I knew that I was not going to be in the top ten, was to subconsciously “benchmark” myself to a self-selected group of runners in my age group and sex, and see how I stacked up against them. By manipulating the categories and the number of members in these categories I can now make things look better in relative terms. For example: Without changing my absolute performance one bit, I was fourth in my age group and sex. Further stratifying by runners from Southern California, in my age group and sex, I think I must have won! So even though my absolute performance did not change one bit, after the fact I could change the benchmark and make my relative performance look really, really good, at least as measured against my handpicked benchmark.

In financial markets, these concepts of absolute and relative

superiority have been taken to extremes, since it may translate into tangible benefits; i.e. more money for those who can prove they are higher in the relative rankings. Each investment manager can pick a style, and then pick a benchmark to their liking, and by beating the benchmark, which can sometimes be like shooting fish in a barrel, the manager can show that “alpha”, or outperformance relative to that self-selected benchmark.

But the benchmarks can be changed after the fact. In a recent paper, [\*Moving the Goalposts? Mutual Fund Benchmark Changes and Performance Manipulation by Kevin Mullally and Andrea Rossi\*](#), new evidence supports that many benchmarks are changed after the fact to show the same fund’s performance in a better light. And this results in more inflows, and hence more fees for the managers, even though in absolute terms the investors may not be any better off (in fact they seem to be worse off).

While benchmarking to a certain degree is obviously good for decision making since it anchors expectations, taken to extremes it becomes just as silly as the stratification with my race described above. Sometimes tracking a benchmark can result in outright craziness, such as the many bond funds which kept buying negatively yielding assets in Europe as central bank buying of bonds depressed yields below zero, and because these bonds were in the benchmarks they followed.

In the stock market, passive index funds, and the monster-sized ETFs like SPY [PY SPY](#) track the S&P 500 index, and have pulled in lots of investor money and may have also pulled in active managers who could not keep up with the passive funds. As

long as the relative performance to the benchmark is positive, the manager(s) can say they are delivering value, and can charge high fees. And yes, if the market falls a lot, and the funds follow the benchmark over the cliff, as long as the relative performance is positive the managers will still be rewarded for providing “alpha”. If this does not work, at least according to current rules they can retrospectively switch benchmarks! Everyone gets a trophy!

As market participants, we should realize that fixating too much on benchmarks can force us to miss the forest for the trees. Given the high prices of financial assets and low prospective returns today, the risk of this fixation translating into low absolute returns is much higher than ever. Whether it’s buying bonds at much too high prices and low yields, or buying stocks at much too high prices and high multiples, benchmarks can easily lull us into a sense of comfort, while hiding the fact that in the end absolute portfolio returns are what matter. You don’t retire on beating a concocted benchmark, you live off returns.

With inflation raging, the yield curve inverted, and asset prices vulnerable to sharp and turbulent selloffs, investors would be well advised to keep one eye on the prospective absolute performance of their portfolio, so that they don’t end up in the position where their portfolio loses a whole bunch of actual money, but happen to do relatively better than some arbitrary benchmark. Relative returns are a way to keep score against peers and averages, but as the saying goes, you cannot eat relative return.

And when it comes to absolute long term return generation, not

losing too much money at any one time, i.e. survival and risk management is of paramount importance. This is why investors who are not blinded by the mirage of relative performance will do well to look at hedging downside risks in their portfolio in this period of unprecedented macro-economic transformation.

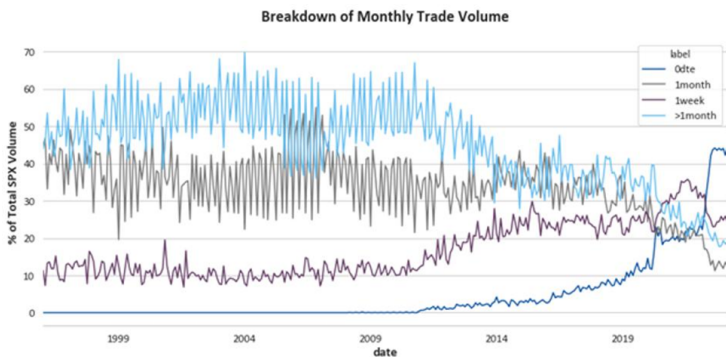
## Gamma Mama! Could 0DTE Options Be The Cause Of The Next Market Meltdown

March 3, 2023

**I**f the GameStop ([GME](#)) phenomenon (see [here](#)) of a couple of years ago did not convince us that options trading are the new opioid for the financial masses, what we are going to discuss today should. And it can influence your financial health! Having traded options across all assets for the last thirty years, my sixth sense is tuned to the subtle changes below the surface in the options trading ecosystem, and a new development in the options markets is worth paying close attention to. For this reason, “same day expiry (0DTE)” options have quickly become the topic of discussion amongst options cognoscenti and even the news media has picked up on this frenzy.

Wall Street and the trading exchanges cater to their consumers. Today's main consumers of financial products are retail traders, many of whom learnt basic option math watching YouTube videos and on Reddit, maybe in college. These same consumers also honed their amateur skills in day-trading during the COVID era. And finally, these traders know how to use network effects, i.e. social media, to influence the power of the masses, which, as we know can impact markets in unpredictable way, just as locust swarms do to fields (see [here](#)).

Index options on the S&P 500 now expire on every day of the week. So if you are a day trader of the S&P 500 or its ETF cousin the [SPY](#)  $-2.1\%$  [SPY](#)  $-1.8\%$ , you can literally wake up in the morning and day trade, with immense leverage, an option that will expire at the end of the day. This strategy has no overnight margin risk since the options are “self-liquidating”. As long as you have enough capital to buy or sell one of these options, you can. What has been stunning is that over 40% of all S&P-related options are now same day expiry (Source: Optionmetrics), or “zero-day-to-expiry” options, shorthanded as “ODTE”. Ten years ago this number was about 5-10%.



*Volume of Trading Volume on ODTE Options has risen sharply*  
**LONGTAIL ALPHA**

So imagine that you have \$100,000 for “trading”. You can very rationally take this money and open a retail brokerage account and deposit the cash into Treasury Bills, which are yielding about 5% for six-month expiry. So now, assuming 250 trading days a year, your trading budget, from the income, without touching the principal at all, is 2 basis points a day or \$20 a day. Does not seem like a lot. But if you were to go and search what options you could buy with this premium, you would find that there are indeed option “lottery tickets” that you could afford with even such a small amount of money. As a matter of fact, as of the opening yesterday this morning (March 2, 2023), a 0.75% out of the money call option on the SPY cost only 20 dollars (Source: Bloomberg). If you traded only once every, say, 10 days, then your budget would be \$200, and you could afford to buy 10 times the quantity of options of these same strikes, or move your strikes closer to at-the-money. Better yet, if you were a little late getting up today from too much partying last

night, the same options would have decayed to half their value as you got closer to the expiration time in the afternoon, so you could do even more if you thought things were going to get interesting toward the close. If you and 20,000 of your social media friends all decide to do this at the same time, well, the impact on markets can be truly enormous.

Options close to their exercise price on the day of expiry are essentially what are called “binary” options. To price them, one would be foolish to use Black-Scholes. To hedge them using Black-Scholes, one would have to be suicidal. The easiest way to price binary options is to use the concept of “jumps”. If the probability of a jump is  $p$ , and the magnitude of the jump is  $J$ , then the fair value of an at-the-money option should just be  $p$  times  $J$  (of course in reality the option will usually have a price higher than the fair value). The hedge ratio, i.e. how much of the underlying security one has to buy or sell flips changes massively at the strike and is essentially equal to the probability of finishing in the money. At expiry, you are sitting on a “knife’s edge”. At expiry, below the strike you need no hedge, and above the strike you need 100% of the underlying security (assuming you are hedging a call option). This, in option language, means that there is enormous (essentially infinite) gamma in the option at the strike, since the delta of the option can change from 0 to 100% for a miniscule move in the price of the underlying security.

By the way, I asked ChatGPT whether ODTE options are dangerous, and here is what it came back with (which is not bad at all):



*“Yes, ODTE (Zero-Day to Expiration) options can be very risky and dangerous. These are options contracts that expire on the same day they are purchased.*

*The danger with ODTE options is that the price of the underlying asset can move quickly and unpredictably, especially on the day of expiration. This can result insignificant gains or losses, depending on the direction of the price movement.*

*Additionally, ODTE options have a very short time frame, which can make it difficult to predict the direction of the underlying asset’s price movement with any degree of certainty. This can lead to increased volatility and higher risks.*

*Furthermore, the bid-ask spread on ODTE options tends to be much wider than for longer-term options, which can result in higher transaction costs and reduced liquidity.*

*Therefore, it is generally not recommended for novice traders to invest in ODTE options unless they have a high risk tolerance and experience with options trading.”*

Let us do an example to make all of this concrete: The above mentioned 0.75% out of the money call option would expire in about six hours when I wrote this in the morning yesterday right at the open (the level of the SPY at the time was 393.8 and the strike was 397). The price of the call option was roughly \$20, and the notional exposure to equities that this gives me was \$39,380 (so a leverage of 2000 to 1!). The theoretical Black-Scholes “delta” of this option was about 13%, or in other words the effective intraday exposure to the SPY this option was

0.13\*\$39,380 or roughly \$5,000 of equivalent equity exposure. This is what a “hedger”, i.e. a dealer who is short the option would have to theoretically buy (assuming using Black-Scholes) to hedge their short position in the option. If the option expires out of the money, the dealer would keep the premium. On the other hand, if there was enough buying of this option (think social networks and WallStreetBets), the act of buying the hedge could propel the option towards the strike. If there was enough demand for the options, the need to hedge could easily overwhelm the liquidity of the market.

Flipping the example on its head, what if the speculation was on put options? This would obviously require the hedgers to sell short the underlying security. And if there was enough demand from the option community, the selling in itself could propel the market lower and propel more selling.

So where does this leave us?

As I wrote a few months before the implosion of the XIV debacle in 2018 ([here](#)), markets can easily get overwhelmed by the size of trading flows when they are programmatic, risk management driven, and in one direction. The recent rise on ODTE options trading seems to be setting up the kindling for another event of similar magnitude. Large swings in the markets are here to stay for now as long as cash investment continues to yield more than long term assets and the yield on the cash can be used to speculate on financial assets via enormously levered strategies such as same day expiry options. Very rationally, yet again, retail investors are rationally holding their assets in cash and speculating in the options markets, which provide both an easy

fix, asymmetric risk-reward and massive leverage. But what we have to remember is that where there's outsized leverage and potential for quick gains, there's often trouble lurking right around the corner.



# III

## Part Three

*“Active Management”: The Potential for  
Unexpected Outcomes Requires Active and  
Deliberate Portfolio Management*



## Part 3: The Potential for Unexpected Outcomes Requires Active and Deliberate Portfolio Management

**F**or a very long time, risk management has been the unloved sibling in the quest for return generation. But when unlikely events happen, active risk management can become the differentiator between the ability to withstand changes and prosper, or be eliminated prematurely.

“Don’t believe everything that you see or hear” is a good adage to remember when the world is changing and requires investors to actively participate in the process of portfolio construction. Many fashionable techniques that worked until very recently have become largely irrelevant, and many techniques that fell out of fashion a few decades ago are working again. Investors cannot simply repeat patterns of behavior and expect to outperform the market or their peers. The world can undergo regime changes and so must the response to it change.

Going into 2022, yields started to rise sharply as central banks found themselves way behind the inflation curve. As they started to raise rates aggressively, cash went from being “trash” to being king. As correlation relationships started to break down diversification also broke down, and investors were forced to look for other ways to manage and mitigate risks. And when bond yields went deeply negative and become outright confiscatory, it was time to get out of staid old bonds and into other assets.

Central bankers went from buying lots of bonds to becoming net sellers. When they were buying bonds indiscriminately, they made inflation protection very expensive, and inflation linked bond prices went to the moon. When they stopped, the prices of these bonds fell, real yields rose, and the price of inflation protection fell - right when inflation was rising sharply.

As I discuss in the following columns, just by paying attention and being flexible, and actively involved, it is possible to participate in shaping asymmetric outcomes for our portfolios.



## Positioning For The Coming Capitulation

May 26, 2016

**W**hen I scan the market for “distortions”, nowhere is the situation more odd from a historical context than in the level of global yields. Indeed much has happened that was unforeseen, even unimaginable a few years ago. Many sovereign yield curves (and even corporate bonds in many countries) are negative, and maybe even justifiably so.

Many authors, including this one, have written to explain this peculiar state of affairs. Reasons include demand from investors for scarce “money-good” securities for their “insurance”-like properties (government bonds are basically insurance policies again global financial meltdown, but not against inflation); the need to minimize tracking error to indices that are composed of these sky-high securities; and plain and simple

outright purchases by global governments that are crowding out investors. Many of these dynamics are still in place.

This bond market rally in recent years has certainly been more hated than even the equity market rebound and rally from the 2008 lows. If there is any truth in the adage that the markets collectively go to the point of pain for most investors in the shortest amount of time, we are probably nearing a crescendo and then an inflection point. What might this look like? Can we get ahead of it?

We need look no further than the grinding flattening of the US yield curve as an indication of what an impending capitulation in the bond markets might look like.

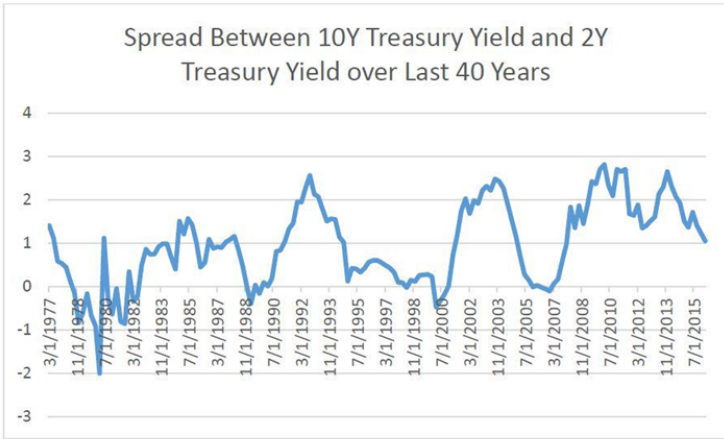
With the 10 year treasury at 1.8%, and the 2 year treasury at 0.88%, the spread is for the first time below 1% in almost a decade. The Fed has recently signaled that they will be raising rates, i.e. all else being equal, there is a bias toward the short end of the curve to rise in yield. On the other hand, economic growth is slowing as the recovery gets long in the tooth, and the 10 year in the US looks like a bargain compared to negative yields in many countries where long term yields looked pegged close to zero or even negative.

Yes, there is currency risk for a foreign investor to purchase US treasuries, but given the relatively tight bounds within which currency markets have been moving, the currency risk might indeed be something that some foreign investors would accept to earn a bit more yield on their portfolios. Not only do US treasuries provide extra yield for investment, but as the world's

reserve currency, they also provide an insurance benefit against a global financial catastrophe.

Going back to the yield curve, note that in both 2000-2001 (Internet crash), and 2007-2008 (global financial crisis), the yield curve had already begun to demonstrate a similar flattening behavior and eventually an inversion, where long term yields fell below short term yields. We can also bring in the difference between the 10 year yield and the 30 year yield. The 30 year treasury at 2.6% is another 0.8% above the 10 year treasury, and the difference between the two also seems to be on a path toward further flattening.

## EXPECTING THE UNEXPECTED



While the difference between the 2 year and the 10 year is driven by Fed policy and economic activity, the difference between the 10 year and the 30 year is driven additionally by inflation expectations and demand for long term insurance and investment that can only be found in long term treasuries.

And by many measures, the demand for longer term fixed income assets is increasing, not decreasing. If we were to postulate that both parts of the yield curve might invert — i.e. the 2 year yield may be higher than the 10 year and the 10 year in turn may be higher than 30 year — there will be a lot of damage to investors in all asset classes, not just bonds.

The main reason is that “carry”, or “maturity transformation” as it is known in more refined circles, is the foundation of a levered economy. “Borrow short, lend long”, works as long as the yield curve is positively sloped. Once it inverts, the cost of financing exceeds the return on investment, and it becomes impractical to be involved in the yield curve carry trade, or many other carry trades that are driven by cheap short term financing.

The risk-premium in the yield curve is a fundamental driver of risk premium in almost all other markets. There are deep relationships between the yield curve carry trade and the carry earned from selling volatility (i.e. selling options). This extends even to the carry one earns from buying corporate bonds instead of risk-free assets, and to the carry earned by investing across countries (i.e. the currency carry trade). In short, carry leaks out from one market into another, and in this way markets can get exposed to the same set of macro shocks. No wonder that financial market breakage is countered by a rapid ease in the short term rate, flooding the market with liquidity, and an ensuing steepening of the yield curve. But short rates today are very low, and the Fed is telegraphing a withdrawal of liquidity, both in action and in communication.

But here is the catch. Even if we believe that the yield curves will invert and the possible consequences will be large, the cost of putting on the inversion trade directly today is one reason this is not a “slam-dunk”. For example, by looking at the forward curves, we can compute that one year ahead the market is pricing in a reduction of the 2 year vs. 10 year spread which is almost 0.40% lower than the current spread. A lot of flattening is thus already “baked in”. So an investor who decides to do the inversion trade today is again, in the language of options, effectively paying a “premium” of 40 basis points to do this trade. This is a high hurdle for anyone looking for “carry”, and very few are willing to lock in negative carry in order to express a view on the direction of the yield curve. Given the lack of other opportunities for earning yield, this is a costly premium indeed.

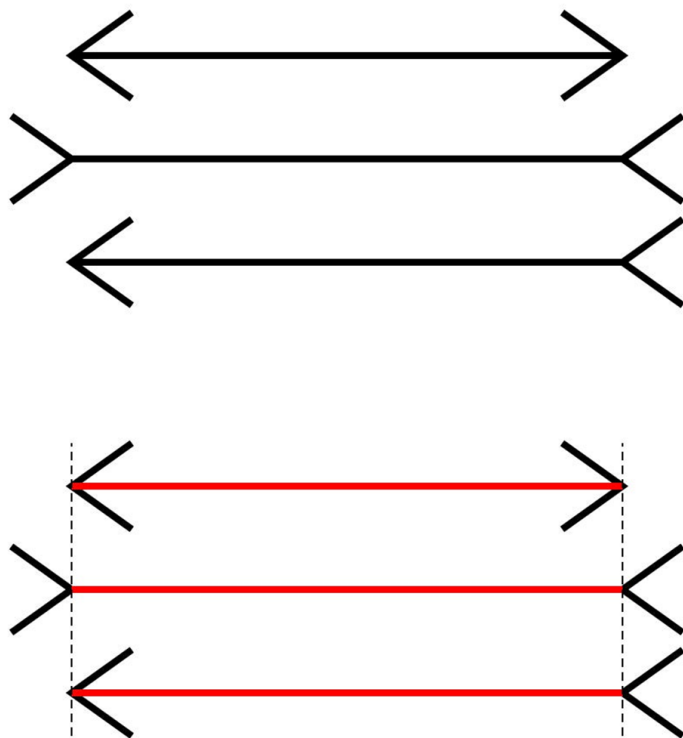
But like beauty, the price of an asymmetric position is in the eye of the beholder. The question for investors is whether the ensuing capitulation could be large enough that this asymmetric position would be well worth the cost. While the negative carry from doing the inversion trade itself might be costly, it is still attractive today to look for other, cheaper sources of convex, asymmetric investments that are likely to do well if yield curves invert and markets suffer the breakage that they almost always do when this happens.

## Why The Quants Might Be Winning On Wall Street

March 16, 2016

**M**any of us have seen the question in the accompanying graphic (the technical name of which is the “Müller-Lyer illusion”): Which of the lines is longer? When we look at them, we *see* that the lines in the middle (“arrow tails”) of each set are longer than the other lines (“arrows” and “arrowheads”), but we *know* that the two lines are equal. Even when we know that what we are seeing is an optical illusion, our eyes still tell us that the middle lines are longer!

## EXPECTING THE UNEXPECTED



Much has been written about this optical illusion, but it was only recently that I had the pleasure of finding out why from Paul Slovic, an eminent [University of Oregon](#) psychologist who is among the originators of behavioral finance. Over a couple of drinks, Professor Slovic explained that while we might be embarrassed at thinking that the arrow tail lines are longer (even after knowing that the lines are equal), we should not feel so.

That's because evolution has created our visual system in such a way that our brain compensates for distant objects (or objects



that appear to be more distant), by giving them a different interpreted length. The arrow tail line is thus interpreted by the system that judges depth and perception as closer, and hence longer. This “heuristic” presumably was an adaptation that allowed us to make rapid and generally accurate judgments of visual perception.

The misinterpretation of the length of these lines is thus very likely a remnant of our survival mechanism. Even though we feel that the arrow tail line is longer, we know the lines are equal after we take out a ruler and measure them. Slovic was the first to document how our feelings significantly affect our decisions (this is known as the “affect” heuristic). In investing, as in other endeavors, one way to overcome our biases is to measure; i.e. use a ruler of some sort.

I have also recently written on how behavior can influence our perception of risk on the extremes. Not surprisingly, crises in particular, and surprises in general can influence our perception of risk on the extremes, something I witnessed firsthand as a portfolio manager trying to balance investor expectations of returns with downside and upside risk.

I have four main conclusions.

First, people generally feel better when they believe that they have portfolios with built-in insurance, i.e. protection against losses, even though the expectation (or average return) of a portfolio with or without such insurance is the same. This explains why people are willing to pay for insurance in the form of things such as put options even when they know that

by itself, the insurance itself will surely be a loss. Witness the purchase of bonds around the world at negative nominal yields by investors, which guarantee a principal loss. But this behavior might not always be irrational or naïve.

Second, and a corollary of the first observation is that insurance, especially catastrophic insurance can remain expensive (and even get more expensive) if people feel (feelings again!), that the world is a dangerous place. Any arbitrageur who tries to take advantage of this without an infinite amount of capital is exposing himself to how fearful those feelings can get. The arbitrageur can sometimes just get run over by a fearful and stampeding herd.

And this fear can last for long periods. We only have to look at the very steep skew in the options markets (for example the difference of the implied volatility of far-out-of-the-money options against closer to at-the money options) to see that this fear premium has become a fixture of markets today. A behavioral perspective on the options markets shows that what drives this premium is the overweighting of subjective (or feelings based) probabilities for rare events like another financial crisis.

Third, and based on the research of some Yale economists, we find that it is not really fair to call the option buyer the “fish at the table” who is constantly paying out premiums to the “rational” seller of options, who is collecting sure profits. As a matter of fact, if we allow for behavioral biases (which can be persistent), both the buyer and seller of such insurance can be completely rational. This heterogeneity is what makes markets.

Fourth and final is the observation that people are prone to react to the “heat of the moment”, and can be time-inconsistent in their decision making process. In other words, they are likely to “feel” differently when they are in the middle of a crisis event than when they are in a quiet environment. A gambler with behavioral biases rationally stays too long at the table when losing and exits too early when winning. We simply cannot argue that this behavior is “wrong” and that the gambler is not executing a rational plan. This is just part of the survival mechanism.

Coming back to the length of the lines, it appears that for good reasons, how we feel can not only influence our vision, but also our investment decision process. And it also appears that one partial solution against the bias is to measure and quantify the magnitude of the distortions. How else can we explain the incredible swing in the equity markets over the last two months, which have gone from being down over 10 percent to now recovering almost all of their losses, without much changing fundamentally?

In this round, anecdotal evidence points to the quants, whose measurement-based methods appear to be winning over humans who are reacting to feelings. At least for now, the ability to measure and to not excessively react to feelings has proven to be a good approach for investing.

## Things Could Get Much Worse For The Banks Before They Get Better

February 22, 2016



**T**he performance of the banking sector this year has been dismal. Despite the sharp corrective rally of the last week the sector remains one of the worst performers. A number of European banks have already plumbed through the lows seen during the financial crisis. A

few others globally look set to follow. It might be tempting to think of the sudden “value” provided by the beaten-down sector. But based on longer term analysis of the fundamentals of what drives bank profits, my view is that careful investors might still want to wait before they try to find a bottom in this sector.

A review of the bank business model and the risks the business model is currently facing provides support to the defensive view.

Banks primarily profit from intermediation, which also means taking and keeping some risk on their own books. Since the financial crisis, however, the limits put on banks’ ability to warehouse risk (which would require them to take proprietary positions), has been seriously curtailed. Less positioning means less intermediation, which means lower profits from transactions. This trend towards less risk taking is gathering more strength.

Next, banks depend on fees charged for services. With the emergence of new technology, and competition, service charges have collapsed. Lower pricing power means lower profits. This technological shift is secular, and not likely to abate any time soon. In fact, the impact of technology and virtual banking will likely bring down costs for financial services at an increasing rate.

Banks also depend on yield curve arbitrage, or “maturity transformation” for generating profits. In other words, borrowing short and lending long. With the specter of rising short term

rates, and falling, even negative long term rates (note Japanese government bonds went negative last month), this carry trade is not very profitable any more, and will become even less so. If there is a wholesale race by every country to push their long term rates negative to stimulate their own demand, the heart of the banks' business models comes under attack.

Another source of some risk is that the emergency powers of the U.S. Federal Reserve and some other global central banks have been significantly curtailed since the crisis. A partially straightjacketed Fed that has just begun to tighten policy has removed the implicit downside protection that the banking sector has enjoyed for so long.

And finally, one cannot ignore the rumblings out of policymaker and political circles that raise the possibility of bank breakups, or at least a significant reduction in the reach of larger banking entities. Only time will tell whether any of the proposed new measures are actually implemented, but given that this is an election year, the risks appear to be on the downside.

Banking stocks had been the darling of the post-crisis rally fueled in large part by low short term interest rates and a very friendly Fed. These conditions made up for some of the profit potential lost through lower intermediation, and lower costs from higher efficiency in financial markets. As the balance shifts with rising short term rates, a less protective Fed, low or even negative long term rates, and an increasingly unfriendly political climate, the risks in the sector becomes more visible and in some cases even more severe than tested in the 2008 crisis. While there certainly are individual investments in the

sector that might provide tactical opportunity, investors would be wise to steer clear of the sector until many of the structural impediments described here show a sign of abating, although it's hard to say exactly when that might happen.

## A Is For Apple: A Market Overview Before The Fed Meeting

September 20, 2016

**I**t's the day before the September FED and BOJ meetings. While all eyes are on Central Bank actions and speeches that will be out in the open tomorrow, the lull today should provide a few moments to go back to first principles of investing in stocks, [bonds](#), cash, and on portfolio construction and risk management.

So let's really get back to basics to the "alphabet" of investing. For many of us with little kids, teaching them how to read starts with A is for [Apple](#), B is for...etc. It is also a great way to think about investing.

With all the focus on Central Banks and the confusion they may have created with new theories, the basis for investing



in the equity markets comes down to one simple thing: if firms create value, and people line up to buy that value (real or perceived), then the firm's value and its stock goes up. For a market caught in a sharp downdraft just a couple of days ago from contradictory Fed-speak, the announcement of Apple's new phone and the continued demand for a newer version showed that inventions, production and especially consumer demand are doing just fine. Call me an optimist, but by virtue of being peripherally connected with two leading scientific universities, I can say that innovation is alive and well.



The flip side of the coin is the creation of “anti-value” from over-reliance on promises. “B” is for Bonds (with a capital B), and at least in my investment playbook at their current pricing level, “B” is also for “Bogus” investment since they are based on a promise of perpetual money-printing. No wonder that when yields rose sharply last weeks, investors who had

bought bonds as investments premised on the promise of low yields forever bailed. But Bonds do have insurance like benefits. Bonds at negative yields are actually insurance, which is their one redeeming factor, but only if the provider of that insurance is credible and the pricing of the insurance is sensible. When that credibility comes under question due to changing academic dogma, it is a lot to ask investors to anchor themselves to the insurance policy. Hence the angst over fluid Fed speak that has become a spectacle unto itself.

C is both for Central Bank Communication, Correlation and Convexity. As discussed, focusing on central bank communication is certainly nerve bending, and at the end of the day, a “complete waste of time”, as my friend Stephen Jen put it recently. I think Investors are better off by, (1) investing in companies with awesome products, (2) managing their portfolio risk and leverage, (3) doing other, hopefully socially productive things with their time that is saved. In the long run, value comes from growth and innovation, and by all metrics there is still plenty of it out there.

Correlation breakdown between stocks and bonds, and even stocks and the Yen (long thought of as a shock absorber on volatile days) was the talk of last week. As the threat of rates rising went up, stocks, which have benefited from the present value effect (future cash-flows being marked up due to the lower discount rate), also fell. Suddenly, it looks like there was no place to hide. At very low yields or very high yields, one should expect correlation between core assets to switch signs, like it has started to do.

Given the unpredictability of Central Bank speech and correlation breakdowns means that this is a time to own Convexity. In other words, look out for correlated, fat-tailed events to occur, both on the “right-side” and the “left-side”. The left-side risks are easy to fathom if monetary experiments fail and we see backtracking from Central Banks. The right-side risks can surface with speed if we see fiscal authorities even hinting at getting their act together. By some common measures, these right side risks may be underpriced in the market. For example, 5% out of the money call options for three months are priced at one third the price of 5% out of the money puts. Note this goes over a couple of Fed meetings, as well as the US presidential elections, and as we toy with uncharted territory in stock indices. If there is any time where there is the potential of an upside spark, it is now – look out above for fat tail risk!

Then there is D for Diversification. Given the breakdown in correlation, we are likely entering another period where diversification as a source of risk-management is likely to prove weak. In our analysis, switching just the stock-bond correlation from its five-year history to what was just observed over the last month results in almost doubling of portfolio volatility and “value at risk”, which are both metrics used by risk managers.

D is also for Divergence. It is not entirely surprising that given the Fed’s desire to raise rates, it is the only major Central Bank where the probability of a rate cut (as computed by Fed Funds futures) is close to zero. With markets and geopolitical risks abounding globally, every other country’s monetary policy has a non-negligible probability of a rate cut! For instance, Brexit’s aftermath has resulted in a bias of almost a 30% cut in rates in

Britain by December. The same is true, though the magnitudes are different, for Canada, Australia, and Japan. The question begs itself – what if an unexpected negative shock were to occur? Could the rate rise expectations be replaced with no change, or even a cut sometime next year?

Skipping a few letters, watch out for “T” for Technology shifts. In just the last few months that we have been setting up our new firm, I am amazed at the multi-fold increase in automation and efficiency for investments that is available to everyone. New technology has removed the barriers to entry for investment managers, though some of the barriers have gotten harder to cross as regulation (perhaps justifiably) has increased. We learnt in our philosophy undergraduate classes that paradigms shift, and it takes people time to adjust to new paradigms. In investment technology, paradigms have already shifted.

Machines are doing a lot more of the investing, trading and even thinking. And machines think differently than humans. As in chess, the combination of humans and machines – “augmented reality” is likely to prove superior to either machines or humans working solo. If you have a teenager you probably have not missed how real new augmented reality games are. And to the frustration of “old-school” value investors, the spillovers from this new technology into investing is likely to be game-changing. At the end of the day, this has resulted in persistence of momentum (machines are biased to do more of what has been working as compared to humans who are biased to think about reversion to the mean). Just don’ be surprised that once markets start to move, they don’t pause easily.

So for robust investment decisions, go back to A, B,C D's and maybe T. And in the short run, forget the last letter in the alphabet. Central Bank decision making today are more akin to watching the Zebra. Funny looking, striped, and hard to understand and domesticate and lean on to for portfolio construction. Good luck betting on them.

## Why Having a Monetization Framework is So Important for Tail Risk Management

November 9, 2016

**I**f you had left yesterday at the market close and come back this morning, you would look at your market screens and see that the equity markets, at least, had done barely anything.

This would have completely hidden the amazing turn of events in US, and indeed, global politics and a limit down move in the S&P E-mini futures before rebounding back to be essentially unchanged from close to close.

If you had any tail hedges, like we did, and if you did not do anything with them last night, you would have realized no gains

from them, and possibly even a loss, as implied volatility fell and another day passed.

On our end, we were up last night and managing our portfolio of tail hedges – readjusting, rebalancing and optimizing. The fact that the major macro futures markets trade electronically almost 24 hours allowed our team to make sure that the fleeting value added from the financial market carnage in the overnight session was captured in our portfolios.

As we have described before in our writings and discussions, we use four major levers to manage a highly convex portfolio of hedges.

First, and what we use sparingly, is monetization, i.e. conversion of increased hedge value into cash that can be used to re-invest in the markets at a cheaper level.

Second, we can convert certain types of strategies into other types that allow for better risk-reward, i.e. converting puts into put-spreads or vice versa.

Third, we can exchange our hedges in one market that has outperformed into another – our algorithms attempt to scan every market that we can trade and evaluate the relevant relative value tradeoffs.

Because markets do not process information efficiently in the short term, these opportunities present themselves frequently. A great example from last night's market action was the dramatic fall in yields as a consequence of the fall in equity

markets, which allowed us to liquidate and convert our long treasury hedges into other hedges. Fundamentally, the knee jerk reaction of falling bond yields made no sense in the context of a Trump policy that would increase deficits and bond issuance.

Fourth, and finally, we can exchange non-linear instruments for linear instruments and vice versa depending on what has happened to volatility.

Our process and the liquidity in the markets last night allowed us to execute three of the four major levers. As we have discussed in the past, tail management cannot be passive since the value added arises from perceptions of risk changing and perceptions change very quickly; and last night's price action showed the importance of active tail management.

The US election outcome was a classic tail event. The market and poll probabilities of candidates' chances were too extremely skewed and one-sided yesterday morning before the election results started to come in. And the severity of the outcomes was even harder to pin down. Compound this with the ability of investors to trade continuously in real-time as news comes out and you have created an environment that requires a disciplined process to manage a portfolio of hedges.

It was a sleepless night at our firm, but one that was fruitful and indeed required for managing our hedge portfolios.

We believe that many such events are on the horizon on both the "left" and the "right" sides, and investors who can analyze such events rapidly, and act upon them, are likely to be able to



WHY HAVING A MONETIZATION FRAMEWORK IS SO IMPORTANT FOR TAIL...

extract the value from tails.

## Is Inflation Really Back? What to Do Now in the Bond Market?

December 2, 2016

**T**he BIG event in markets that has occurred this year is the massive selloff in global bonds, accelerating since the stunning victory of Donald Trump in the US elections.

The common and widely held view, which now seems to be reflected in the bond markets, is this: (1) Fiscal stimulus will result in more bond issuance, which (2) will result in inflation and (3) more losses in the bond markets. Investors who own bonds want to know what to do now – should we buy more, sell what we own, or wait and see?

The rise in bond yields since November 8 of half a percent (50 basis points) is, for many investors, a symptom of the inflation

“disease” that may grip the economy. But before we agree and panic, let us put our biases aside for just a minute and analyze this situation.

There is something utterly convincing about the notion of inflation rising and bond yields rising since they both have been so low for so long. It is just natural to expect some mean-reversion to longer term levels. The negative and very low yields that have existed in the world’s fixed income markets over the last few years just make it easier to argue the case that yields should now rise. And given that central banks artificially propped up the bond markets makes this case even stronger, since we see clearly the proximate “cause” for the low yields.

Now we know that the probability of observing a symptom (sharply rising bond yields) given the disease (that inflation is going to rise) is not the same as the probability of rising inflation (the disease) given bond yields are rising (the symptom). They are, of course, related by the famous Bayes rule, but not identical. We have to carefully evaluate causality.

As an example, suppose you discovered one morning that you had the symptoms of a very rare disease. You ask a doctor and are told that given the disease, the probability of having the symptoms is 90%. But what you want to know is not the probability of having the symptoms given the disease, but having the disease given the symptoms.

The probability of having the disease given the symptoms is proportional to the product of the conditional probability of having the symptoms given the disease and the unconditional

probability of having the disease. Since the disease is very rare, let us say it has an unconditional probability of only 1%. This base rate, as it is called, decreases the probability of having the disease (given the symptoms). If we can also somehow figure just the unconditional probability of having the symptoms, we have all the information we need to compute the probability of having the disease given the symptoms.

Let us assume that the unconditional probability of having the symptoms is 5% (i.e. we can sample the whole population and estimate this number). Then using the Bayesian approach, the probability of having the disease given the symptoms is 90% times 1% divided by 5%, or about 18%. Not negligible, but much lower than the 90% probability of the symptoms given the disease. So it is clear that asking the question in the right way makes a big difference in our answer to the relevant question.

Another, visual example is in the pictures below. Do you see a hill or a crater? Are you sure?

Try flipping the image (or see next page for flipped image and an explanation). This is not an optical illusion, but actually a demonstration of how human brains are Bayesian by design, interpreting data probabilistically in the context of new information and prior conditioning, and thus vulnerable to mixing cause and effect.



So let us apply the Bayesian approach to the bond markets and inflation expectations today. One could argue that the probability of a sharp rise in inflation is 10% (assume high inflation in the US means 5% or higher over the next three years). We want to know the probability of high future inflation given that bond yields have risen.

This is equal to the product of the probability that bond yields have risen given high future inflation times the probability of high future inflation divided by the unconditional probability of bond yields rising sharply like they just did. Let us also assume that a half percent shock in the level of bond yields over a short period happens only about 20% of the time (close enough based on historical experience).

The last item we need is the probability of a sharp rise in bond yields given high future inflation. Let us say this is 90%. Multiplying everything out, we see that the probability of high future inflation given a sharp rise in bond yields is only about

45%. Still not negligible, but not something to panic about, and certainly not the almost 100% probability that the market is seemingly romancing. Perhaps something else such as technical factors, or a change in sentiment towards bonds is really the culprit? Hard to tell with certainty just yet.

So is this a buying opportunity or a selling opportunity for bonds?

The best answer to this question has to refer to the objective function of you as an investor. To paraphrase another author (Joel Greenblatt) “Choosing individual assets without any idea of what you are looking for is like running through a dynamite factory with a burning match. You may live, but you’re still an idiot.”

We have to know why we are buying bonds in the context of our overall portfolio. If we own other assets that provide us with inflation protection (real-estate, equities with pricing power, inflation linked securities, gold, commodities etc.), then a bond market that is 10% to 20% cheaper today than three weeks ago is a great investment as a source of protection against economic slowdown or financial crises and also as a source of income (and, of course, this depends on your age, other economic, personal and financial conditions).

And as we have noted before, at the low yields we saw this summer, the bond market was less of an investment and more of a pure insurance policy. At 2.5% yield on the ten year Treasury note, or over 3% on the long bond, the bond market has regained some of its investment characteristics, while keeping

its insurance-like properties. On the other hand, if you already own a lot of bonds or other fixed income securities that might get crushed if the inflation disease raises its ugly head, then maybe it is better to wait to buy more bonds.

There are certainly a lot of holders of bonds at much lower yields who hold them in a levered fashion as investments that they hoped would be bought out by others at even higher prices and lower yields; and they might be forced to sell (running through a dynamite factory with a lit match they were!). Just look at Germany and most of Europe where bonds are still trading at negative yields despite the sharp backup in US bond yields.

So, as always, the prescription for the disease depends on the patient. We have to look at things rationally and with our biases clearly accounted for, and then decide whether the bond market today is good medicine or not. It is certainly on sale, but just as we don't buy medicine simply because it is cheap, don't just let price dictate what to do with the market today.

Explanation of the “hill” or the “crater” confusion:

This is the “right side up” picture of the meteor crater. The fact that depending on the perspective the picture either looks like a hill or a crater has to do with the fact that the brain starts with the prior (“base rate”) that light is coming from the top, and uses this to weight the image and interpret it as a hill or a crater. If you flip the image on its edge, it will alternatively look like a hill and a crater, but not both at the same time.

EXPECTING THE UNEXPECTED





## Revisiting ‘Buy The Dip’ When Volatility Is Low

June 6, 2017

**E**ven I was a little bit surprised at how much agreement there was on the [two pieces](#) that I wrote in this forum a few weeks ago on the risks and consequences of selling volatility when it was so low – presumably the quantification of short gamma positions and their potential consequences resonated with our readers.

Indeed, the only other time I have experienced such a consensus that the market was too high and volatility was too low was before and during the massive rally in the 1999-2000 dotcom bubble. What paid then, as it has done for the last few years, is the strategy known as BTFD: “Buy The Failed (or F@#\$!%^ in traders vernacular) Dip”. Of course that story ended with the bust of the bubble, but until then, the going was good.

So how can we understand the dynamics of BTFD?

Imagine yourself as a prudent and risk conscious investor who is careful in managing your downside and wants to be in the market at a constant exposure. As the market goes higher and higher, you want to protect your windfall while systematically being able to buy more of the market if it dips enough. In other words, you have a “trailing stop and rebalancing plan”. So you would like to behave like you own a put option that you can trade out of when the dip occurs. Basically, you want to outsource the rebalancing decision to the options markets, which will generate the appropriate liquidity from the mark-to-market increase in the option value.

So what is your reaction function as the market dips? As the market dips, you first observe the value of your total portfolio (value of the underlying portfolio plus the value of the put option). The value of the underlying portfolio falls as the market falls, but the value of the put option rises. Since the value of the put option rises, you have a mark-to-market gain, that, if you choose, you can monetize. If you believe that dips are a temporary phenomenon (and this belief is an important assumption), then monetization on a dip is the optimal strategy for long term gain. Of course, this belief can change at any time, and then monetizing the put and buying more of the market would be a bad choice rather than keeping the put option in place for further declines – BTFD did not work so well in the 2008-2009 crisis.

To keep the discussion simple, let us say you own a one month option that is 5% out of the money on the S&P 500. Now if today

the market drops instantaneously by 2% (like the selloff and recovery a couple of weeks ago), the option creates the need for an extra 10% of exposure (the delta jumps by that amount). You can hypothetically sell the appreciated put option, and take the money and buy 10% more stock to regain the target exposure. So the desire to keep a constant amount exposed in the market allows you to use the dips to rebalance.

And if you can buy the downside put cheaply enough, this procedure allows you to keep moving the threshold at which you monetize closer and closer to the current level of the market. It also makes the jump in the delta proportionately higher when the starting volatility level is lower.

Now for every seller of an option there has to be a buyer. If your sale of the put option is purchased by a dealer who is going to temporarily warehouse the option on his or her books, he will need to do a few things. First, he will hedge his delta, i.e. he will buy enough of the market against the options you sold him. Second, he will try to lay off the volatility risk, i.e. he will sell other options to hedge the volatility risk of the option he just bought. The net effect is that he provides an additional bid to the underlying market, and he pressures implied volatility. These strategies, which take volatility as a signal, trigger buy orders as volatility falls. Does this sound like what we have been experiencing?

So while there is broad collective belief that the markets will recover after dips (and this can be ascribed in the rear-view mirror to easy Fed policy, improving fundamentals and earnings, and fiscal stimulus among many other reasons), not

only does BTFD work, it shortens the time to recovery, and invites other participants in a self-fulfilling way. You don't even need to own the put option to piggyback on the BTFD dynamics. You just need to act like you own it. Of course trees don't grow to the moon, and volatility cannot go below zero (even though one might agree that yields shouldn't be below zero either, but that's another conversation), so at some point this has to stop. At some point BTFD stops and turns into STFB ("Sell The Failed Bounce"). Until then, beware of fighting the BTFD, especially since the cost of playing the BTFD game via options is so low.

## Watch Out For Volatility Tourism And The End Of The Summer Calm

July 25, 2017

**S**ummer will soon be coming to an end, and in the beautiful beach town of Laguna Beach summer tourism is reaching its crescendo like it does every year. This year, however, with booming equity markets, a general feeling of well-being, and little in the form of risk of wars and other fears distracting tourists, I sense things are a little overboard. Parking seems just a bit harder, getting into restaurants much tougher, and crowds are considerably thicker. The local economy depends on these tourists, but I can sense the locals are yearning for September. Good vibes abound everywhere, and nothing attracts more tourism than postcards and pictures back home with shots of smiling faces. Hidden gems, like Laguna Beach, always get discovered with time.

In what used to be a hidden gem for derivatives wonks and institutional managers of money, we are now seeing a similar kind of surging investment tourism. It follows a strategy of “selling the noise”, or selling options - via derivatives contracts or packaged products. The end goal is to pocket the premium income.

And boy, has the strategy done well recently! The theory goes as follows – there are two types of market participants, insurance buyers and insurance sellers. The market for options is a market for risk transfer; i.e. the insurance buyer pays a risk premium to the insurance seller. If there is no event that results in contractual payouts to the option buyer, then the option seller gets to keep the premium. On average, the theory goes, the option buyer has to pay the option seller a bit more than the fair value of the premium to take the risk of loss. On average, the option seller keeps the margin between the premium he receives and the theoretical value of the option. This is the option seller’s “edge” that he obtains by having enough capital to make the option buyer whole if needed.

Now a derivatives trader in the energy markets can run a synthetic “refinery” by selling gasoline futures and buying crude oil futures, or another derivatives trader can run a synthetic “crush spread” operation by selling soybean oil futures and soybean meal futures against buying soybean futures. Similarly an investor with an option account can run a synthetic “insurance company” by selling options on margin or capital backing the sale of the options. Margin money is cheap after years of money pumping by central banks, and income is hard to get. So it naively makes sense to take capital at low interest and

use it to sell options to generate yield like a perpetual motion machine. Witness the impact of these synthetic insurance factories on the levels of volatility in the equity markets.

Now if running an insurance company out of your garage in the equity markets makes sense, why limit yourself to just one line of business, or why be a synthetic “mono-line” insurer when you can be a “multi-line” insurer? Isn’t diversification the ultimate free lunch? So, again, the theory goes, sell insurance and reinsurance *across* markets to diversify – act like a multi-line insurance company. Which is probably why as VIX is at an all-time low, volatility in other markets has followed it lower. If the option selling strategy works in one market why not do it in all markets?

A metric of the bond market volatility, the MOVE index (at 47 basis points per year) is the lowest it has ever been. The TYVIX index which measures the volatility of the ten year futures contract, the liquid bond market cousin of the S&P 500 futures market, is at 4%, a level last seen before the quant meltdown of 2007 and right before the taper tantrum of 2013. The VIX at 9% means that the market is expecting that over the next month or so the annualized volatility of the equity market will be no more than 9% (long term volatility has averaged about twice that). But the MOVE index at 47 basis points means that the bond option markets don’t think that yields will move more than about 15 basis points over the same period. And this is while the Fed is in tightening mode! I look at about twenty different volatility metrics daily, and the story is the same across most markets. Here are some examples: According to Bloomberg emerging market implied option volatility is at 14%, the FTSE

(UK with Brexit looming!) is at 10%, Indian equity volatility is at 11%, and the KOSPI (Korea – with a possible geopolitical turmoil event, no less) is at 10.5%. The high yield ETF HYG trades with a volatility of about 6% (52 week high of close to 30%). Volatilities of the Yen and Euro are in the 7% range, which is also close to multi-decade lows.

But since macroeconomic volatility has been falling, couldn't one argue that all volatilities across markets should fall in concert, and if so then why is this approach of running a diversified synthetic insurance factory flawed?

There are three reasons why.

First, the Fed and the other central banks of the world are protecting equity prices even though they will deny this simple fact (“watch not what we say but what we do”). So the fact that the VIX is low can maybe be justified since the VIX is a metric for the equity markets and hence a stimulant for animal spirits. But for every save there is a sacrifice, and bond markets, currency markets and commodity markets have no such implicit central bank put. Selling volatility in other markets by imitation is missing the point of why VIX is so low, which is that there is an underwriter, or insurer of last resort behind the equity markets, the Fed (and the ECB), but not so for other asset classes.

Second, which requires a bit more thought, is that the S&P 500 is an index, and the VIX is a measure of the volatility of the index. The volatility of an index mathematically is a function of the volatility of the individual constituents and the correlation



between them. So when either the volatility of the index falls, or the correlation between the constituents decreases, the volatility of the index declines. And correlation between the constituents of the S&P 500 at 27% has also declined sharply (as measured for example by the CBOE implied correlation index). So no wonder that the implied volatility of the S&P 500 as measured by the VIX has fallen so low. I can almost justify these low levels as “fair” but won’t go so far since both volatilities and correlations tend to rise when bouts of greed and euphoria are replaced with bouts of fear. To wit, in 2008 the VIX went to 60% and so did the implied correlation as all stocks started to move down in lockstep.

But coming back to volatility in other asset classes there is little contribution from correlation. The TYVIX is a volatility index of the ten year futures contract, and the futures contract is made up of the deliverable basket of ten year notes, whose correlation is close to one and quite stable. So, betting on a falling volatility of the ten year note is simply betting on falling volatility of the ten year yield, just when the Fed is becoming more activist and possibly eager to tighten aggressively. Similarly the volatility of the Yen and Euro is not a volatility of an index but the volatility of a single exchange rate, so no correlation benefit there either.

Third, the total volatility across markets and assets is generally conserved over time. Risk is transferred from market to market and person to person, not erased. Yes, central bank action might push volatility down in equities for a considerable period, but markets will reprice the risk elsewhere. Like pushing on a balloon, the risk will get transferred somewhere else eventually. Evidence suggests that both currency and bond markets are

vulnerable today to the repricing of overall volatility. Certainly one of the areas to watch is the impact of rising volatility in bond markets on various algorithmic strategies that take their cue across assets, mechanically, from volatility signals.

So watch out for the end of the summer calm, and plan for the exit of the volatility tourists. I watch the VIX with one eye, and the signs of volatility repricing in bonds and currencies with the other, where volatility tourism seems to have gotten a bit too popular.

## Time To Bail Out Of Bonds Into The Relative Safety Of Stocks?

July 27, 2018

**T**rouble is afoot, again, for the bond markets. Could bonds today be more unsafe than stocks? For the long maturities in the global bond market, it appears so, at least in the near term.

Despite the jawboning known as “forward guidance”, central bank support for bonds is naturally beginning to ebb as global economies regain their footing, asset prices make all-time highs, and the escalating rhetoric of currency and trade wars paints a bulls-eye on artificially low global yield levels. For the last few years, the low (negative) level of yields in Germany and Japan has been the “fountain of youth” for all markets, primarily for global bond markets. But now, the wall of “free money” that seemed to stretch as far as the eye could see, is beginning to

look shorter. The fountain of youth is beginning to turn to a trickle.

There are unintended consequences of the low, flat yield curve globally, such as the negative impact on banks, which make the path of least resistance for yields to rise and yield curves to steepen. Banks make profits by borrowing short and lending long, so a flat yield curve eats right into their profit machine. It has been a decade since the last time the yield curve was this flat, and we are now exactly five years from the time when the yield curve reached its recent steepening peak. A flat yield curve is not conducive to the optimal functioning of bond markets. Either short term yields have to fall, or long term yields have to rise for yield curves to steepen to more normal levels. Barring a sharp, unforeseen recession, I suspect that the next bout of steepening will arise from long yields rising. This view is even stronger in Europe, where the ECB has kept short term yields negative, for what, as discussed below, is a substitution of monetary policy for fiscal wealth transfer from one set of European countries to another.

Let us start with the United States government bond market. Two-Year Treasury yields in the US are around 2.7% whereas thirty-year yields are at 3.10%. But the interest rate duration of the thirty-year bond relative to the two-year is ten times as large. In other words, all else being equal, for the same amount of interest rate risk one could buy a much larger amount of two-year treasuries and still be guaranteed principal redemption in two years.

Another way to look at this calculus is to compare today's spot

yield with the yields implied at some forward horizon, since what matters to investors is what the market is implying over the holding horizon. At a one-year horizon, the yield curve is implying two-year yields to be at 2.9%, and the thirty-year yields to be at ... 3.12%! So what is baked into the curve is about a twenty basis point further flattening. In other words, choosing thirty-year bonds over two-year notes means that the investor has to be betting on a flattening of at least twenty basis points before he starts to profit from the curve. Extend this analysis out five years, and we can see that the yield curve spread of the forward two-year treasury yield and the forward thirty-year treasury yield is flat at 3.15%. Two-year treasuries are guaranteed to return their current yield of 2.65% if held for two years. Due to price risk, the same thing cannot be said for the thirty-year bond. Holding any long bond today may be like playing with fire in a munitions factory.

The situation in Europe and Japan is even more perverse due to the central bank purchase-driven negative yields in the very short end, which permeates into historically low yields across their yield curves and to the admittedly shaky peripheral countries. Even though professional bond market investors have become used to this “normalcy of deviance”, i.e. the fact that Italian, Spanish, and Portuguese yields are about the same or below the US, this situation is not normal. There is a fundamental difference between negative yields and positive yields. These two distinct yield regimes require us to think of bonds in different conceptual frames or “phases”. When bond yields are negative, the price of a zero-coupon bond by arithmetic is higher than par. This effectively guarantees a loss of principal and a buyer committing to a loss of return for

return of capital. I call this the “bonds as insurance” phase. As yields go from negative to positive, as they did in Japan recently after being negative for most of 2016, there is a sharp transition of bond prices from insurance policies to investment assets. Let’s call this the “bonds as investments” phase. As such, they have to compete with other investment assets, and if they were to compete right now as investment assets, they would lose.

Central bank addiction to low yields in the face of robust growth can be explained in terms of non-monetary objectives. In Europe, where the countries are not part of a unified political or fiscal system, negative short-term yields play the role of a monetary subsidy of the ECB (European Central Bank) which transfers wealth from one country to another. Most of the long bond supply of Germany and other “safe” European governments sits at the ECB. Because of the lack of supply to satisfy index demand, long bonds are scooped up by investment funds to match the risk statistics of the bond indices that they track. As a small gift, they are provided “carry”, i.e. a percent or two of income as time passes.

In my view a percent or two of carry compensation is very skinny if the payback is a few tens of percent of potential price loss. In a very perverse way, the lower the yield and the higher the price, the more the demand increases, since there is no other way to match the duration metric of the index. In Japan, low yields help maintain a growing mountain of debt that will quickly become unserviceable if yields are allowed to move up sharply. Of course, as a sovereign, Japan can continue printing more Yen which will eventually find a way out of Japan and into other countries’ assets. The recent talk in Japan of moving

the yield target up to 0.11% caused a fit, as global bond markets all sold off sharply. In the US the current level of low long-term yields despite Fed interest rate increases are explainable both by money flowing out of Japan and Europe looking for yield and by a late rush to lock in liability immunization with attractive tax deduction benefits for pensions, among other factors. These are all reasons to hold an investment asset at elevated prices for essentially non-economic reasons.

While the world's central banks have been able to justify a world of extremely low yield and massive accumulation of bonds due to the lack of inflationary pressures — for now — the fact remains that in a competitive market for profits, these distortions cannot continue forever — the market will force the long end of the yield curve to a price that it considers “fair”. Clearly central banks have more ammunition than a private investor in the short run, but if banks are to survive and government debt has to clear, yields have to reflect this in the long run. I am aware that the long run can be very long, but it makes little sense as an investor to lock in capital with the guarantee of receiving less capital back in the future. Perhaps it takes a challenge to the existing order from a non-monetary source, as in recent Presidential tweets, to set off the chain of events that brings the long term into the short term. Given the complacency in the global bond markets, the path from here to there is likely to be sharp, sudden and breathtaking.

What about the stock market? The money that will come out of bonds has to go somewhere. In the short run, the likely place for this money to find a temporary resting place is in the deep equity markets of the world. Despite high prices, theoretically

there is still room above, though the circumstances dictate selective prudence and tactical readiness to move back into short duration fixed income assets. One nice benefit of short duration assets such as the Two-Year Treasury is that not only does it provide a healthy 2.7% yield, but also provides liquidity against sharp equity market drawdowns.

In terms of relative pecking order, the US equity markets will likely take the lead since they are the most liquid and have the ability to take in gigantic flows. Further, in a world of currency wars and a generally business-friendly fiscal government policy, companies that are more domestically focused are likely to be better investments. Steepening yield curves are also good for the financial sector as discussed. On the other hand, tightening financial conditions will likely be negative for “spread” and “carry” markets, such as emerging markets, high yield credit and technology. While it’s hard to be too bullish on any asset class and any subsector of equity markets after ten years of a bull market, unfortunately these choices seem the better than piling into low or negatively yielding bonds. Taking risk while being well protected on the downside is a theme that I have highlighted before, and emphasize again.

Also note that after the VIX debacle of February, the volatility in equities has oscillated back to recent lows, but volatility in the bond markets has literally crashed. This has happened because of a number of reasons. First, macroeconomic volatility is at all-time lows, and in a world of low macroeconomic volatility and central bank buying of fixed income assets, there is the perception that bond markets cannot fall much. The corporate stock buybacks that have supported equity markets have a



close parallel in the central bank driven buybacks in the bond markets: the government issues debt (bonds) with one hand while the other hand of the government buys back the very same bonds.

If and when the government bond “buyback” cycle reverses, bond market volatility will spike, bond yields will jump, and asset classes levered to future borrowing will suffer. Asset classes most sensitive to discount rates will be the first ones to lose and bond markets, by definition, are all about the discount factor. Second, “shadow financial insurance”, i.e. the selling of options to generate income, which last year was the proximate cause of the low volatility in equities, has found its way into all asset classes, and into bond markets in particular. All of this makes protection strategies, i.e. purchase of options on both stocks and bonds, extremely cheap.

Putting these broad thoughts together, a simple, practical asset allocation today might consist of three main pieces. First, for growth, it may have roughly half in developed market equities, especially focused on small capitalization stocks and sectors that would do well in environments where yield curves across the world steepen and cross-border disputes escalate. This could be supplemented with a core holding of short maturity Treasuries that provide a decent, credit risk immune yield north of 2.5% or so with guarantee of principal. Finally, and depending on drawdown tolerance, some of this yield might be spent on protecting the downside of the risky equity part of the portfolio.

In my view, the divergence of global central bank policy has

created these allocation opportunities. Today investors can build relatively benign portfolios of equities while harvesting the yield from the safe part of the bond market as other parts of the bond market are becoming increasingly dangerous. While I have chosen to focus on the three core pieces discussed above, it should be noted that there are other asset allocation strategies that may also do well in the current market environment and may warrant consideration.

## What Are The Best Places To Be In The Equity Markets?

June 17, 2019

**W**ith US equities making new highs and monetary policy taking another step towards easing, I looked at the long term performance of different styles of equity investing to see if there were any simple strategic conclusions we could make. This is an especially important time to take a close look at implicit bets that are hidden in every equity portfolio, since performance will likely be particularly dependent on the Fed and the politics surrounding their rate policy.

To perform the analysis, we took the publicly available returns from the website of renowned finance professor Kenneth French. Based on the 2014 paper of Nobel laureate Eugene Fama and French on their “five-factor model” of equity returns,

this data gives us a unique perspective on the long-term history of US equity market strategies. It also gives us some signals on what we believe we can expect in the years to come under different scenarios.

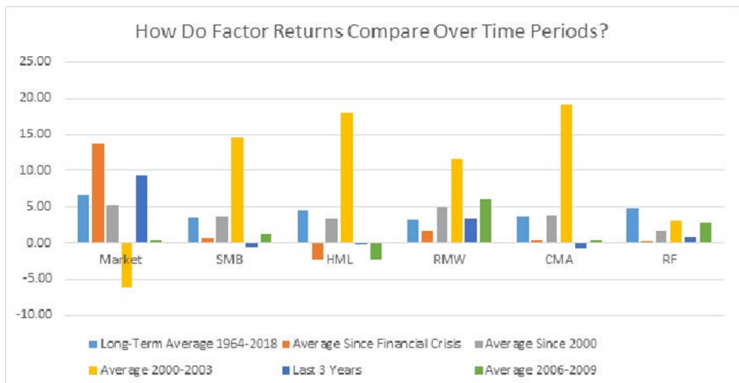
The Fama-French five-factor model decomposes returns into the market factor, the small minus big factor, the high book value minus low book value (“value”) factor, the profitability factor, and the investment factor. To summarize what these mean: the “market” factor is simply the excess return on the whole market over the risk-free T-Bill rate (RF). The “small minus big” (SMB) factor signifies the return outperformance or underperformance of small companies over large companies. The “high minus low” (HML) factor does the same for companies that have a high book value relative to their market price versus the opposite, so it captures the return of “Value”. The “robust minus weak” factor (RMW) looks at how profitability impacts returns, and the “conservative minus aggressive” factor (CMA) captures the difference between conservative companies that do not invest as much as the aggressive companies. This model is a linear approximation to a return attribution problem, and not perfect, but for our objective, it is quite powerful.

In the first chart (Source: Ken French’s website) we show different time periods and compare simple averages of annual factor returns for those periods. The obvious observation here is that all factors do well over the 50+ year long term history, and also do equally well over the almost twenty year history since the tech bust of 2000. Since the financial crisis, it is no wonder that the market factor has on average trounced all the other factors, which is part of the reason why investors have

## WHAT ARE THE BEST PLACES TO BE IN THE EQUITY MARKETS?

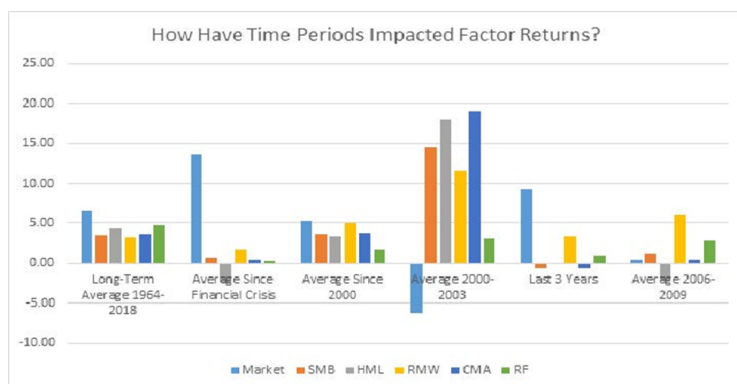
fled en-masse from active equity management to passive, cheap, indexed exposures to the overall market (e.g. the large ETFs such as SPY and IVV).

Over the tech bust period of 2000-2003, the market factor on average had a negative annual return, while the other factors did extremely well. The aftermath of the tech crisis was indeed a great time to be an active equity manager who could implement relative value bets. In the last three years, as global quantitative easing from Central banks has taken another leg down, the market factor has continued to beat most other factors. Also note that during the financial crisis, it paid to be exposed to profitability over the other factors.



By grouping by factors across periods, as I have done in the second chart, it is again clear that over all long term and three year periods except the tech crash period of 2000, the market beta factor provided healthy returns. During this period, it is clear that all of the other factors did really well. Also note that the value (HML) and size (SMB) factors have really done quite

dismally since the financial crisis, as the open monetary spigot has predominantly favored large growth companies. Stock picking has simply not worked as well as exposure to the market as low cost market beta has been buoyed by ample liquidity. We just need to look at the FAANG stocks to get anecdotal confirmation of this.



What general conclusions can one make regarding investments at this stage of the equity markets and expectations for the future?

First, over the long run there is compelling evidence that being long the equity market is the right decision, as long as one is not forced out in short term downdrafts. As is often said, the S&P = GNP, so as long as we believe that there will be long term growth, there will long term growth in the stock market. But the market can and will continue to frequently get ahead of itself. But even when the market has a significant correction, it has paid to hold on to risky assets. By building enough diversification and explicit protection, one can avoid

liquidating at the wrong time and be a buyer when others are forced to de-risk.

Second, long term history shows that over time smaller companies do better than large ones. In this context, the last decade is clearly an outlier. If there is reversion to the long term mean, we expect the smaller companies to again do better than larger ones. But we might be a few years away from that point, since things tend to get worse for smaller companies late in the economic cycle before they get better as fears of impending slowdown in economic growth rise.

Third, if we do have a deep correction in the mega-cap tech stocks, we should expect small and large value stocks to do relatively better. However, we might still have some more value factor underperformance in the immediate short run as the effect of low global yields find their way into the growth sector in US tech. Long value has been a quant equity favorite, and might be exposed to capitulation before it rebounds. But such turning points are impossible to capture.

One simple conclusion from all historical periods is that exposure to profitable companies is consistently valuable. But it is again very hard to discern whether the current profitability metrics are real, or a function of easy money, stock buybacks and tax cuts. Similarly, companies that are conservative in investment also do well over almost every period. So look for companies and sectors where over-investing is not a problem. Given the increasing buy-back and M&A activity on the back of easy money, this is an area where some care might indeed save one from a debacle.

And finally, the risk-free asset, T-Bills, is not a bad place to be for consistent income. With short term government yields in the 2% range, a healthy amount of cash should be in every portfolio. In terms of a simple portfolio model, all of the above seems to suggest a conservative exposure to outright market exposure, downside risk mitigation, and plenty of liquidity in the form of good old Treasury Bills or money market funds with liquid, high-grade holdings.



## MAMA's Day: "Make America Make Again" Stocks Will Win The Next Decade

May 7, 2020

I recently saw a study that showed that every decade there has been one asset class that has outperformed everything else by a large margin. In the 60s and part of the 70s it was the "Nifty Fifty" (Coca-Cola, Disney, GE, IBM etc.) stock basket; in the 70s gold was the shiny performer; in the 80s Japanese stocks took the baton; in the 1990s the Nasdaq stocks reached the stratosphere; in the 2000s oil and energy stocks left everything else in the dust; and in the most recent decade the FAANGMs have been the place to be.

So I wrote to my team and also to my close friends and relatives to speculate on what the next decade will bring, and

in particular thematically where we should think of investing our money for extraordinary returns.



I received a great set of ideas. The common theme? Let us just borrow from a familiar political slogan and call it *MAMA: Make America Make Again*. Thanks especially to my wife, my brother and my whole team for their thoughts over the last few days.

The recent economic and medical disaster has made it obvious that dependence on foreign manufacturing facilities for essential items has been taken too far. For now, globalization has been shown to have its blemishes and shortcomings that the free-trade and open border theories did not anticipate. When the United States cannot find enough masks to support its own population's needs, it seems clear that too much manufacturing has moved away from the country. The obvious reaction to this will be to bring essential manufacturing back to the US, which

can only mean that current investment in manufacturing at home will pay big dividends in a few years. Hopefully, instead of concocting synthetic credit instruments, toxic financial products and vehicles for leveraged speculation, America will go back to making the high-quality stuff that actually matters.

MAMA will certainly apply to drugs, vaccines and other pharmaceuticals. While conspiracy theorists will debate the origin of the COVID-19 virus for years to come, all we need to know is that despite all the scientific advances and information overload we are subjected to, we don't quite understand how to protect our bodies from mutating viruses, and possibly other chemical agents. Biotechnology and pharmaceutical R&D will benefit from the necessity to have solutions so that we are never again hobbled in such a sudden manner. MAMA also says to make stuff that makes us more resilient overall, as individuals and as society. EVTOL ("electric vertical takeoff and landing") aircraft and drones will begin to deliver all these essentials safely to our homes. This technology has been waiting for its opportunity, and as more kerosene burning airplanes become grounded, we will just adapt to intelligent aircraft doing all the flying and delivering for us.

The renewed focus on hygiene and health will also, in the long run, make people healthier. This, of course means that we will probably live longer on average than we previously estimated. Which, to me, suggests that industries that support the aging, retired and elderly will have a better chance of succeeding. Populations will increase, and industries that can make synthetic, but nutritious food will be able to feed the increasing, more health conscious population. With increasing

demand, “synthetic meat” from vegetable products might become a serious competitor to meat from animals.

And of course we cannot fail to see that for the most part the sudden shock that resulted in a WFH (“Working From Home”) culture has marked a semi-permanent change in how we will work going forward. The reports I am getting is that other than the natural human isolation, the technology that people are using to work from home is pretty seamless and might actually be more efficient than millions schlepping twice a day to and from work. Making “super-highways” for data will play the same role that the freeway system played almost a hundred years ago during the last set of major “depressionary” crises. And unlike the “bridges to nowhere” that were built in other places looking to get their unemployed to work, better data super-highways will squeeze out even more productivity and time from an already productive work-force. Some of the old modes of learning, for instance going to colleges and universities, might not return in the same form, as students find out that much is available in real-time over real fast networks at home. My bet would be on elite American universities who have a platform for research and development, which requires collaboration and original thinking. Anything that comes out of a book might as well be streamed.

MAMA also has the potential to balance geopolitical power. The emerging balance of power between the US and the rest of the world suggests to me that we are already in the early to middle stages of a new cold war. Nature abhors a vacuum, and this time the US adversary who has stepped up to fill the vacuum from the disappearance of the Soviet Union is China.

The deficit, and the enormous amount of debt owed to China is one consequence of a dependence on US consumer goods made in China. I don't think it's a stretch to imagine that the sheer volume of goods will be slowly replaced by higher quality, albeit higher-priced goods made at home here in the US. But if the higher price comes with higher quality and durability, I suspect that the consuming public will just get used to it.

I anticipate more US-China friction, and the threat of a fire sale of Treasuries by the Chinese. The latter worries me less now than it did a few months ago. Now that the printing presses are working at maximum pace and no one seems to be complaining, the US Fed can just print a couple extra trillion to buy back the Treasuries. And those debased dollars will end up getting re-circulated into US assets anyways. Yes, this also means that digital currencies will do better as stores of wealth. Fortunately, while the technology for mining can be made anywhere, the limit to how much of the currency can be mined makes it less likely that stored wealth can be confiscated by fiat by public policy makers.

Making all this useful stuff needs natural resources and land. Both, especially energy, are in ample supply today at generationally inexpensive pricing. And they are both there for risk-takers.

So there you have it. As always, every crisis portends major change and major opportunities. This Mother's Day, I, for one will say thank you and bet on MAMA.

## How To “Play” The Elections As An Investor

October 9, 2020

**N**ormally when someone mentions “playing” the market it makes me cringe. As a professional investor who takes the job of investing very seriously, it is *the* last word I would want to be associated with making decisions on how to deploy capital. But COVID-19 has shut down most other sports and games and financial markets market have become more gamified, so using the logic of games backed by some probability theory might not be such a bad approach to use when positioning portfolios in the days leading up to the elections.

Let us start with the facts and then try to put odds on various outcomes. As of this writing (October 8, 2020), most polls see Biden leading by about 10 points (see, for example 538’s

forecast [here](#)) and compute an 85% probability of a Biden win. For those who have some understanding of probability and options, this is a simple result to understand. For example, if we assume an underlying normal distribution (“bell-shaped”) with a mean of 50 and standard deviation of 5 points, this 85% probability is just the cumulative probability of being below 55 (one standard deviation). The reason I cast the result in this form is because we can think of the current Biden lead as Biden “being in the money”, using option language, and the 85% as the option “delta”. But more importantly, as we enter the last stretch of the election, any volatility or shock could reduce the “in-the-moneyness”. For example, if the standard deviation of poll forecasts increases to 10 points, then the probability of a Biden win falls to 69%.

From this viewpoint, Biden is “long” an in-the-money option, and Trump is “short” that same option. As Trump currently lags the election polls, it is rational for his team to create more volatility to try to move Biden out of the money. So, we can expect more tweets similar to the one observed a couple of days ago that unilaterally pulled out of the fiscal discussions. Keeping with the theme of games, look out for A “Hail Mary Pass”, or long-shot, desperate attempts to change the outcomes from whichever candidate starts to lose ground, likely to appear in the next week or two. As we get closer to election-day, the time value of using the optionality, i.e. doing something volatile and consequential, is eroded, partly because by that time many votes will have already been mailed in. So the next few days are probably the most vulnerable to unexpected news.

Coming into the elections, Florida (23 electoral college votes)

will be the key state to watch. Currently the two candidates are very close in Florida. But another source of uncertainty are the mail-in votes. In the state of Florida, mail-in votes have to be received by 7 pm on the day of voting (see [here](#)). Election experts expect more Democrats to mail-in votes than Republicans. So here is a possible scenario: when the mail-in numbers are released, there is a sharp swing and perhaps even forecasts of a Biden win. Will they stick as polling booth results come in? If not, the markets could be in for some violent swings.

In addition, for the first time in history, people will be entering the election with very little confidence that the election will be concluded officially by November 3<sup>rd</sup>. There could be all sorts of legal challenges and other unprecedented outcomes. What participants will be able to see is the behavior of the stock market, and they will be tempted to use the market as a tool to forecast political outcomes. Here, again, one has to be very careful to interpret what one sees. I ask the reader to bear with me as I go on a simple but somewhat wonkish trip with elementary probability.

Let us call  $P(B)$  the probability that Biden wins. For now, we can use the 85% number for this. Let us also assume the probability that the market is up on the day of the election is  $P(U)$  and since we don't really know what the likelihood, unconditionally, for the market to be up or down is, let's assume it is 50% (i.e.  $P(U) = 50\%$ ). Based on some informal surveys I did, the consensus seems to be that if Biden wins, the probability of the market rallying is approximately a third (or 30%). This is called the "conditional" probability  $P(U|B)$  of the market rallying if Biden



wins. Now we can compute the probability that given the market is rallying, Biden has won. To do this last exercise, we use “Bayes” rule, which says in symbols that  $P(B|U) = P(U|B)P(B)/P(U)$ . Plugging in the numbers,  $P(B|U) = 0.30 \cdot 0.85 / 0.50 = 51\%$ . Bottom line, conditional on a rallying stock market, there is a 51% chance that Biden has won, which is pretty close to even. This might shock some people who think that a rallying stock market must mean that Trump has won.

This leaves me a little bit uncomfortable. Can the stock market, aka the “wisdom of crowds” be such a weak metric of the election results?

Let us try to address this by going back to 2016. As the Florida results were coming in at night, the after-hours futures market started to fall precipitously. By the end of the night, as I was leaving work on the West Coast, and Trump’s win was cemented, the equity futures market was limit down. By the time I came back to work the next morning, it had completely recovered all of the lost ground and started a multi-year bull market.

Again, let us use symbols and Bayes’ rule. Coming into the election, the consensus of Trump winning the election was quite low. Let us call probability of Trump winning  $P(T) = 40\%$ . Very few, including the options market, thought that Hillary Clinton would lose the election. The consensus was also that if Trump won, the probability of the market rallying was very low. Let us call the  $P(U|T) = 25\%$ . Again, we will assume that there was a 50/50 unconditional probability of the market going up or down. Plugging these numbers into Bayes’ rule, we obtain

$P(T|U) = 0.25 \cdot 0.40 / 0.50 = 20\%$ . So the market's consensus was that if we observed that there was a rally in the markets, the probability of Trump having won was only 20%. Or conversely, if the market was down, the probability of Trump having won was very high.

The market was both right in the short run, and very wrong in the long run. When the veil of uncertainty was lifted, the result was that Trump had won. The market fell sharply, but as discussed, as more information was revealed, the very one-sided consensus reversed sharply.

The only way one could have taken advantage of the sharp reversal without taking too much risk would have been via maintaining optionality. Maintaining optionality in this context means many things. First, it means entering the elections with an open mind, and approaching the investment decision with the knowledge that no one knows anything about the short term reaction of the market. Second, it means that if the consensus is too one sided, it could be more profitable to take the other side, because the odds, or "asymmetries" could be substantial if the consensus is wrong, as happened in 2016. Third, it means using options to help manage risk and position portfolios. In many sectors, such as interest rates, option volatility is still at historic lows, as the Fed has set a cap on yields with its massively expanded balance sheet and zero rates. Finally, as we enter the last four weeks before the election-day, realize that a lot of extra noise will be created to move the odds around by whoever is behind. This noise should create opportunities for steady investors who have scaled their risk taking correctly and have the liquidity to take advantage of

such opportunities. We will see the long-term consequences of this election only in the long term, but there is still time to work out a *game plan* for the short term. And that’s probably a slightly better word than “playing” the markets in these uncertain times. While forecasting the election and the market’s reaction to the various outcomes is very tough, having even a rough game plan and being ready to implement it is quite possible.

## No Checking Out Of The Hotel California While Markets Are Addicted To Central Bank Money

November 18, 2020

**L**ike most Americans, my family and I were planning a trip to somewhere, anywhere, away from home for Thanksgiving. After all the tickets were booked, reservations made and dog-sitters arranged, we received an email from our children's school last Friday night that if any family left California for the holidays, our children would be required to quarantine and not allowed to return to school for fourteen days. So the trip is cancelled and we are checked into the familiar hotel California. Not all that bad, really, because a staycation at home in California is actually pretty good, even without Disneyland. We also completely agree this is the right move by the school, since the thought of having

another shutdown right before yearend would be a big blow to the students and parental sanity.

Running this morning on the trails in sunny SoCal, the famous lines from the Eagles' "Hotel California" summarized my current mindset when it comes to markets and travel: "*Welcome to the Hotel California, Such a lovely place...plenty of room at the Hotel California.*"

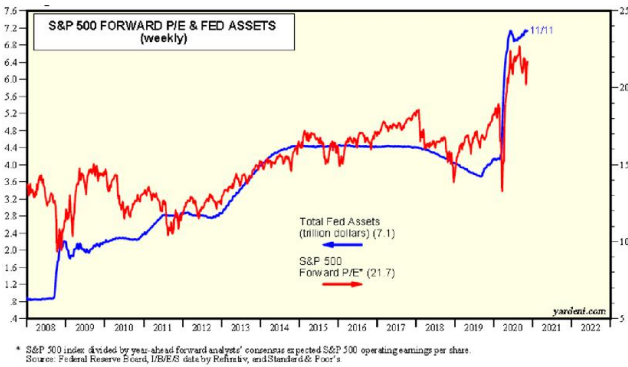
There are many different connotations of the meaning of the song, some good, some bad, but the point of this discussion is not to explain what Don Henley and the Eagles could have been thinking, but just take his word for what the song was about: "*a journey from innocence to experience*". Whether the song was referring to cannabis or some other form of psychedelic, it echoes the graduation of financial markets from fundamentals to basically an infused rally to which the markets are now addicted and "*we are all prisoners here of our own device*", and I, for one, am not complaining.

Stock markets and bond markets are making record highs, even as the economy is close to another shut-down and people are still waiting in lines at food banks. The fundamental nature of the financial system has changed, as valuation metrics rise in lockstep with Central Bank [CPF](#) balance sheets. In the last few years, global Central Banks have become asset price setters. With almost \$22 trillion worth of assets held between the three major Central Banks (Source: Federal Reserve, ECB, BOJ), and no end in sight to asset purchases and cheap money, the innocence of economic growth as a pre-condition to asset price performance has been replaced by the wholesale buy-in of

MMT's (paraphrasing the Eagles) "*sweet smell of liquidity*" that provides yet another boost for FOMO investors and Bitcoin [BTC](#) . Long duration, COVID-friendly companies that mostly happen to reside in California (Facebook, Google, Apple [AAPL](#) , Amazon [AMZN](#) , TESLA [TSLA](#) ) have hit the jackpot. There is certainly plenty of room for Microsoft [MSFT](#) to join the California club, though I suspect the never-ending increases in taxes is a good reason for them to stay out of our so-called "Golden State".

With the Fed buying Treasuries and junk corporate bonds and the ECB buying German bunds at negative yields, many old and new zombie companies are issuing record amounts of debt. Forward price-to-earnings ratios (see figure below thanks to Yardeni Research) are higher than at any other time excluding the dotcom bubble and cash (Source: Refinitiv). Growth stocks are free options on further stimulus, with momentum trouncing value for almost a decade and sending many ivory tower value investors into hiding. Home prices have surpassed their previous nosebleed highs. Liquidity is ample and mostly free, and homebound citizens are spending aggressively again. With the US having the exorbitant privilege of getting away with anything for the time being when it comes to policy, the only threat on the horizon is a wholesale loss of confidence in the US dollar. But again the Eagles said it already: "*they stab it with their steely knives, but they just can't kill the beast*".

NO CHECKING OUT OF THE HOTEL CALIFORNIA WHILE MARKETS ARE...



*Fed Assets vs. S&P 500 Forward PE Yardeni Research, used with permission*

For those waiting for Armageddon in the form of short positions, it could be a long time coming. Equities have been singled out by the government as the asset class to protect. For global Central Banks, the point of no return has long since passed. The public is more than happy to have asset prices stay high, and nobody should complain as long as the market does not crash and we get monetary and fiscal handouts from the governments of the world. As Ed Yardeni recently said, the only thing between MMT on steroids, which is where we currently are, and MMT gone hog-wild is an imminent agreement by politicians that they can just print money to solve any problem. Once that dam breaks, we are looking at years in Hotel California. Of course, at some point the markets will crash again, and we will all be *running for the door* at the same time.

Until then, quoting the sage advice of the Eagles one final time:

*"We are programmed to receive*

*You can check out any time you like*

*But you can never leave"*



## An Ode To FOMO

December 10, 2020

**I**n June of this year, as the world was still reeling from the aftermath of the COVID-19 crash in the stock market, a Wall Street journal article entitled: [“The Ticker Symbol We Need Right Now: FOMO”](#) focused on an investment strategy I have been discussing for some time. Readers know that FOMO means “Fear of Missing Out”, and it is generally well established that there are fewer painful experiences than seeing your neighbors get rich doing stupid things. To paraphrase a famous proverb – “first you try to reason with them, then you try to convince them, and finally, you just join them.”

For my own portfolio, I am glad that my experience from prior tech bull markets has taught me not to fight momentum and collective behavior of individual investors who extrapolate most recent experience. As brilliantly discussed in a recent [article](#)

by Andy Lo and his colleagues in the *Journal of Investment Management*, this behavior transcends geographies, and also transcends education, training and expertise.

The behavior emanates from perceptions of risk. To get on a bandwagon appears less risky, and individuals in aggregate are much more risk-averse than institutions. I may also add that the biggest skeptics of momentum-driven markets are academics, who, to use the quote above and my own experience, after all reason is exhausted, are actually more prone to buying close to the top, and selling at the lows. When it comes to the stock market, it is sage advice to leave your smarts at the door.

Central Banks continue to flood the markets with cheap money, and have decided to completely ignore asset price inflation. We have had a massive IPO year, with smart stock owners gladly parting with equity for funny money cash. SPACs are everywhere. Modern Money Theory and the lack of goods and services inflation means that there is no remaining barrier to money printing and Central Bank bond buying.

Historically, there are times to own assets, there are times to own cash, there are times to lend, and there are times to borrow. Right now, with global yields stuck at zero, and whether or not your personal philosophy and experience allows, it is time to *borrow, lever and buy assets*. Yes, it is very dangerous given stratospheric valuation, so it has to be done with built-in asymmetry and protection. As I have discussed in previous [work](#), one way to do this is via call options on the stock market. Call options provide a neat little package of leverage, asymmetry, and FOMO without losing your shirt if markets

tank. (*Note: Options involve risks and are not suitable for all investors. There are many factors that an investor should be aware of when trading options including interest rates, volatility, stock splits, stock dividends, stock distributions, currency exchange rates, etc. Investors should only engage in options trading that is best suited to their financial condition and option experience and which considers current market conditions. Investing in options may increase volatility and/or transaction expenses. An option may expire without value, resulting in a loss of an initial investment and may be less liquid and more volatile than an investment in an underlying security. only to the purchase of options but not to the holding of the options themselves.*)

And yes, I also know all good things come to an end, and when this one ends it won't be pretty either. Until then, don't be shocked to see even more incredible performance by risk assets and your neighbor's portfolio. If, despite all commonsense, this simple strategy still works, I give you permission to sing my Ode to FOMO.

*You told me to save my money*

*Put it in a pot and watch it like honey*

*But when I opened the pot*

*Relatively speaking there wasn't a whole lot*

*I should not have listened to you*

*So clear you did not have a clue*

*I should have done what my neighbor did*

*Throw caution to the wind and throw in a bid*

*You made fun of the day trader*

*You said it will be different later*

*Like a fool I listened and got stuck in slo mo*

*Now I am so much happier with FOMO*

*I know you will be right in the end*

*You tell me not to borrow and not to lend*

*But I won't listen anymore to your no no*

*I think I will buy some call options and just FOMO*

*(Copyright: Vineer Bhansali, ASCAP)*

## A TIP To The Wise: Don't Look At TIPS To Protect Against Inflation From Here

March 3, 2021

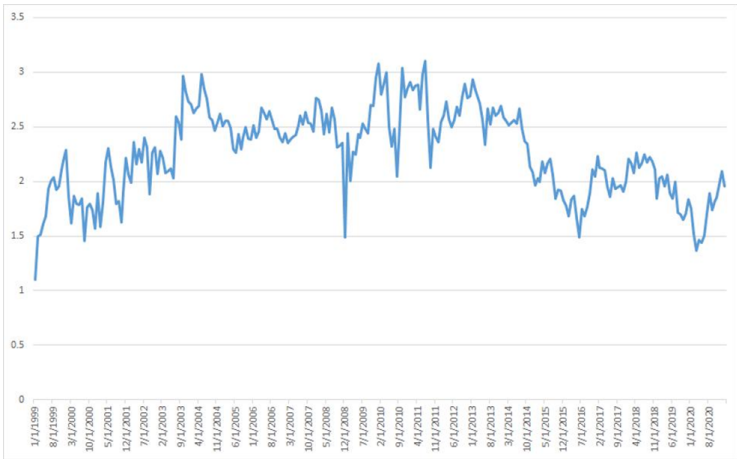
I have had more conversations with investors about inflation recently than any time in the last decade. Wherever we look (or shop), prices are rising, rapidly, except in the “official” inflation statistics. The official inflation statistics such as the CPI, PCED etc. might not be the best metrics for inflation, as I wrote about last week ([here](#)). But like a return of (for some, cringeworthy) fashions from the 1970s (i.e., bell bottoms and platform shoes), we know creeping 1970s-style inflation when we see it.

So investors are looking for ways to measure and manage their portfolios against inflation with other assets and tools.

Fortunately, the toolkit is large. To name a few: commodities (e.g. energy and metals), real estate, lower duration bonds, bitcoin, value stocks over growth, or one of the other popular ones: TIPS, or Treasury Inflation-Protected Securities, which we will discuss here.

TIPS are indexed to the CPI, and the return is measured in terms of the “real yield”. Since the nominal yield of regular Treasuries is made up of the real yield plus other stuff — e.g. inflation expectations, liquidity premiums etc. — a widely followed metric of expected inflation is the spread between a regular (nominal) Treasury, and the real Treasury yield of the same maturity. This is a widely followed metric, also known as the “break-even” inflation rate. For a long time, market participants used this as a metric for extracting inflation expectations, since presumably in a “free” market such as the US Treasury market, the buying and selling of market participants reveal very valuable information; i.e. in this case the price of inflation defense. A particular version of the breakeven inflation metric known as the “five-year-forward-five-year breakeven inflation” is displayed in the accompanying chart.

The five-year-forward-five-year breakeven inflation is currently exactly at 2%, which happens to be the Fed’s target.



*This figure shows the market's forward "expectations" of inflation as implied by the TIPS and nominal Treasuries market for five years in five years time. Source: LongTail Alpha, Bloomberg.*

For practical purposes, we can think of this as what the market is implying about the five-year inflation rate five years from now. Also, investors who think inflation is going to be higher than the breakeven inflation can choose to buy TIPS and sell nominal Treasuries. If the yield difference between the nominal Treasuries and TIPS increases, this would mean that the nominal bonds have done worse than TIPS in total return terms, thus justifying the allocation to TIPS.

Alas, I believe the metric is no longer valid as an informational tool. This is because the Fed has bought more TIPS since the coronavirus crisis started last year than the total amount issued. Digest that for a moment: the Fed bought over \$175 billion of TIPS from March 13, 2020 to the end of February, 2021, whereas only \$150 billion or so of new TIPS were issued (Source:

Bloomberg, Federal Reserve). In percentage terms, the holdings of the Fed have gone from less than 10% over the same period to over 20%. Of the over \$1.5 Trillion dollars of outstanding TIPS, the Fed owns over \$300 Billion. And yes, the Fed has also bought a very large amount of ordinary, nominal Treasuries.

Now here is the punchline. The Fed wants inflation to be about 2%, on average. To have inflation get to 2% consistently, the expectations of the market have to be “anchored” to this 2% target. To manage expectations, the Fed can buy enough TIPS and Treasuries, just in the right amount, to make the breakeven inflation rate equal to 2%, or whatever it wants. If we look at the chart again, we see that the five-year forward five year inflation is exactly at 2%. The metric is cooked to perfection. Mission accomplished?

Not so fast. Remember that the breakeven inflation has no real information content these days. Due to the buying by the Fed and others, the actual real yield on short term TIPS is deeply negative (about -2% in the five year maturity area, and -0.50% or so in the ten year maturity area). Even thirty 30 year TIPS are at 0% real yield and the real yield of the almost \$30billion TIPS ETF TIP is about -1.25% (Source: Ishares). Since real yields are a function of economic growth, negative real yields, if they were a good metric of the market’s expectations, means that the market thinks there will be no growth. But the equity markets are saying there will be a lot of growth.

So someone is wrong. Either the stock markets are wrong, or the TIPS market is wrong. My view is that the TIPS market is simply not a market in the traditional sense any more, and



the equity market is sort of a market, but the Fed, by buying corporate bonds and its underwriting of risk in the stock market, has also boosted the equity markets. So neither has much informational content, except that at the end of the day, the equity markets are more important to the economy and the Fed than the TIPS market.

So where does this leave investors? In my opinion, buying a TIPS bond with negative real yield is betting on actual inflation rising by a lot. If inflation got to say, 3%, the nominal yield on a TIPS security will still be lower than 2% at these levels of real yields. On the other hand, if actual inflation were accompanied with growth in the economy, real yields would have to rise, resulting in losses from negative returns on prices. If inflation were to rise, but growth did not rise (“stagflation”), most investors would probably want more price return on assets than a measly couple of percent from TIPS. In other words, heads TIPS lose, tails TIPS lose – unless the Fed and indexers keep buying them at lower and lower yields, which of course they can.

Bottom line, owning TIPs now is betting that the Fed, via its power to print money, will continue to manage the inflation expectations scoreboard. And we know whenever a metric becomes an objective, it loses its value as a metric, and perhaps also as a useful objective. In such an environment, an investor's best choice may be to get real and buy, “really real” assets whose price is not being artificially managed.

## Of Mountain Lions And Market Tail Risks

April 6, 2021

Over the years, I have used the probability of mountain lion attacks as an example of a tail risk that I, as a trail runner in California, face every time I go out for a run in the wilderness. I know the statistics, that mountain lion attacks on humans are incredibly rare, so rare that in the last century only a couple dozen of humans have been attacked fatally in the state. But this does not cause me to relax when I am out on a long trail run, because my own actions can create an increased risk. In mathematical terms, the conditional probability of an attack goes up as I put myself in an environment that is more likely to contain a bold – and hungry – mountain lion.

Over the last few months, the semi-rural community in which

we have some livestock has experienced the real risk of thinking purely statistically. A mountain lion (or maybe a group of them), has begun to attack livestock. Instead of hunting the very agile deer and coyotes, the lion(s) have been lurking on the outskirts of the community, and have opportunistically entered the community, day and night, to stake out small animals. Goats, dogs and sheep have gone missing. In response, the terrified community, which also has many small children, religiously followed the guidelines of the fish and wildlife commission and has begun to lock up livestock (not yet little children!) from dusk to dawn.

The lions have adapted to this, and being the predators they are, found ways around to get their prey. One of them jumped a metal fence, entered an enclosed space over three horse stalls, sauntered across the aisle of a horse barn, jumped another wall and dive bombed into the stall of two of our sheep and killed them last week, which was all recorded on motion sensitive video on our “sheep cam”. The lion then returned later to eat its kill numerous times, including later that evening, again recorded on live video. Fortunately no human was around at the same time in the same location.

The law in California (proposition 117) makes it illegal for mountain lions to be killed without a “depredation permit” (requiring three “strikes” against livestock), and only if the lion threatens human life, which has been critical in keeping the lion population from becoming extinct. But as in all things with many well-intended but poorly thought-out laws, there are unintended consequences and philosophical conundrums.



*Mountain lion dive bombing on lambs in a stable*

The conundrum is that while the law permits killing a lion that threatens a human, if it is bold enough to threaten human life, it might be too late to save that human life, especially if the life is that of a small child, which would appear no different than a hairless lamb to the lion. This is a very tough conundrum, since killing a mountain lion has many assorted costs, including the possible extinction of an amazing species, but not killing a rogue predator also has costs, including the possible loss of human life and almost certain loss of livestock and pets.

We see similar conundrums in the market today. If we think of an impending, debilitating market crash as a similar rare event, we really have two choices. We can either remove the risk (“depredation”), by exiting risky positions or purchasing insurance against market crashes. Or we can wait and see if the crash is ready to happen, and then hope to exit the market right before the crash. This latter, “just-in-time” approach to risk

management is used by participants when the cost of hedging is considered to be too high. I have had the opportunity to present to many investment committees and boards over three decades, and the decision almost always boils down to this: should we (hedge) or shouldn't we? In other words, it's a decision between paying for managing the risk today against deferring the decision until the bad event seems imminent. The worst response is to blame one-self in hindsight with the statement: "I should have known better and done something different".

The calculus of catastrophic risk mitigation fundamentally depends on the probability of the event in question, since we can agree that the severity in either case is quite extreme and destructive. So the question becomes one of forecasting the likelihood of an extreme market crash (or lethal human mountain lion attack). The question becomes harder to answer because very intelligent people (experts), including well-funded researchers and organizations, are on both sides of the question, effectively cancelling out each other.

In the case of the mountain lion controversy, the anguish of the community was somewhat managed by a presentation by the leader of a mountain lion protection group, who eloquently argued that eliminating one lion was not only unlikely to solve the problem of livestock attack, but could actually increase the likelihood and long run risk because other, competing lions could move into the territory and go for the easy pickings rather than hunt deer. In the case of markets, the issue is no less confusing. Very sophisticated researchers, most with storied credentials and institutional backing, argue eloquently that hedging market risk will not help, since the cost of hedging will

outweigh the benefits over the long run, and that avoidance or diversification is the better approach.

Faced with this confusing set of inputs, what is an investor (or rancher) supposed to do? First, it goes without saying that in either case, severity or exposure should be minimized. For instance, leaving animals unprotected or running massively levered portfolios is just asking for trouble. So reducing the potential severity, of course, is the first step. But having done that, what is our next step?

If the expected loss in either case arises from the product of the severity and the probability, then minimizing the probability of the severe event is the only other course. Unfortunately, in both cases the probability of the loss can be reduced, but not eliminated. Unless we have a crystal ball or some tool that allows us to forecast the probability of a very rare event, we are out of luck if we just wait to make the right decision in the nick of time. To my knowledge, and after three decades in the investment business, there are very few mathematical tools that can accurately forecast rare events and market crashes. Yes, we can start to anticipate rare events as somewhat more likely, but even then the quantitative probabilities of these events are likely to be off by many orders of magnitude. I have not been able to forecast market crashes with any accuracy, or a mountain lion attack for that matter, but there are indeed times when I feel queasy in both cases. If it's any reassurance, most of the time when I feel queasy, nothing happens.

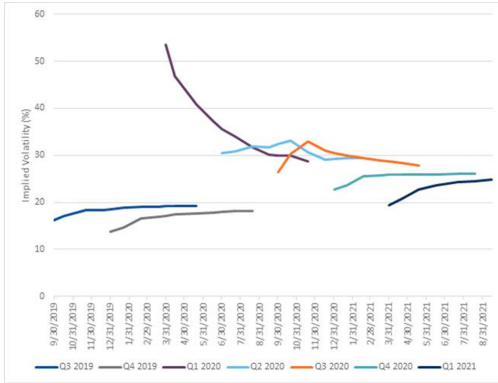
So we are faced with only main one decision: should we incur the cost today or not. This question is much easier to

answer even without knowing the probabilities. All we need to answer is the counterfactual question: how severe will the consequences be if we do nothing and the rare event happens?

It is very easy to get emotional when faced with the picture of mountain lions killed by ranchers to protect their livestock, or by the video of a mountain lion attacking lambs (or suburban poodles). Scientists on both sides of the aisle can pick the data that best supports their thesis (and life's work and funding sources) to move opinion in their direction. I know this, because my own training is in the hard sciences, and even in the hard sciences, selective reasoning occurs very frequently, especially when research funds are tied to it.

Killing mountain lions willy-nilly is illegal as well as cruel, regardless of the experience, emotions and opinions of folks affected by them, and surely there are good logical arguments on both sides. Fortunately for market participants the choice to hedge risk is neither illegal nor cruel. Given the levels of volatility and the massive buildup in leverage and asset prices, this question can be answered by each investor faced with the simple alternative: how bad will I feel if the market crashes and if I have done nothing to protect my investments?

## EXPECTING THE UNEXPECTED



*VIX futures curve shows volatility back to close to pre-COVID levels*

We see that implied volatilities in the options markets have collapsed as the markets have rallied to record highs. While COVID and its impact on markets was unforecastable, it was still hedge-able, and those who did so were able to come out of 2020 very well. We are in a similar situation today. We have no idea what's on the horizon, but by all metrics, even these unknown risks are yet again quite hedge-able.



## Contemporaneous Cost-Effective Convexity

January 16, 2022

**W**e have been convinced through our research that the purpose of risk management is to use all tools available in the markets to create more robust portfolios that can survive major shocks. In a recent paper titled [Diversifying Diversification](#) my colleague Jeremie Holdom and I demonstrate that a democratic and open-minded approach to risk management is almost as good as a strategy that fine tunes the selection of risk reducing instruments using perfect hindsight. The added benefit of a simple strategy is that it does not require contortions and convulsions to justify one unchanging point of view. Here I will discuss one of the strategies: the use of put options.

The use of options as a risk mitigation tool has been vilified

by countless academic articles and self-serving investment advisors. The logic typically relies on some version of the following argument: "options cost premium, and on average this premium decays to zero. Hence on average holding options is a cost. Other alternatives for risk mitigation have lower cost, so these alternatives should be preferred to the use of options". Many dismiss options based strategies once they hear this argument, and maybe rightly so; who wants to spend money when yields are so low?

Having spoken with hundreds of investment officers and risk managers over the years, I usually pre-empt the conversation by stating that if they decide to use options for risk management, there is no way to avoid paying some cost – options are never free. Like car or homeowners insurance, which also isn't free, you have to consider the downside risk of not paying for it in the event of a catastrophic loss. In many cases these initial discussions are sufficient to discourage those who are looking to options-based strategies just as a tactical maneuver from using options.

But occasionally we run across an investor who understands the long term economic value of incurring the cost and actually helps to clarify our own thinking. One such actual investor would not be discouraged, and told us point-blank that he is looking for "contemporaneous, cost-effective convexity". After 30 years of practicing risk management, I realized that the three C's are exactly what options facilitate – thanks dear investor for such a concise summary of the benefit of options.

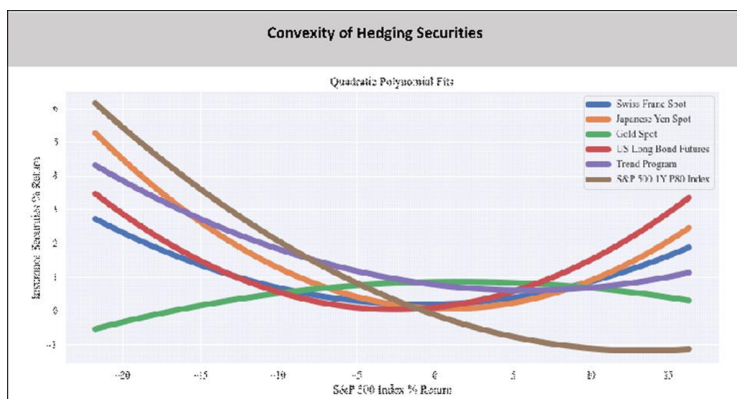
Let us take them in turn.

*Contemporaneous* simply means “at-the-same-time”, or with “no-delay”. Witnessing the latest implosion of markets in 2020 we can reliably conclude that options were the most immediate “first-responder”. The price of put options responded immediately to the sharp market decline. And this should not be a surprise, because an option is a contract designed to do exactly this. In this response, options outclassed other indirect ways of hedging, such as trend-following, diversification etc., which offered little, if any protection. The risk of a hedge not responding in a timely manner is that the time lag might force one to take other, sub-optimal decisions.

*Cost-effectiveness* of options obviously depends on one’s perspective. Options do cost premiums, and this cost can be quite variable depending on volatility and other variables. But relative to other alternatives, such as de-risking out of risky assets, or investing in cash at negative real rates of return, this cost may not be nearly as prohibitive once the benefits are accounted for. If the strategy of using options is counter-cyclical — i.e. when implemented systematically when volatility is low and markets are high — this can also result in much lower cumulative cost than other alternatives. And for the reliability one obtains, knowing the finite cost of options is an added plus when constructing a strategic portfolio risk management plan.

Finally *convexity*. Options are by definition the most non-linear instruments when compared with other alternatives. And non-linearity, when owned, means “explosive” convexity. The attached chart from the aforementioned paper shows the convexity of various alternatives. Clearly the curvature for large market movements; i.e. the convexity of options dominates

other alternatives. There simply is no other instrument that can hold a candle to options when it comes to convexity. And convexity is never free.



*Convexity of various hedging strategies. The generic strategies are more fully described in the paper “Diversifying Diversification”.*

*Source: LongTail Alpha LLC*

As the markets begin to convulse at the thought of Central Banks turning hawkish as inflation spirals out of control, some past champions of risk management tools — e.g. bonds and duration — are beginning to disappoint and indeed causing more portfolio pain. Of course their time will come again when inflation subdues and yields are higher.

For now, cost-effective, contemporaneous ways of owning convexity will likely win out. Yes, options do cost money, but when we price in the value of immediacy and reliability, these costs don't seem so high, especially when measured against

potential portfolio losses. You get what you pay for, and if contemporaneous convexity is what you are looking for, then options are probably the most cost-effective way of getting it.

## Why Commercial Banks Are A Disaster In The Making And What You Can Do About It

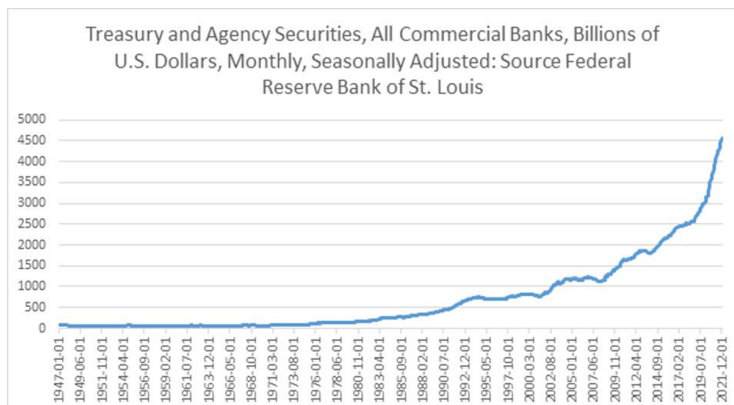
January 24, 2022

**T**he famous Abbott and Costello skit “Who’s On first, What’s On Second, I Don’t Know is On Third” summarizes the current state of hot potatoes in the bond markets.

Of course we know who’s on first. Who? Exactly. The Fed. The Fed holds more Treasury bonds than any other Central Bank in the world. According to the Federal Reserve’s data, as of this month the Fed holds over 5 trillion dollars’ worth of Treasuries, compared to just over 4 trillion dollars held by all other foreign official buyers. As I have written before, the Fed also owns almost 25% of all TIPS (Treasury Inflation-Protected

Securities), as they bought up more than the total issuance of TIPS to drive real yields negative in the last few years. And we also know that last month when pivoting Jerome Powell pivoted, the Fed essentially guaranteed that they would not be buying many more Treasuries in relatively short order; i.e. in March if you own TIPS you really better want to own them.

What's On second? Commercial banks. The St. Louis Fed's FRED ("Federal Reserve Economic Data") database shows that commercial banks own a whopping \$4.5 trillion of Treasury and Agency securities ([here](#)). We also know from the most recent earnings report that one or two large banks (you know who, don't you? – sorry for the pun) have bought hundreds of billions of these Treasuries. Now why would large commercial banks buy up all those Treasuries at such deeply negatively real yields? One can only speculate, and the reason probably lies somewhere between being forced to, for various reasons, and because buying the bonds and selling them to the Fed in their "asset purchases" was too easy money to pass up.



*Treasury and Agency Securities Holdings of Commercial Banks*

The point is that now many of these banks are stuck holding bags full of low yielding Treasuries, maybe like that turkey I warned about ([here](#)). The non-economic buyer (Fed) will soon quit buying them, and in a few months will start to “run off” its existing holdings. Who will step up and at what price? Are there enough “greater fools” in the marketplace? Is it Thanksgiving for the turkey?

Historically the marginal buyer of Treasuries has been a foreign entity; e.g. from Japan. For almost a decade, Japan has been able to print money freely and exchange the Yen for dollars, amongst other currencies, which then get recycled into Treasuries of all maturities. You can think of this as a US asset based “retirement plan” for Japan funded with their funny money. Yield does not matter, only principal redemption matters. So the hope would be that if Treasury yields rise just a bit more, they will likely step up again to buy them. Faith in strangers being willing and able to finance at negative real rates of return. Hoping for the



return of the greater fool.

Back to the banks.

Massive bond holdings are not their only problem. As the frenzy of trading activity in stocks starts to cool, the banks who provide “financial services” naturally make less money from the lower velocity of transactions. So rising yields cut twice — first by reducing the value of holdings, second by cooling animal spirits who want to trade. But aren’t rising yields good for banks because they make more interest income? Not yet, in my view. Right now the immediate effect of rising yields is to impair balance sheets and create lower business income. Yield income takes time, price losses happen immediately.

Then there are astronomical compensation costs. I am sure you all read the eye-popping numbers regarding bonuses paid by banks. Part of that is funded by record profits in the middle of COVID-driven trading and deal-making frenzy, and another part is being funded by record issuance of bonds at historically low yields and spreads. No wonder bank bond issuance is soaring, and the more the bank debt is issued, the higher the spread, which means the higher the discount factor applied to future bank earnings. Which means lower commercial bank stock prices.

By now you are wondering who is on third. Of course I Don’t Know. But my guess is that it is various types of buyers who don’t pay attention to yield. This group includes passive holders of bond funds who have seen their value soar over the last two decades, foreign private buyers who are looking for yield, and

public pensions who are in an accounting regime where they have to buy risk-free bonds to manage liabilities. There's also systematic momentum traders who buy simply because at least in recent history bonds have only gone up, and quantitative investors seeking "risk-parity" who lever up bonds to the same risk as equities. This group might also include you – it certainly includes me and my bond fund that I had long forgotten. Who knew that "safe" investments could lose so much?

So what can one do?

As in baseball, the third has no choice but to pay attention to who's on first and what's on second. And those two are stuck. And because these two players are much bigger in their market impact, those on third would be well advised to steal home before they force an inevitable implosion in the bond markets. If banks are your thing, look to the regional banks – and make sure they (1) are not huge owners of Treasuries and Agencies, (2) don't depend on trading volume to be profitable, (3) have low outstanding debt. You won't get the proverbial "toaster" for opening an account– that's reserved for choice customers – but your investment likely won't be toast.

## Maybe Treasury Inflation Protected Securities Are The Place To Be Again

July 18, 2022

**A**s far as managing longish term market-implied expectations go, the Fed could declare victory now. The 5 year forward 5 year breakeven inflation rate computed using Treasury Inflation Protected Securities ([TIP S](#)) and Nominal bonds, has dropped (again) right to the 2% level (of course since the Fed is majority owner of both nominal bonds and TIPS, they can make this number whatever they wish it to be by buying or selling nominal and inflation linked bonds, so this indicator should be taken with a HUGE grain of skepticism).

## EXPECTING THE UNEXPECTED



### *5y Forward 5y Breakeven Inflation Rate*

The recent low of the 5y forward 5y breakeven was about 1.4% at the height of COVID, and the high was 2.4% in early 2022, before the Fed pivoted aggressively to squash inflation and inflation expectations. Recall that during the financial crisis of 2008 TIPS were sold aggressively as both illiquidity and fears of deflation surfaced and drove the forward breakeven down to about 1.5%. TIPS don't act like Treasuries should when there is a race for the exits.

The pyrrhic victory over the breakeven inflation rate has come at significant cost. In the US, rich asset owners have of course been socked. Those who cannot afford high-priced food stuffs and gas are losing purchasing power too. And those in the middle, who loyally contribute to their retirement plans, are finding that their nest eggs are about 20% to 30% less valuable than at the beginning of the year. Everyone is beginning to hurt. Internationally, rising US short term rates are resulting

in sharp dollar strength, which is making nations like Sri Lanka go through what is effectively a revolution. The damage is just starting to show, globally.

Though interest rates are most going to be raised again at the next Fed meeting by at least 75 basis points, the severe yield curve inversion where short term yields are now higher than almost all longer maturities suggests the market is pricing in lots of things, including the global economy, breaking in the next few months. An actual crisis could require the Fed to pivot and go neutral at minimum and perhaps even talk about easing if things get much worse. For those who insist that the Fed will cure inflation even if it means throwing the economy do not understand the fact that “monetary policy is the handmaiden of fiscal policy”, to use words of Paul McCulley. In other words, a political entity that will give under the weight of political pressure when Washington complains about a deflating economy. The Fed is faced with two future constraints: high inflation and cratering markets.

So what will precipitate the pivot that I have been talking about? Quite simply an excuse that financial market stability has become more of a threat than the economy can live with. As with earthquakes, there are already signs of these precursory phenomena of illiquidity rising. The rapid disappearance of liquidity across many different markets suggests we are on the precipice of a financial market disaster if more financial stress is put on the economy.

The Fed knows this. If they really wanted to slow the economy down, there is a way to do it beyond just raising rates. This

would include outright sales of assets. The trillions of longer-term Treasuries and mortgage pass-throughs that they bought in the frenzied stimulation of the economy over the last few years could be sold to suck out more long-term liquidity than just raising rates can. But selling assets in a bottomless pit of illiquidity can also destroy confidence. So I don't think that massive scale asset sales are likely to happen anytime soon.

Back to TIPS.

What is more likely to happen is a compromise. The compromise could look something like this: reported inflation will be FORCED down. Maybe inflation settles down to between 5 and 6 percent. And because bringing realized inflation down from the recent 9.1% to 2% in any short period can only occur with a deep recession which no one wants, the Fed slowly begins to telegraph that while 2% is the long-term inflation target, the short-term target is something like 4%. My guess is that policymakers won't want to define "long-term" or "short-term" too precisely to keep maximum flexibility.

Let us assume for discussion that long-term means 10 years and short term means 2 to 3 years. If this is the possible path of inflation, what is best way for investors to position their portfolios?

A little over a year ago I wrote in this forum why we should not look for TIPS to protect against inflation ([here](#)). But I am increasingly of the view now that TIPS, which had previously been bid up to insane price levels by the Fed and retail ETFs, might be beginning to provide some asymmetric protection and

the potential for total return as well. That's primarily because they have lost so much value recently.

TIPS theoretically are insurance against inflation. But insurance is only potent when the price of that insurance is relatively cheap. When TIPS were trading at deeply negative real yields due to frenzied buying by the Fed and retail investors, they were "negative insurance" against inflation. Which is why as inflation has risen sharply, TIPS and TIPS funds have fallen in price, rather than rising in price. The pure duration effect of rising real yields, which had boosted the price of TIPS killed the benefit from the purported inflation protection. But are we at a stage where TIPS are attractive again?

Let us take a couple of examples.

First, just a simple 2 year maturity TIPS. Currently this TIPS has a 0.10% real yield. But the actual yield earned by an investor is the sum of the real yield and the inflation rate (lots of details on this at the website of the [Treasury Direct](#)). Both the principal and coupon are adjusted for inflation. So as inflation grows, so does the principal, and the coupon is paid on the increased principal. If we add the 9% inflation, then yes, this bond is yielding, instantaneously, in annualized terms, about 9.10% (Source: Bloomberg). Pretty good. How about a year out? If we look out a year and attach some probabilities to the various outcomes for real yields (the way I did is to use the probability distribution of nominal yields as implied by the market), we can compute scenario prices based on the hypothetical yield changes and the coupon income. Then we can weight the outcomes with the probabilities to get the expected return.

If inflation averages 9%, the “expected value” of the annual return from the coupon and the possible change in yields is about 9.81%. What if inflation averages 5%? The expected return drops to about 6.5% over the next year. And if inflation actually, miraculously drops to 2% this bond will still have an expected total return of 3.8%. For a 0% inflation rate the total return is about 2%, and you have to have an outright deflation of -2% for this TIPS to have a zero return. There is no magic here, just bond math, and incorporation of total return principles of roll-down and carry and pull-to-par.

Running the same numbers for a 10 year maturity TIPS, we find that at 9% inflation the expected annualized return for a one-year horizon is 10.5%, at 5% inflation averaged over the period the total expected return is 7.1%, at 2% inflation 4.5%, at 0% inflation 2.75%, and at -3% inflation (deflation) the expected return is 0 over the horizon. Again, no magic, just bond math and averaging over market implied probabilities.

So in summary, buying inflation insurance via TIPS was extremely unattractive just a few months ago when the Fed had crowded the TIPS market and retail investors followed them like the piper, and dealers front-ran the Fed and got stuck with the TIPS; today the fact that TIPS have lost so much value from an unwind of the excess, while inflation is rising, makes them attractive again as a fixed income instrument. This is because the market has punished the high-priced TIPS owners by forcing real yields high and prices low. Right when inflation is spreading and peaking, voila, the price of the insurance again is getting cheap.



If a fumbling, panicking Fed raises rates too quickly and aggressively, I suspect the economy will tank, and real yields will fall sharply. TIPS ought to do well from their current starting point, since they are bonds after all and bonds rally when yields fall. On the other hand if the Fed stays behind the inflation curve and lets inflation go higher, TIPS will compensate for the higher inflation in terms of higher coupon and principal. That's why they are called TIPS after all.

## Killing Me Softly Or Killing Me Quick: Inflation Risk Versus Default Risk

July 29, 2022

**A**fter more than thirty years trading bonds, which became super boring for the latest decade until this year, I am beginning to feel that the glory days of bond trading are coming back again. The main reason, of course, is that central banks are now fish out of water, grasping for tools in their toolkit, and they have abandoned buying bonds without attention to valuation. The playbook of “forward guidance” driven policy is also out the window, as is FAIT(H) (Flexible Average Inflation Targeting with “Hope” – my extension [here](#)), and most important the confidence in forecasts. This is beginning to create interesting opportunities for investors.



If the glory days of bond trading are coming back, then like me, you should dust off old bond textbooks and strategy papers, and prioritize going back to evaluating risk and return in various bond asset classes from first principles. I have been refreshing myself on stuff that I learned thirty years ago on forward curves, spreads, expectations, carry and roll, total return, defaults, inflation, cross-currency risk, risk-premia and so on. My livelihood depended on this when I worked at the Salomon Brothers Arb desk, and at PIMCO back in the years of the bond vigilantes, and might depend again on it. Yours probably doesn't, so let me highlight here what I believe are two of the most important things for market participants to consider right now when deciding where to potentially put their money in bond markets.

The key to the decision is to understand there are two main

ways to lose money as a lender, which is what one effectively is when buying a bond. The most immediate way is for the borrower to not pay you back; i.e. an actual or explicit default. This is what happens when you buy a junk bond or an emerging market country like Argentina and the company or country you are lending to goes under. Default kills quickly. The second way to lose money is to lend to a borrower who pays you back later in a currency that is worth less. This is literally what happens when you lend to a country with high inflation. This is implicit default, because inflation also kills, softly, with a smile ([without the pleasure of the Roberta Flack hit song](#) or the Fugees version that I whistle to myself these days when I see restaurant bills).

Thus, whenever one invests in a bond, there are some key decisions that have to be made by paying attention to explicit default or implicit default. First, what should be the term of the bond – and the risk of the term decision has both the inflation risk and the default risk in it, which we can sort of disentangle. Parting with your money for longer means you should be paid a higher yield, most of the time, because the borrower both has more opportunity and more incentive to default, inflate, or both. Right now the Fed is on a mission to quash inflation that has run away from them, so short term yields — e.g. the two-year Treasury — is yielding more than the 10 year Treasury.

So decision number one: should you go longer maturities or shorter maturities? Of course, this depends on what you think will happen to the economy in the short and the long run as a consequence of the aggressive tightening. If you think the economy will become much weaker in the long run, then it might make sense to lock in yield for longer using credit

risk free instruments. If you believe, like me, that the recent weakness is largely self-inflicted by the Fed's wrong call on inflation, then one may want to consider parking their money for the short term to jump on opportunities with ready cash when the Fed pivots (by the way the way I read it they did a "softish" pivot at yesterday's FOMC meeting). If inflation stays high for a long time, then longer maturity bonds will lose more money than the shorter maturity bonds, and floating rate bonds with credit risk might do better since the coupon will reset as rates rise.

Many believe that inflation today is the bigger problem. And there is a possible way to avoid the pernicious, soft death of inflation. Research and consider TIP [TIP S](#) (Treasury Inflation Linked Securities), which promise a guaranteed real yield, which is not very high, but as long as inflation remains high, your principal is guaranteed to grow. Since I wrote a piece on TIPS ten days ago real yields have collapsed, and the prices of TIPS has jumped up, according to *Bloomberg*. But many believe there is still room to run as the market realizes Powell 's Fed might be powerless in keeping the economy growing while controlling inflation.

What about valuation? Comparing TIPS with junk bonds, we can see that for one of the first times in many years the compensation for default is much lower than the compensation for inflation. Normally, since inflation risk is much lower than default risk, the inflation risk compensation is much lower than default risk compensation. To compare the two, we can look at the indicated yield of the TIP ETF vs. the HYG [HYG](#) ETF (as in High Yield Corporate Bond). The TIP ETF advertises

an indicated yield of 5.79%, which will of course vary with actual, realized inflation. On the other hand, the High Yield ETF HYG has an indicated yield of 5.08%. So right now it seems we are being paid more to take inflation risk (slow death), than default risk (quick death). Either way, the yield on both assets is much lower than actual inflation which clocked 9.1% last month (all data from Bloomberg), so either way we are losing money relative to purchasing power if we invest in bonds. To be sure, the choice is one of damage control.

Which brings me back to the rebirth of active bond trading opportunities. Bond markets are wrestling free of almost two decades of central bank control. In such markets, thinking for yourself, as a bond trader would, pays. Whether it's the choice between inflation risk or default risk, having a framework for relative value is coming back into play. And it does not require everyone to be a bond market wizard like the ones I knew back in the 90s. It just means paying attention to what you are getting paid for, and whether it is worth taking the risk. For now I will take the risk of short maturity bonds, especially TIPS, so neither inflation nor default can kill me slow or fast. Eventually bonds are made for safety of principal and damage control, and today protecting a portfolio from both types of default is going to be key to being around for risk taking opportunities of the future.

## TIPS ‘n’ STRIPS

August 28, 2022

I am not a big fan of Fish ‘n’ Chips. But give me tips and strips and I am very happy! Having grown up vegetarian in India, I came to the United States when I was 18. The only on-campus job I could get was flipping burgers at the Red Door Café at Caltech, where I was told by the café boss that I “had to flip ‘em, not eat ‘em”. Adapting to the times, the Red Door now offers “smoked tofu”, hummus, grain salad, and other vegan menu items.

Hard work at the burger joint paid off, and I was sort of promoted to be waiter at the Caltech Athenaeum, where I had the distinct pleasure of serving (and once spilling soup on) *the* Richard Feynman, the Nobel Prize-winning physicist. Working in a student cafeteria gave me “optionality”; i.e.. come whatever, I knew I was going to be able to at least survive on my own, and

this resulted in “convexity” — i.e., large gains from small but important decisions at the right time. Lots of upside potential with limited downside.

I would like to discuss a couple of items on the government bond menu today that provide a similar kind of asymmetric risk-reward: TIP [TIPS](#) (Treasury Inflation Protected Securities) and STRIPS (Separate Trading of Registered Interest and Principal of Securities). As of this writing, they offer meaty yield and above all, convexity under uncertain macro-economic conditions. Under the specter of a “resolute” Fed that might end up breaking financial markets to correct its massive errors in managing monetary policy and inflation, this choice provides a lot of protein for carb (stock) overloaded stock heavy portfolios.

First TIPS: As I wrote a couple of weeks ago in this forum, TIPS pay a real coupon rate, which is typically quite low (since real yields equal nominal yields minus inflation), but the principal of these securities increases with inflation based on the CPI inflation rate. For TIPS ETFs like [iShares' TIP](#), the increased principal is actually paid every month. So if inflation is running at 8%, say, each month the increased principal, assuming nothing else changes, will result in a distribution to the TIPS holder of record a coupon of  $8\%/12$  from the inflation component. Of course, if inflation falls to zero, there would be no inflation compensation. So an ETF like TIP currently offers an “indicated yield” of over 10%! (Source: Bloomberg) And this is for a Treasury which has no credit risk. If inflation is a tax on the common person, then for TIPS holders, the payout is a tax refund of sorts. TIPS are a call option on inflation.



Next STRIPS. STRIPS are basically zero-coupon bonds that are the building blocks of regular Treasuries, stripped away from their parent Treasuries for your consumption pleasure. As a matter of routine the Treasury issues bonds that both have a coupon and principal. Due to demand from those who want bullet cashflows on one day in the future (for example a lump sum payment against a single insurance obligation, or to pay a defeasance), the government allows dealers to strip out the principal and the intermediate coupons, slap a new label on them, and sell them as separate stripped bonds. I have previously called these type of zero-coupon bonds the “god particle of finance”, because they ultimately are the building block of all financial instrument prices.

Because the principal strips belong to a specific bond, while the coupon strips can originate from many different bonds with the same coupon dates, there is a premium to the principal (“P”) strips over the coupon (“C”) strips in terms of a lower yield on the P strips. In the table below, I show the 3% coupon full bond issued in 2014, along with its zero coupon strips as an example (Source: Bloomberg, as of August 26, 2022).

EXPECTING THE UNEXPECTED

Specifications	Full Bond	Coupon Strips	Principal Strips
CUSIP	912810RJ9	912834PB8	912803EK5
Maturity	11/15/2044	11/15/2044	11/15/2044
Coupon	3%	0%	0%
Price	92	44.62	45.39
Yield	3.52%	3.66%	3.59%
Duration	15.93	22.209	22.209
Modified Duration	15.64	21.809	21.818
dv01	14.54	9.733	9.9
Convexity	3.101	4.864	4.867
Size (in Billions)	42		5.8
Price Change for +100 bps shock	(14.37)	(9.72)	(9.89)
Price Change for -100 bps shock	14.40	9.74	9.91

*Comparison of “full” November 2044 Treasury Bond and its stripped “coupon” and “principal” STRIP versions*

For our discussion, the two kinds of strips may be treated the same. For example, if I were to buy a STRIP maturing in 2044, as of this writing it would cost me roughly 45 cents on the dollar, and in 2044, on maturity date, I would get 1 dollar back. The reason this is interesting is because of the convexity of the strips relative to the full bond with all the coupons. Note that the percentage price movement, or duration, of the strips is more than 50% higher than the full bonds. The volatility of interest rates means that long term strips are more convex than equivalent maturity coupon bonds, because the intermediate coupon payments don't weigh down the zero-coupon bond. In this example, if yields rise or fall by 100 bps, the full bonds will lose 14.37 points, while the zero coupon bond will lose 9.7 points. Convexity rises with volatility. So in a sense similar to options, Strips provide a call option on long term interest rate volatility.

So there we have it. TIPS are a call option on inflation rising, and STRIPS are a call option on yield volatility rising. With inflation raging, the Fed pledging to fight it at all costs, and a lot of macroeconomic uncertainty, the ability to own call options against macroeconomic volatility can be had today in the bond markets with TIPS and STRIPS while receiving a nice yield at the same time. It's the equivalent of offering both burgers *and* vegan items on the menu, something everyone can like, lots of good protein for your portfolio and healthy at the same time.

## Being Mulish: I Buy Treasuries Direct

October 20, 2022

**I**f you listen to the Fed, this is what you will hear: There will be no pivot! That is, they are not planning to lower rates any time soon come hell or high water. Each time there is a mini-hiccup in the global economy or the markets, many look for imminent signs of a pivot...but all we get is a string of Fed speakers who march out to say that they will keep interest rate hikes going for now, and there is no reason to worry about financial stability despite a cratering stock market and evaporating 401K balances.

Despair no more! Believe it or not, the mulish persistence of inflation, and the even more mulish behavior of the Fed, opens up some very attractive investment opportunities for investors which have not been available for over a decade now. It just requires a little bit of point and click work by the investor on

the internet.



*Being mulish*

But first, some background on the title of this note. The

8.2% inflation print of last week happened to coincide with the birth of a new family member in our animal household, Bruiser Woods. Bruiser is most likely a mule, if you couldn't tell from the accompanying photo – hence the term “mulish”, as in stubborn as a mule. My wife rescued Bruiser's mother, and the whereabouts or species of his father are unknown. But boy, is he a welcome member of our animal house!

Technically, mules are a blend between a donkey father (jack) and a horse mother (mare). Since the horse and the donkey are different species with horses having 64 chromosome and donkeys having but 62, mules have 63 chromosomes. In other words, they are a blend of a horse and a donkey, but unfortunately because of the odd number of chromosomes, genetic continuation becomes quite hard. Mules are very hard workers (when they want to), and can carry up to 20% of their body weight, a big responsibility.

Central bank policies right now are a hybrid of the inflationary horse and the financial instability donkey, and are likewise being tasked to carry a huge load. Policy makers have to optimize between unemployment (not too much), and inflation (not too high). The mulish attachment to the wrong “transitory” paradigm resulted in the current mulish persistence of inflation, which resulted in a massive increase in short term rates. So now we have a situation where very short term Treasury Bills are yielding more than any other maturity in the yield curve.

For example, as of today the 26 week Treasury Bill that will be auctioned on October 24<sup>th</sup> and which will mature on April 27 of 2023 is trading in the “when-issued” market at a yield of close

to 4.5%. So it makes no sense to me to leave a lot of money in a bank deposit account where you are getting no return. Instead lend it to Uncle Sam for the next six months to pick up an extra 2.25%! For those who want to know, the annualized rate of return for one-week bills is about 2.5%, one month bills is 3.5%, and three month bills is almost 4%! (Source: Bloomberg) And if rates go higher, you can roll the cash at maturity at even higher yields.

By the way, this is why the banks are laughing all the way to the...bank, because they see that most investors have forgotten that deposits should get a market rate of interest, not zero-ish, which is what the banks are paying them (unless they tie up their money in a CD which comes with some credit risk). And this is part of the reason why banks "net interest income" is making records even though their business is facing unprecedented troubles ahead from an economic slowdown, rising mortgage rates, and yes, defaults. They take money from depositors at roughly 0%-ish, and lend to the Federal government, amongst others, at a nice little yield pickup – I cannot get into the details of the Fed Funds and repo markets here, but trust me there is a big yield pickup for the middleman - the overnight repo rate is already north of 3%. Highway robbery, if you ask me, because you can get more yield with less default and credit risk by lending to the government *directly*.

Last week, my thirteen year old son was a bit shocked to hear that he, through his Treasury Direct account, is actually lending to the United States Government. Most people know that the US government has trillions of debt that keep the country running, and it refinances this debt by issuing new debt. But

most folks don't realize that the government today is actually paying a good market rate for your liquid cash. If you look at TIPS and I-bonds, they are making you whole even for inflation – contractually. Second, the government will need the good people here and overseas to lend it the cash, and to do so it will have to keep paying a good market rate of interest as it finances its debt. The US government can default, but the probability of it doing so before printing an unlimited amount of dollars to pay everyone is almost negligible. Certainly the US Treasury is more credit-worthy than your neighborhood bank.

Bankers will obviously not tell you to lend money directly to the US government, or in other words tell you to buy securities from the US government, because there are no fees attached to it. Similarly, fund complexes won't tell you to buy directly from the Treasury either, because then they also would not earn management fees. But it is as simple as opening an account at the Treasury Direct [website](#), linking it to your bank account, and placing an order to purchase the securities once or on an ongoing basis. In my own experience, the site is still a bit clunky, but a huge improvement from a few years ago when I first discovered it.

So the last week when a good friend of mine asked me if I was bullish or bearish on the market, I simply said that at current yield levels, I am neither bullish nor bearish, just mulish with short term Treasuries and TIPS that I purchase directly from the Federal government. If earning a little money instead of possibly losing a lot elsewhere makes me stubborn like Bruiser, then fine, go ahead and call me a mule.



# Epilogue: Building Optionality

March 2023

We have gone through a thirty-year period in economics and financial markets which is now beginning to reverse. And what worked for the last thirty years might not work for the next thirty. If the last thirty years were about “selling volatility”, betting on deflation, and buying assets, then the next thirty could turn out to be about “buying volatility”, betting on persistent inflation, and selling financial assets for other types of assets. Or maybe not. Maybe they will look exactly like the last thirty. I simply do not know. This chapter is about building asymmetry or “optionality”, without being able to forecast what will actually happen. The simple idea is that even without perfect foresight, if we can roughly guess the odds of future events, we can still do something about it.

My current firm, LongTail Alpha, was formed in 2015 with this one hedgehog-like idea in mind. Firms like PIMCO were formed and succeeded because of one great secular idea. Starting in 1984, if you could look at your crystal ball and anticipate inflation falling for the next thirty years, and if you could anticipate effective, credible central banks keeping

economies and markets under control, there was only one thing to do – bet on bonds, and asset prices in general, and sell volatility to earn volatility risk premiums. PIMCO’s “structural alpha”, and the “total return” concept, was based on this simple philosophy. And for the next thirty years it made a small Newport Beach bond shop and its founder and portfolio managers into one of the great movers and shakers in the world. It also made many clients and also employees, including myself, financially independent, and able to live out the American dream of self-determination and working for yourself on things that you want to work on. Such is the power of one good decision, made at the right time. Being long volatility, which is another way of characterizing being long optionality or asymmetry has been that one big idea for me, given how the unexpected has been critical to my own career so far.

When I came to the United States from India in 1984, I knew nothing about investments and financial markets. As I rode a borrowed bicycle in Chicago as an eighteen-year-old to the mall to buy a pair of jeans on a 40% off sale, I could see banks advertising yields on deposits of more than 10%. At the time, I had no reference point on what 10% meant, but of course looking back today I can see that the reason yields were so high was because the fiscal and monetary policy of the three decades that had preceded the Volcker era were inflationary, and indeed the previous Federal Reserve had lost control of the narrative. The oil shocks and other geopolitical issues did not help keep a lid on inflation either. The confluence of supply shocks and irresponsible policy making has been ascribed blame for the inflation of the 1980s. But what was

most unexpected was that at the time, no one thought that interest rates would decline again, and eventually decline into negative territory in much of the developed world, as they have done globally in the last few years. The bond market went to an extreme where a fundamental, 5,000-year-old unwritten law of finance would be broken; i.e., one should not have to pay to lend.

But just as in the 1980s no one wanted to buy bonds with yields in the 15%- 20% range, in 2018 and 2019 one could not stop people from buying bonds even though they were receiving negative real and negative nominal yields. Human behavior is totally incapable of anticipating how extreme things can get. And until it is too late, humans don't like to do things differently.

The situation today is uncannily similar. A highly political constellation of Central Banks who collectively took economic theory and practice into extreme levels of interest rates and monetary stimulus not only created massive inflation, but are also partially responsible for asset price bubbles and massive inequality. From a purely social perspective, the societal imbalances that have been created are unprecedented, and this will have ongoing, secular repercussions for politics, geopolitics and of course financial markets.

The pendulum always swings and overshoots, and its inertial movement destroys things in its way. If the last fifty years have been a swing of the pendulum towards benefiting the owners of capital, we are entering a period where the pendulum will most likely swing towards restoring some power of labor over capital. Which is why the upheaval caused by the unexpected COVID-

19 crisis accelerated the return of massive pricing power from labor.

As of this writing in early 2023, despite consumer prices sky-rocketing, there is still a shortage of workers, and by all measures we are in the middle of a wage-price spiral which will require unprecedented monetary policy action and possibly unexpected damage. The globalization trend of the last few decades has come to an end, and whereas currency war historically meant making your currency weaker to sell more stuff to your trading partners, today the same term means trying to make your currency stronger to ward off rising prices.

I grew up in a country where I have witnessed similar dynamics first hand many years ago. The strong hand of government was everywhere. There was rationing. There were licenses and permits for everything. There was corruption, and it mattered more who you knew in government than what your idea and execution capability was. This type of world replaces financial capital with social capital. And social capital in this context simply means that the network of people you know in important places – those who can provide permits and licenses, matter a lot.

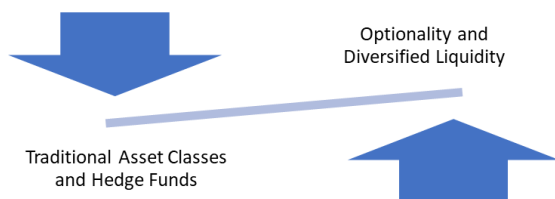
Along with the social upheaval which is a natural response to lopsided policies, today we are faced with the problem of how rising prices and shortages can meet the needs of the population at large. Without ascribing any judgment, one obvious solution is to use re-distribution. This simply means that taxes will be increased through many, and perhaps any, means possible, on those who can afford to pay them, and given to those who are

suffering from inflation and the results of other policy errors. Whether it happens through increased income taxes, or “wind-fall” profits on companies, or value added taxes on sales, or maybe even wealth taxes, the direction of least resistance seems to be more taxation and re-distribution.

If this is the world of the future, owning assets that either cannot be taxed, or those that cannot be valued accurately (and hence not taxed accurately), could very well become havens for investors to seek out hiding places. Many have argued that digital currencies serve this function and hence their popularity. Growing up in India, I saw similar dynamics occur first hand. For every illiquid asset, for instance apartments or land, there was an official, “white” price, on which the owner paid taxes, and a real, “black” price, which was the price at which the asset would be transacted. In this type of world, cash is king. When I say cash, I don’t mean even short duration bonds, because they can be tracked. The cash here is real, “under your mattress” cash, which provides no yield, just liquidity. Are we in a phase where the developed markets start to follow the “third world” by creating parallel economies? If that happens, having choices, options, for where to invest, and when to invest, will make a big difference.

In this world of rising volatility and the subordination of financial assets to other “real” assets, traditional asset classes and asset allocation paradigms will likely not work. What will work is optionality. Optionality for me simply means here the ability to have a menu of choices, at the right price, that are not tied to the whims of a small group of bureaucratic decision makers. In this world there will be very few forces to restore

prices to their fair value. In other words, mean-reversion will break down, and be replaced with more sustained trends. In this world, having your own, explicit optionality, via contractual obligations, i.e. “owning explicit options”, will be better than trusting the Fed, or the government, to bail you out. And in this world, real, liquid cash will always have a place.



In the framework that I have been refining for three decades to meet these new challenges, I therefore see four main levers that investors can use to manage the risks of their portfolios. They are:

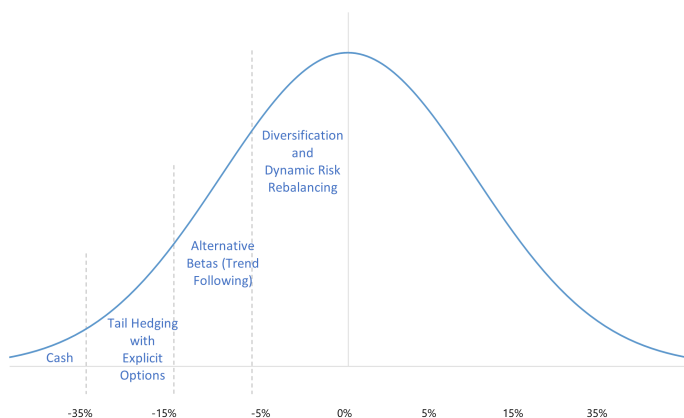
- **Diversification and Dynamic Risk Rebalancing:** this is just a way to systematically harvest normal fluctuations by having rules to never put all of one’s eggs in one basket.
- **Trend Following:** since mean reversion is likely to not work very well, markets will move, and it will benefit one from riding the moves rather than fighting them.
- **Tail Risk Hedging Both on the “Left” and the “Right” Side:** this is explicit insurance, or an approach to buy options when the price of options is cheap and there is potential of jumps due to shocks and illiquidity.
- **Cash:** cash is always useful when there is economic

disarray, counterparties are defaulting. Thus it is the ultimate long optionality, when everything else fails.

In my framework, each of these choices is an “option”, because somehow, directly or indirectly, it benefits from rising uncertainty, rising volatility, and rising tail risks. The trick is to know how much of these options to include in the portfolio, and how to move between them as their relative risk-reward changes, and which obviously can vary from investor to investor.

In the graphic below, that I first wrote about in an editorial in the *Journal of Portfolio Management* almost ten years ago, these “option” levers are overlaid on a probability distribution of market returns. Yes, I know that the academic literature of the last thirty or so years has proclaimed that owning optionality is expensive and results in negative expected average returns over time. But what if the world of the future turns out to be very different than the world of the last thirty years? In this world of increased uncertainty, lack of policy support for asset prices, and increased re-distribution, it would be hard to make the argument that not having choices, i.e. options, is a bad decision. And what if averages matter less than the steep troughs and crests, or “tails”?

## EXPECTING THE UNEXPECTED



So the question I will leave you is: “What If?”. Just as PIMCO made one good decision from which all good decisions organically flowed — i.e., riding deflation and falling volatility from the 1980s to the 2020s — what if the next thirty years depended on one good decision, and that decision was a bet on rising volatility, rising inflation and everything that follows from that decision?

In this type of world, investors who can expect the unexpected, and prepare for it by building optionality for themselves, will be the ones who prosper. Those who remain mired in the history that has already passed, and cannot expect anything else but mean reversion will likely be shocked. The amazing thing is that the tools are here for the taking. The only challenge is to be able to think independently and be prepared.



## Acknowledgements

The history of this collection requires gratitude to a lot of people – more than I can remember. These include everyone from parents who instilled a sense of “follow your own passion”, to old teachers and professors who encouraged learning and experimentation, to family, who have been supportive through ups and downs, and of course colleagues who I have loved working with over the temptation of hanging out at the beautiful SoCal beach I can see from my office window.

Over the last six years that these articles were written, there are some specific people who deserve additional thanks. First and foremost thanks to Seth Lubove, who has been the editor for my various Forbes.com pieces on which these articles are based and indeed introduced me to that venue for my need to express my market views. Thanks also to Aman Ahluwalia for his diligence in making the articles compliant and ready for publication. My colleagues past and current, at LongTail Alpha read most of these pieces and occasionally gave me great feedback both on content and presentation. I should mention Brian Baker, Brett Maune, Joe Guirguis, Paul Wendler, Linda Chang, Jeremie Holdom, Marcy Rappaport, Binika Rijal, Brendan Hoang and others. I would also like to thank my nephew Udai Baisiwala for a close reading of the initial manuscript and suggesting more coherence. My brother Roveen and my wife Rebekah

also deserve thanks for reading the pieces and for providing feedback and asking questions that in many cases lead to the next piece.

Finally, thanks to the audience, both actual and virtual. When I wrote these pieces my goal was to cut through the confusing message that one receives from modern financial press and news, which confuses everyone on what exactly to do next. My point in writing these articles was to first be clear, second be direct, and third answer the inevitable question: “so what”? For this, I thank the unknown readers who not only read but sometimes reached out to ask follow-up questions, and once in a while even criticized and disagreed politely. In trying to communicate clearly for you, I force myself to try to think clearly for myself. And ultimately that is why these articles were written in the first place.

*\*A note about the cover photo: In one of the most unexpected events of my recent life, I ended up leasing and occupying the office with the same view Tom Cruise famously had in the “show me the money!” scene in the movie “Jerry Maguire”. Expect the unexpected.*

## About The Author



Vineer Bhansali is the Founder and Chief Investment Officer of LongTail Alpha. His 30-year investment career started at Citibank, where he founded and managed the Exotic and Hybrid Options Trading Desk. He later joined Salomon

Brothers in its Fixed Income Arbitrage Group, followed by the CSFB Proprietary Trading Group. Dr. Bhansali was at PIMCO for 16 years, serving the last eight years as MD and Head of the Quantitative Portfolios Team, which he founded in 2008. Dr. Bhansali also managed all of PIMCO's analytics from 2000 to 2010. Among other responsibilities, he was the lead PM for the PIMCO TRENDS Managed Futures Strategy Fund, the PIMCO Tail Risk Hedging Funds, PIMCO RealRetirement and RealPath Funds, and PIMCO's indexed ETFs. He was also co-PM of the PIMCO Global Multi-Asset Fund, PIMCO Global Relative Value Fund and PIMCO Distressed Senior Credit Opportunities Fund. He has written five books on finance: "Pricing and Managing Exotic and Hybrid Options"; "Fixed Income Finance: A Quantitative Approach"; "Bond Portfolio Investing and Risk Management", "Tail Risk Hedging", and his most recent: "The Incredible Upside-Down Fixed-Income Market: Negative Interest Rates and Their Implications" and authored over 30 refereed papers on topics as varied as option pricing, fixed income, tail hedging, asset allocation and economics in leading Journals that include the Journal of Finance, Financial Analysts' Journal, Journal of Portfolio Management, and Journal of Risk. He has received numerous awards, including the Graham and Dodd Scroll Award and TIME magazine's college achievement award. Under Bhansali's leadership, PIMCO received the Risk Manager of the Year Award in the asset-management category in 2002 from Risk Magazine. In its announcement of the award, PIMCO cited "a proprietary system developed in-house by PIMCO's Vineer Bhansali, Ph.D. and his team." Dr. Bhansali received his Ph.D. in Theoretical Physics from Harvard University in 1992 and M.S. and B.S. degrees in Physics from Caltech in 1987. Vineer is

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