

## The VIX Index turns 25, Reflections on Quiet and Fear, Throughout the Years...

Our beloved index was born in 1993, I think you'll agree, those were simpler times...well before subprime...before Isis, that Eurozone crisis, decimal prices and these addictive devices ...before the flash crash, crypto cash, negative rates and deflationary states...before that bond caper called the taper. Before the quant quake, and the news they now call fake ...before eBay, AOL and Netscape...before the dotcom would take shape.

In '93, the S&P at 430, A Professor from Duke his name Bob Whaley...founded this index we now obsess over daily. .. quoting with vigor, researching with rigor...trades bigger and bigger ...capturing surprises as market realizes periods of vol high and low ...a quarter century ago, how would we know the extent of devotion we'd have to this index of motion?

Way back when, you were a simple construction, and markets could make an easy deduction, using front month puts and calls of 8 different strikes...two decades before Facebook gave us likes ...but still responding to Fed hikes, and military strikes ...our trusted VIX would spike in markets unsportsmanlike.

In short order, the fear gauge they would dub it...one number, all informing, And we came to Love it...earning our affection...a handy reflection of prices in correction, establishing the connection between risk and reward ...this index so adored, yes sir the CBOE has scored.

And without further ado, let us now turn to, a brief history that uncovers the mystery of these events they call risk off, when markets reached a brisk trough and the price of insurance reflected the demand for procurance of option protection...here now a cross-section of market malfunction, investors left with compunction as silence became violence and quiet gave way to riot.

Our first event, would severely dent sentiment once ebullient....I refer to a currency melt, a troublesome hand these countries were dealt ...around the world this risk would be felt ...Asian Contagion it would quickly be called...reserves depleted and growth downright stalled ....all across Asia from Thailand to Korea and ripping through Malaysia...plummeting equities and capital flight...the VIX hit 38 as fear became fright....all of this mayhem, made 97, one of distortion and just a portion was on the financial battlefield, cause that same year Tyson bit Holyfield...it was only an IMF deal that would ultimately shield the market from further erosion.

But just one year later risk would return even greater...when Russia defaulted and our VIX was vaulted... in motion quickly was a triggering event for this ungodly portfolio called LTCM...an All Star Team if there ever was one, Fed officials, PMs and quants by the dozen...Meriwether and Mullins even Scholes and Merton leaving the investment community all but certain that the code had been cracked and dollar bills would be stacked, this the Street thought of as fact. Returns were seductive, the economy constructive, and the PhDs were productive. What could go wrong, it wasn't easy to see, this greatest team in history. Danish mortgages, risk arb, and swap spread conversion, Royal Dutch Shell, Unilever and index dispersion.

How did it happen that Genius would fail? We'd soon learn of the epic scale of a portfolio that bet almost uniformly on stability, enabled by the founders' unique credibility. They assumed that returns were normally distributed, leaving them certain how risk was attributed...this portfolio was short

options of all shapes and sizes, vulnerable to scenarios in which our favorite index rises. To 45, the VIX would ultimately surge, as this giant portfolio teetered on the verge of toppling the financial system at large, leaving the Maestro Greenspan no choice but to take charge.

A decade would pass and leverage would build, Central Bankers proving ever so skilled at fostering a climate of conditions benign when vol would be low and asset prices would shine...by 2007, leverage had grown, the housing market propelled by the ninja loan.... frenzied construction as prices hit a zenith ...Las Vegas, Florida, So Cal and Phoenix...credit available, option IOs salable, assumptions unfailable and the ratings agencies, Fitch, Moody's and Standard and Poor's, stamped triple A and allowed us to ignore the risk that housing prices might somehow retreat and deal a blow to bank balance sheets.

A financial crisis was now on arrival and markets would have to fight for survival... Northern Rock, Wamu, Lehman and Bear...the VIX hit 80 during the worst of this scare... Never before a crisis so systemic, the fate of capitalism in the hands of an academic...Bernanke and his Fed had not a moment to blink and were forced to innovate with a kitchen sink of rescue plans often hatched in haste, a reflection of the epic challenges faced. "How can we stabilize?", asked the man with the beard and confront the circumstance everyone feared in which bank losses led to capital shortfall and a self-reinforcing market squall. The economy would tank and credit spreads would spiral, the GFC was about risk gone viral. Ultimately, it would end this 100 year storm, to incredibly cheap assets investors would warm...especially as the Fed was now buying bonds, hoping this would help markets respond.

Over the following years, the VIX would again spike, the Flash Crash, Debt Ceiling and China would strike, pushing our trusted gauge of fear to an inflated level where 50 was near.

But then upon us came a year most serene...just how else to characterize 2017? Closing below 10 on 42 occasions, the VIX reflected a low vol equation where market moves were substantially muted by forces that were largely economically rooted...growth looking better and inflation subdued, positioning however, increasingly skewed to selling options and earning theta...the vol shortfall prominent in the data. Because when realized vol is just 6.8, a VIX of 11 is too high a rate for investors to absorb the hedging cost that leads to dollars of premium lost.

And this leads us in to 2018, a more interesting time for the volatility scene. The VIX surged all the way to 50, as markets melted and repriced quite swiftly. A number of causes that one might assign, among them of course, VIX ETP design. Here we will not dive into that, but we know the short vol profits were quite fat...driven by stability that was oh so consistent and market outcomes that were truly resistant to risks both current and prospective, this latest spike provides a ton of perspective, on the reality that asset prices are subject to periodic outbursts when panic selling comes from fearing the worst.

So VIX index, we are glad you've turned 25...from 8 to 80, you've done more than survive...through the long stretches of calm and bursts of unrest, through tranquil times and market stress.

Knowing that this presentation has been anything but normal, I will now start my remarks a tad more formal.

Dean Curnutt, CEO of MRA

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