Volatility

(UN)EQUAL PARTS RIPPLE, REFLEX, REFLUX, AND REVERBERATION

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A False Sense of Newness

Volatile periods in market history like that which we have been experiencing of late always seem to occur suddenly as if they materialized out of the ether and were completely unexpected. It often seems that investors react to sudden spikes in volatility as if they have never witnessed the market behave in such a manner before. However, as the author of Ecclesiastes noted, "What has been will be again, what has been done will be done again; there is nothing new under the sun."

Rattle and Hum

While the impetus for each such bout of market volatility may originate from different factors: global pandemic, threat of a Greek sovereign-debt default, housing market collapse, catastrophic act of terrorism or the bursting of a tech stock bubble, the resultant volatility is not in and of itself, new under the sun. Such fits of market volatility usually begin with a ripple within the financial universe which then acts as a catalyst for an involuntary reflex by investors to let slip a sell-off in the stock market.

Depending upon the strength of the reflex which grips the collective attention of investors, this sequence of events generally engenders a sudden onset of acid-reflux and panic which serves only to reinforce a negative feedback loop which finally leads to the last and final stage of this cycle which is capitulation by investors whereby they sell anything with a ticker symbol or that isn't otherwise nailed down in some manner—without regard to the underlying financial prospects or merits of the asset in question.

Once investors are sufficiently rattled, what started as merely a ripple on the surface of the financial markets has the potential to reverberate like a disquieting sound far and wide, causing havoc that is not bounded by the confines of Wall Street as it can negatively impact Main Street as well. Once excessive volatility takes residence within the psyche of investors, the only remaining questions to resolve are the amplitude of the volatility spikes and the duration of the spasms. As we have all witnessed in the past couple of months, volatility can well and truly appear with frightening speed and manifest severity.

Market Participants

Generally speaking, traditional market participants include investors (long-only buyers who are usually looking for a longer-term investment with a reasonable risk/reward profile), traders (of both the human and algorithmic variety who move in and out of positions from as quickly as a few days to only a few nanoseconds), and speculators (traders that are typically only interested in the most risky assets that sometimes lead to potentially asymmetric returns).* All three market participant cohorts benefit from volatility in one way or another. The typical long-only investor only notices and cries foul regarding volatility when it takes the market down. However, volatility is not limited to bear markets as volatility is bi-directional in nature. It is possible to have significant volatility that actually takes the market higher. Few if any investors recognize such positive periods in the market as excess volatility, much less venture to complain about it. Traders, especially those that use options, know that volatility is their friend as the very nature of the Black-Scholes Option Pricing Model (the most widely used option valuation tool) recognizes that options become more valuable as volatility increases since large swings in volatility increase the likelihood that an option comes into the money, prior to its expiration. Speculators like volatility even more than traders as it increases the chance that some trade that they have made will potentially approach the realm of an asymmetric return because few, if any, other investors made the same or similar investments.

Volatility, a Character Study

Technically speaking, volatility is merely a measure of a security's, or an entire financial market's, movement over a given period. However, in some ways, excessive market volatility is like the sketchy relative that shows up at family time during the holidays and stays longer than desired and causes more disruption than is warranted. Such are the typical investor's feelings about volatility.

Now that we have described how investors generally feel about volatility and referenced the sheer disarray that excessive volatility can wreak in the financial markets, we'll look more closely at volatility itself, how it is measured, the origins of the most prominent volatility measure, and market devices that attempt to manage and mitigate the severity of spikes in volatility. Any attempt at outright elimination of volatility, as unwelcome though it may be, is a fool's errand as it is part and parcel of the stock market. It is important to remember that just as Risk is the other side of the Reward coin, Volatility is the other side of the Complacency coin. In fact, excessive levels of complacency are often indicators of potential impending volatility as it generally means that the market has become far too comfortable with the amount of underlying risk that they are taking on which generally leads to ever riskier investor behavior, all of which sets the table and tees up an almost certain spike in near-term excess market volatility.

Measuring the Intangible

While volatility has always been a feature of the financial markets, efforts to quantify or measure it have proven rather elusive. The pertinent origins of attempting to measure implied (or predicted) volatility of the S&P 500 Index (the "market") date back to the Black-Scholes Option Pricing Model which was published in 1973. However, it wasn't until 1990 that the Chicago Board Options Exchange (CBOE) began to make progress in deriving a workable calculation of implied market volatility. In 1993, the CBOE released the Volatility Index (VIX) which is a measure of expected (implied) market volatility over the next 30-day period. It is based on S&P 500 Index options and is calculated in real-time. While officially known as the Volatility Index, it is unaffectionately known as the "uncertainty index" and often disparagingly referred to as the "fear index". Nonetheless, it is the "gold standard" for a 30-day forward looking estimate of market volatility in US financial markets.

Unlike actual securities, the VIX is expressed in percentage terms rather than in dollar terms. Ranging from 0–100, the VIX is generally considered elevated if its level is above 20. (See Table 1, below, for notable milestones in the history of the VIX, since its inception in 1993). Any single VIX quotation is meant to imply, with a 68% degree of probability (1 standard deviation on a normal distribution curve), the projected possible movement of the S&P 500 Index over the coming 30-day period. However, as simple as that sounds, it is slightly less straightforward. Specifically, if the VIX is at 20, it is rendering an implied movement of the S&P 500 Index over the next 30 days of 20% +/–, on an *annualized* basis. The actual expected movement in the S&P 500 in the coming month is calculated by dividing the VIX value, 20 in our example, by the square root of 12. Thus, we have a theoretical expectation of a move of 5.77% +/– during the next 30 days. The VIX itself cannot be bought nor sold directly like a security. Market participants interested in "investing" in the VIX must do so by means of derivatives (synthetic securities), either Exchange Traded Funds or Exchange Traded Notes, which attempt to mimic the movement of the VIX via tracking VIX futures indexes. There is even a derivative available which is based off the relative volatility of the VIX, itself.**

As we see from even a cursory review of Table 1, below, the VIX can become quite elevated at times, usually in response to the type of exogenous shock that we are currently enduring in the financial markets. Unlike the 2008 Financial Crisis which caused a precipitous drop in the financial markets because of an asset bubble and shenanigans in the financial world, our current situation is caused by a health crisis which has profoundly detrimental financial and economic ramifications. What you don't see in Table 1 are the extensive periods of excess market complacency (VIX levels in the low teens, or even single digits) that we experienced for virtually all of 2017 and significant parts of both 2018 and 2019. Recall that most investors are oblivious to volatility when the market is rising and such periods of complacency build fuel stores for what will certainly be the next period of elevated, to excessive, market volatility. It is arguable that the outstanding market performance we experienced in 2019 set the stage for the sudden appearance of record setting volatility with which we are still dealing. To paraphrase a common aphorism, "the road to market volatility is often paved with investor complacency."

Table 1 – VIX Milestones	
10/24/2008	Intra-day high of 89.53
11/21/2008	Closed at a then record high closing value of 80.74
3/16/2020	Closed at a new all-time record high closing value of 82.69

Somebody Call an Electrician

In some ways, it was Black Monday, October 19, 1987, that likely set the CBOE down the path of working out the VIX calculation so that the market would, ideally, not be completely blind to impending grand mal seizures of excessive market volatility. On that fateful Monday in 1987, the Dow-Jones Industrial Average (the "Dow") fell 508 points, or 22.6%. While we have seen many such point moves of late in the Dow, the 22.6% decline still ranks as clearly the worst single-day performance in Dow history. In the aftermath of Black Monday, the New York Stock Exchange (NYSE) developed and introduced so-called Trading Curbs, colloquially known as "circuit breakers". They are intended to interrupt a market that finds itself in the grips of a market free-fall, driven by panic selling by most, if not all, market participants—a "time out" if you will. (Please see Table 2, below, for the specifics on the current requirements for flipping the switch on the 3 distinct market declines, or Levels, which correspond to the respective circuit breakers). As you can see in Table 3, below, we have had a number of recent market declines that have "tripped" the Level 1 circuit breaker but have thus far avoided a Level 2 event. While it would be hard to prove that the existing circuit breakers are the perfect solution for trying to forestall an all-out panic driven market sell-off, it would be hard to argue that they have not shown relative effectiveness and, at least for the present time, are our only workable means of intervening when the market steps into a sink hole. Perfect is the enemy of the good and the circuit breakers that we have currently have shown themselves to be good enough. As investors, let's all hope they continue to do the job for which they were designed as they are doing it admirably.

Table 2 – Trading Curbs (aka Circuit Breakers)

Level 1 Halt	**7%**	• Trading will halt for 15 minutes if drop occurs before 3:25 PM • At or after 3:25 PM, trading shall continue unless there is a Level 3 halt.
Level 2 Halt	**13%**	• Trading will halt for 15 minutes if drop occurs before 3:25 PM • At or after 3:25 PM, trading shall continue unless there is a Level 3 halt.
Level 3 Halt	**20%**	• At any time during the trading day, trading shall halt for the remainder of the trading day.

Source: Vanguard

Table 3 – Recent Circuit Breaker Events

3/9/2020	Dow fell nearly 8%; Level 1 event, right after the market opening
3/12/2020	Dow dropped just over 7%; Level 1 event, right after the market opening
3/16/2020	Dow dropped nearly 8%; Level 1 event, occurred early in the trading day
3/18/2020	Dow dropped slightly over 7%; Level 1 event, circuit breaker was tripped several hours into the trading day at approximately 1 PM

Sun Rise, Sun Set

I hope by this point in the telling that the reader has a better understanding of the nature of market volatility, the means by which we measure it, and the efforts that the financial markets have devised to address it. As we have seen, volatility is interwoven into the fabric of the financial markets. Sometimes it wears like the finest silk while at other times it is as unpleasant as the scratchiest of wool sweaters. Wish as we might that market volatility were something to be spirited away, or otherwise reduced to negligible levels, granting that wish is simply not possible. Such aspirations cause me to think of the closing lines of Hemingway's novel "The Sun Also Rises" where the protagonist, Jake Barnes, an American expatriate living in post-WWI Paris, is asked to imagine a similarly impossible circumstance and he sums up the notion with the closing salutation, "Isn't it pretty to think so." Such is the case with market volatility.

*Asymmetric Returns are generated by a security with an asymmetric risk/reward profile. Said another way, one that is imbalanced or skewed toward the upside rather than the downside. Investors clearly prefer to capture more of the upside, less of the downside. Investors Seeking Asymmetric Returns are looking for a trade with more potential for profit, less potential for loss.

Most market participants generally stay within their usual investment category, although sometimes they may switch to a different market participant cohort when they recognize an opportunity. A long-only investor may infrequently buy or sell an option but they generally focus on researching companies and making investments that they feel will appreciate over time. Occasionally, a cat will change its stripes altogether. Such an example would be the talented and accomplished value investor Dr. Michael Burry. Prior to the 2008 Financial Crisis, he directed a value-oriented hedge fund that had amassed very impressive returns as a long-only investor. He was renowned for his ability to uncover value in unloved and under-appreciated stocks. He crossed over into the speculator's cohort when he was one of the first to not only determine that we were in the midst of a massive asset bubble, driven by the sub-prime mortgage market, but also how to profit from his analysis of the housing bubble via Credit Default Swaps (CDS). He discovered that investment banks like Deutsche Bank, wire houses like Merrill Lynch, and insurance companies like AIG were more than willing to sell him inexpensive CDSs (at base, a CDS is an insurance policy against possible default of the underlying security or entity) on various Collateralized Mortgage Obligations (CMO) that represented pools of sub-prime mortgages. When the sub-prime fueled housing bubble burst and the CMOs became virtually worthless, he made for himself, and his investors, many hundreds of millions of dollars (~$800 Million) when the issuers of the CDSs he held were forced to make good on the instruments. This is an example of a speculative investment with a profoundly asymmetric return. If you want to learn more about Dr. Burry and the others that generated asymmetric returns during the 2008 Financial Crisis, I would suggest your read "The Big Short" by Michael Lewis, or at least watch the movie of the same title.

**Some market participants may be interested in the VVIX which was introduced in 2012. It is a known as the "vol of vol" as it is calculated in the same manner as is the VIX, except that rather than using S&P 500 Index option prices as the principle input, it relies on VIX option prices.

About Our Author

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