ABR Dynamic Funds – Year-End 2022 Newsletter

A Tale of 2 Halves

In this note, we review volatility in 2022 and review the performance of the ABR 75/25 Volatility Strategy, both in 2022 and over the full history.

2022 Volatility Review

Simply put, equity volatility experienced an approximately 1-in-50-year event in the first half of 2022 and then normalized over the second half of 2022.

The First Half of 2022

The first half of 2022 brought a very choppy volatility market with no extended trends and numerous rapid reversals. In fact, it was quite unusual even by the standard of volatility's behavior solely in down markets.

3 Ways Volatility Exhibited Significant Outlier Behavior in 1H 2022:

1. **There were 9 instances of the VIX Index rising above 30.**
    a. This smashes the 6-month average (1.3 times every 6-months) for the VIX topping 30 and is the most ever (since 1990).
        i. 1H 2022 was highly unusual even by the standard of only "down" equity markets.
            1. The 6-month average was 2.3 times in 2000-2002 and 1.5 times in 2008, and it happened only 1 time in 2H 2018 and 4 times in 1H 2020.
    b. Despite rising above 30 on 9 occasions in the first half of 2022, the VIX Index never even reached 37!
2. **VIX trends were vanishingly short in duration, only about 3 weeks long on average.**
    a. Volatility trends are typically measured in months or longer.
3. **Realized Volatility (the size of the S&P 500 swings) remained below 25 despite the 20% drop in the S&P 500.**
    a. It has been quite unusual to see an S&P 500 drawdown >20% with such low volatility. Specifically, the 20% drop was in the worst 1 percentile of all 6-month S&P 500 returns with volatility below 25 since 1928.

Putting together this data, we estimate that the **first half of 2022 was approximately a 1-in-50-year event** in terms of the "weirdness" of volatility.

The Second Half of 2022

As with all unusual and rare events, this one didn't last. The following graph illustrates the contrast with the first half of 2022.

3 Ways Volatility Normalized in 2H 2022:

1. **There were only 2 instances of the VIX rising above 30.**
    a. This figure was essentially in line with the long-term average of 1.3 times per 6-month period.
2. **Volatility experienced longer duration trends.**
    a. Visible in the previous graph, the trends were measured in months, not weeks.
3. **There was a more normal pairing of equity return and volatility level.**
    a. The S&P 500 was up 2% with volatility around 23.

Many people also want to know *why* equity volatility stayed so low in the first half of 2022. We address this question in the appendix at the end of this note.

How did the ABR 75/25 Volatility Strategy Respond?

The First Half of 2022

The ABR 75/25 Volatility Strategy utilizes a primarily volatility trend-following model. Therefore, the approximately 1-in-50-year unusual choppiness and sharp reversals, with no clear trends, presented a challenging environment for the strategy. As a result, the strategy lost and underperformed the S&P 500 in the first half of 2022.

The reversals in 1H 2022 were too quick for the model. As soon as the model moved into a long volatility allocation in response to rising volatility and in preparation for a possible spike in volatility, volatility immediately reversed back down several times.

Recall these periods of rising volatility (VIX in the low/mid 30s) when investors had great concern of things getting much worse, when they ultimately did not:

- *Beginning of the Ukraine war (Feb/Mar 2022)*
- *Higher-than-forecast inflation (several times in 2022)*
- *Lockdowns in China (several times in 2022).*

In other words, these were exactly the periods investors may have wanted ABR 75/25 to prepare for a crisis, in order to potentially provide value to portfolios if the crisis did materialize, such as it did in March 2020 or October 2008. However, the extremely rare sequence of numerous rapid reversals in volatility resulted in an unfavorable outcome for ABR 75/25.

The Longer-Term Perspective

Some investors wanted to know, midyear, if we were updating or "tweaking" ABR's models in order to account for the "new volatility environment." The answer was (and remains) no. Sure, ABR could probably solve for a 1-in-50-year, 6-month event, but that might mean hurting the returns of the other 49.5 years, as well as the overall return. We remain long-term focused on how volatility works and why volatility has historically been partially predictable.

Of course, ABR acknowledges that nothing is always predictable, and random variance is a major factor in investing. Tail events do happen to all investments, hence a focus on risk management when constructing our models. We are also cognizant of the fact that the Strategy's loss and underperformance in the first half of 2022, in what we believe was such an event for our models, were far from ideal. However, if the first half of 2022 was approximately a 1-in-50-year event in volatility, as we have argued above, then the Strategy's loss and underperformance of the S&P 500 were tolerable for multiple-market-cycle investors. <u>After all, in just the last 20 years, the S&P 500 had a 51% max drawdown, and U.S. 20+ year treasuries had a 42% max drawdown.</u>

The ABR 75/25 Volatility Strategy is designed to thrive over multiple market cycles, in part by surviving such rare and unfavorable environments as the first half of 2022, but mostly by providing a potential way to win in multiple market environments. Historically, the Strategy has performed well in equity bull markets, such as 2019 and 2021, and in equity crises marked in part by extended volatility trends that reach very high levels, such as the GFC (pre-inception) and Covid-19 (live). The strategy does not win all the time and has not historically performed well during lower volatility equity corrections, such as Q4 2018 and H1 2022.

The result of this behavior has been a partial equity or core replacement that, over the full history since 2006 (including the challenging first half of 2022), has delivered both diversification to and outperformance of the S&P 500.

ABR 75/25 Volatility Strategy vs. S&P 500 Index (2006-2022)

(Includes hypothetical performance. See disclosures for important information.)

Statistic	Winner		Result	
	ABR 75/25	S&P 500	ABR 75/25	S&P 500
Annualized Return	✓	X	13.0%	9.0%
Sharpe ratio	✓	X	0.8	0.50
Sortino ratio	✓	X	1.26	0.66
Maximum Drawdown	✓	X	33%	51%
Time to gain max DD (1/MAR)	✓	X	2.6 years	5.6 years
Alpha	✓	X	8%	0%
Best Month	✓	X	21%	13%
Worst Month	✓	X	-10%	-17%
Best Quarter	✓	X	30%	26%
Worst Quarter	✓	X	-22%	-30%
Best Year	✓	X	57%	56%
Worst Year	✓	X	-28%	-43%
Best 3 Years	✓	X	167%	100%
Worst 3 Years	✓	X	4%	-39%
Best 5 Years	✓	X	286%	182%
Worst 5 Years	✓	X	23%	-6%
Best 10 Years	✓	X	482%	367%
Worst 10 Years	✓	X	97%	87%
GFC (Q4 2008)	✓	X	30%	-22%
Covid (Q1 2020)	✓	X	15%	-20%
Q4 2018	✓	X	-12%	-14%
H1 2022	X	✓	-33%	-20%
H2 2022	✓	X	6%	2%

Appendix

Why did equity volatility remain so historically low, relative to the equity selloff in the first half of 2022?

Despite what the 24-hour news cycle and numerous “thought leaders” would have you believe, “why” is usually a question that is mostly not answerable, even in hindsight. The belief that we know these answers was called the Illusion of Understanding by Daniel Kahneman and the Narrative Fallacy by Nassim Taleb. The answer is generally a little bit of something knowable

and a lot of random variance. Nevertheless, we will rebut a couple popular theories before offering one of our own, with the aforementioned caveat that it is offered only in addition to the likelihood of a healthy dose of random variance.

A number of people have speculated that volatility has remained low because there was little buying of volatility assets (options, VIX futures, etc.). This assertion usually takes the form of investors were already positioned for the equity downturn, with lower equity allocations, and didn't need a hedge. This assertion is wrong. First, it isn't possible for the universe of investors not to own all of the stock in the world, and so investors in the aggregate owned just as much stock as ever. Second, even if true, this assertion would not explain why *realized* volatility (i.e., the swings in the S&P 500) remained so low. Explaining why realized volatility was low is the most crucial element to explaining why implied volatility (i.e., the VIX) was low because implied volatility remained tethered to realized volatility in 2022, as it has in the past.

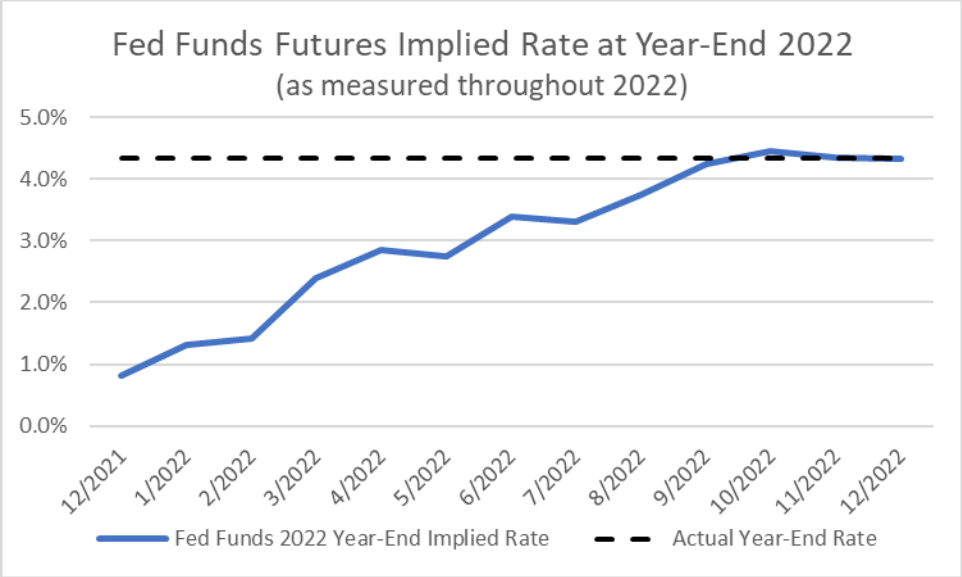
Therefore, the additional buying of volatility instruments only directly affects implied volatility, and it might make the difference between a 25 and 26 level in the VIX. However, if realized volatility is in the low to mid-20s, extra option buying simply isn't going to make the difference between a 25 and a 40, 50, 60, 70, or 80 level in the VIX. Realized volatility in the first half of 2022 was just under 25, and the average level of the VIX was 26.3. A lack of buying wasn't keeping the VIX way too low.

There is one way, some speculate, that implied volatility can actually affect realized volatility, and that brings us to the second theory. A number of people have asserted that gamma hedging has at times this year increased equity market swings (and at times decreased the swings). A full explanation of gamma hedging is beyond the scope of this note but suffice it to say that the seller (buyer) of some volatility instruments may need to buy (sell) stock as it rises and sell (buy) stock as it falls, in order to maintain a market neutral position. This activity could, in theory, magnify (reduce) the size of short-term equity market swings. However, research attempts to quantify this phenomenon have found an essentially meaningless effect on the scale of this discussion (time frames that matter to long-term investors), perhaps a few basis-point magnification (or reduction) of ~1% moves in the S&P 500. What possible additional effect may exist has mostly been found in intraday time scales rather than at longer time frames. The intuition for the lack of effect at longer time frames is likely that a brief period of slightly magnified (reduced) moves followed by a brief period of slightly reduced (magnified) moves is generally offsetting, as is a briefly magnified (reduced) move up followed by a briefly magnified (reduced) move down. In other words, this theory also cannot explain the difference between a 25 and a 40, 50, 60, 70, or 80 level in the VIX.

Instead, we offer a different theory for the relatively low realized volatility that accompanied the drop in equities in the first half of the year. It is the slow pace at which negative news trickled out this year. Of course, now we all know that central banks were slow to raise rates; that Russia would invade Ukraine; that China would lock down significant economic regions due to Covid-19; and that consumers would rapidly spend $4 trillion in extra savings from the pandemic, all of which would contribute to significant central bank rate hikes.

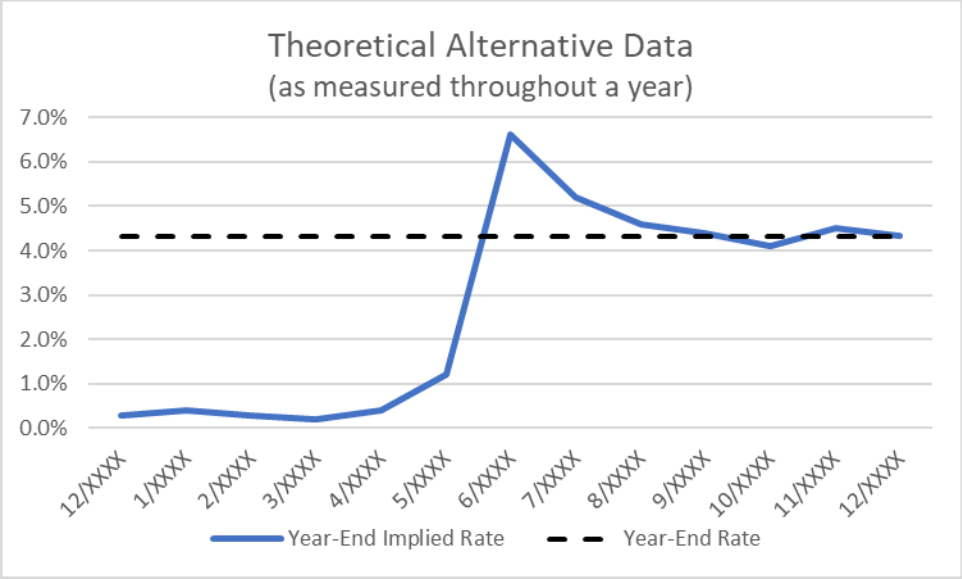
However, these pieces of news came out over time, and market participants did not collectively know them at the beginning of the year. It was only gradually and rather steadily that market participants came to terms with the need for higher rates. This statement can be made with a high degree of confidence simply based on how gradually and steadily implied interest rates rose throughout the first half, or perhaps three quarters, of the year.

To illustrate, we use the U.S. Fed as an example. The following graph shows the year-end Fed Funds interest rate, as it was implied by futures markets at each month-end in 2022. To avoid confusion, this is not a normal rate curve graph. This graph shows the interest rate for only one point in time (year-end 2022) as it was estimated by market participants over time in the past. The rate at only one point in time is hardly a complete picture of interest rates, so we also note that the interest rate at other points in time (2 years, 5 years, 10 years, 20 years) showed a qualitatively similar pattern throughout 2022.



The graph shows that the understanding by market participants that rates would have to be higher at the end of 2022 was gradual, not sudden – somewhat like the equity market selloff throughout 2022. Put another way, the mechanism – interest rates – for the repricing of the present value of future cash flows (i.e., for the repricing of stocks, at least in theory) moved gradually, much like the actual repricing of stocks.

A sudden moment in time at which everyone realized rates would be much higher might have produced a markedly different type of equity market selloff. That realization might have looked like the following entirely theoretical graph, which does not represent any past data or prediction of future data. It is only meant to illustrate a possible contrast.



It is possible that such a moment would have been more akin to the Lehman bankruptcy in September 2008 or the worldwide Covid-19 lockdowns in March 2020 – it may have triggered a high volatility equity crisis. However, as of yet, it hasn't happened (that wording is not meant to imply a forward-looking prediction of any kind).

Disclosures:

The standardized returns of the ABR 75/25 Volatility Strategy for the periods ending 31 Dec 2022 were -28.4% for one year, +4.5% for three years, +4.7% for five years, +7.5% for 10 years, and +13.0% for the full history since 2006.The "ABR 75/25" Volatility Strategy is represented by 75% of the returns of the ABR Dynamic Blend Equity and Volatility Index Powered by Wilshire (ABRVXX) and 25% of the returns of the ABR Enhanced Short Volatility Index Powered by Wilshire (ABRXIV) respectively (collectively, the ABR Indexes), net of hypothetical expenses of 2.00% fixed and 20.00% incentive. Actual expenses may vary and past performance does not guarantee future results.

ABRVXX was launched 30 Apr 2015, and ABRXIV was launched 31 Jan 2017, such that performance information before those dates constitutes pre-inception (hypothetical) index performance. The hypothetical performance history was systematically calculated utilizing a static blend of the firm's long and short volatility models. Hypothetical trading programs in general are designed with the benefit of hindsight. Investors cannot invest directly in an index.

Calculations in the first table above are based on all rolling periods of the indicated length using monthly data from 2006 through 2022, and the figures are not annualized. The "time to gain max DD" is 1 divided by the MAR ratio. The MAR ratio is the annual return divided by the maximum historical drawdown. Therefore, 1 / MAR is approximately the amount of time, using long-term returns, that would be required to gain the maximum drawdown. As such, 1 / MAR is not the actual amount of time that a strategy took to recover the one particular instance of its maximum drawdown, or the time spent "underwater" during its maximum drawdown.

As noted, certain performance information shown above is hypothetical, and certain comparisons shown above use pre-inception (hypothetical) performance information. Hypothetical performance does not reflect actual trading experience and does not necessarily reflect the deduction of all expenses. HYPOTHETICAL PERFORMANCE RESULTS HAVE MANY INHERENT LIMITATIONS, SOME OF WHICH ARE DESCRIBED BELOW. NO REPRESENTATION IS BEING MADE THAT ANY ACCOUNT WILL OR IS LIKELY TO ACHIEVE PROFITS OR LOSSES SIMILAR TO THOSE SHOWN. IN FACT, THERE ARE FREQUENTLY SHARP DIFFERENCES BETWEEN HYPOTHETICAL PERFORMANCE RESULTS AND RESULTS SUBSEQUENTLY ACHIEVED BY ANY PARTICULAR TRADING PROGRAM. ONE OF THE LIMITATIONS OF HYPOTHETICAL PERFORMANCE RESULTS IS THAT THEY ARE GENERALLY PREPARED WITH THE BENEFIT OF HINDSIGHT. IN ADDITION, HYPOTHETICAL TRADING DOES NOT INVOLVE FINANCIAL RISK, AND NO HYPOTHETICAL TRADING RECORD CAN COMPLETELY ACCOUNT FOR THE IMPACT OF FINANCIAL RISK IN ACTUAL TRADING. FOR EXAMPLE, THE ABILITY TO WITHSTAND LOSSES OR TO ADHERE TO A PARTICULAR TRADING PROGRAM IN SPITE OF TRADING LOSSES ARE MATERIAL POINTS WHICH CAN ALSO ADVERSELY AFFECT ACTUAL TRADING RESULTS.

“60/40” is 60% equities plus 40% bonds. Equities are represented in the above material by the S&P 500 Total Return Index. Bonds are represented by the Bloomberg Barclays US Aggregate Bond Index.

There is a pooled vehicle which utilizes the ABR 75/25 Volatility Strategy; its inception date was 10 Oct 2021. For more information on the live-trading performance of various ABR-advised strategies or the hypothetical performance presented, please contact us. Wilshire® is a service mark of Wilshire Associates Incorporated (Wilshire) and has been licensed for use by ABR Dynamic Funds, LLC. The ABR Indexes are not sponsored, endorsed, sold or promoted by Wilshire, and Wilshire makes no representations or warranties with respect to the ABR Indexes. ABR Dynamic Funds, LLC may receive compensation in connection with licensing the ABR indices to third parties.

The Strategy may acquire or enter into derivatives instruments and transactions. Derivatives are financial instruments that have a value which depends upon, or is derived from, a reference asset, such as one or more underlying securities, pools of securities, options, futures, indexes, or currencies. Derivatives may result in investment exposures that are greater than their cost would suggest; in other words, a small investment in a derivative may have a large impact on the Strategies’ performance. The successful use of derivatives generally depends on the ability to predict market movements. There may be an imperfect correlation between a derivative and its reference asset. Certain transactions, such as those involving investing in certain derivatives, may give rise to leverage, causing the Strategy to be more volatile than if it had not been leveraged.

Incorporating a dynamic volatility strategy into a portfolio is designed to help an investor potentially mitigate, and potentially benefit from, volatility in the U.S. stock market. However, all investing involves risk including the possible loss of principal. There can be no assurance such a strategy will achieve a gain or prevent a loss. Volatility assets and strategies may not be suitable for some investors due to their financial circumstances and risk tolerance. A volatility strategy should not be viewed as a complete investment program.

Volatility assets entail their own unique risks that investors should consider when evaluating a volatility strategy. Volatility-based futures can become volatile and difficult to value and can be

imperfectly correlated to the underlying asset or index. Due to leverage, the loss on a long futures contract could greatly exceed the initial investment. The loss on a short contract theoretically is unlimited since the appreciation of the shorted asset also theoretically is unlimited. Thus, a small investment in derivatives could have a large potential impact on the performance of a portfolio. Further, a volatility strategy may at times call for high portfolio turnover rates, which increases brokerage costs. High turnover also may generate net short-term capital gains.

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