

ESTIMATED RETURNS:

Dealer Flow: +1.30%

Long Vol: +4.24%

Vol Neutral: +2.28%

INDEX MOVES: Open | High | Low | Close

S&P 500: 4605.38 | 4743.83 (11/22) | 4560.00 (11/30) | 4567.00

NASDAQ: 15498.4 | 16212.2 (11/22) | 15451.4 (11/30) | 15537.7

DOW: 35891.59 | 36565.73 (11/8) | 34426.68 (11/30) | 34484.18

RUSSELL: 2295.3 | 2460.8 (11/8) | 2171.8 (11/30) | 2197.3

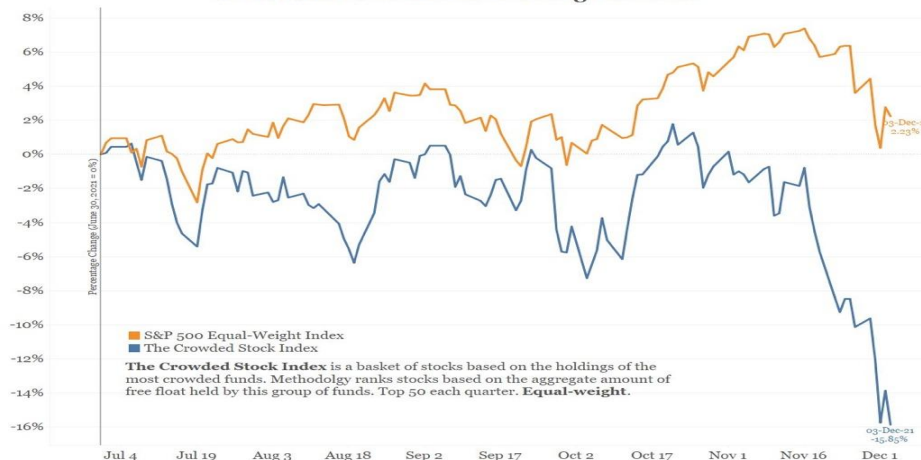
VIX: 16.26 | 28.99 (11/26) | 14.73 (11/4) | 27.19



PERFORMANCE: On the surface November appeared to be a quiet month with the S&P500 ranging between 4650 and 4715 for roughly 2/3rds of the trading days. It is not uncommon to see periods of consolidation after large moves such as the 6.9% gain in October. While all was quiet in

aggregate at the index level, there was turmoil below the surface. Serious pain was occurring in single names, with many of the high flyers from the Covid era experiencing extreme drawdowns from their highs. Peleton and Zillow dropped 51.8% and 47.6% (respectively) in the month of November alone, down 74.2% and 74.1% (respectively) from their All-Time Highs. According to Reuters, "The HFRI fund weighted composite Index slipped 2.2% in November, its biggest monthly fall since March 2020, when the coronavirus pandemic first slammed into financial markets, the hedge fund research consultancy said in a report received on Wednesday."

Fund Favorite Stocks Are Getting Punished



The major indices were able to stave off larger pullbacks thanks to the relative strength of some of the usual market leaders (AMZN, AAPL, NVDA), resulting in an approximate 1.5% trading range for the majority of the month. However, the vulnerability of the overall market began to show on Thanksgiving. Given the low available liquidity on the holiday and a reduction of vol supply, the news of the emergence of the Omicron variant provided the spark to shake the market out of its delicate balancing act.

As we discussed at great length in our previous newsletter and in other media (Cem's TD Ameritrade interview found here:

<https://twitter.com/tdanetwork/status/1465725690314166275?s=21>), the Sumo wrestling nature of today's markets was on full display as we saw a 2.3% drop on the shortened holiday session beginning with the opening of futures Thanksgiving night. Just as a powerful lunge in Sumo can carry a wrestler out of the ring if dodged and not met with an opposing force, the amount of leverage in today's markets can lead to extreme moves when the typical counter forces (liquidity and vol supply) are absent or reduced.

Dealer Flow: Our Dealer Flow Fund was able to generate +1.3% returns for the month despite the S&P dropping .83%. The strategy was able to successfully navigate a treacherous environment that saw significant destruction this past month elsewhere in the hedge fund space. Importantly, Dealer Flow continues to act as a solid diversifier as it remains strongly uncorrelated to the overall market.

Vol Neutral: Our Vol Neutral strategy was able to take advantage of the downturn in the market, while aiming to remain uncorrelated to the market. Along with a bit of mean reversion from the previous month, Vol Neutral was able to generate +2.28% returns for November.

Long Vol: While the market spent the majority of the month range bound, our central thesis about a leptokurtic market kept us positioned well for any possible spikes in volatility, which came to fruition in the final week of the month. Our patience and positioning paid off as our Long Vol strategy was able to return an excellent +4.24%.



OUTLOOK: The hypothesis of **linguistic relativity**, also known as the **Sapir–Whorf hypothesis**, is a principle that posits that the way in which individual languages encode information about the world, influences its speakers' worldview or cognition. As such, people's perceptions are directly relative to their spoken language. Benjamin Whorf argued, for example, that many native languages, such as Hopi, remarkably, have "no words, grammatical forms, construction or expressions that refer directly to what we call 'TIME.'" He argued, therefore, that "it is gratuitous to assume that a Hopi who knows only the Hopi language and the cultural ideas of his own society has the same notions, often supposed to be intuitions, of time and space as we have, and that are generally assumed to be universal." Through his linguistic studies, he concluded that the Hopi, unlike cultures from "Standard Average European" (SAE) mother tongues, had "no general notion or intuition of time as a smooth flowing continuum in which everything in the universe proceeds at equal rate, out of a future, through the present, into a past." To the Hopi, not all time is created equal.

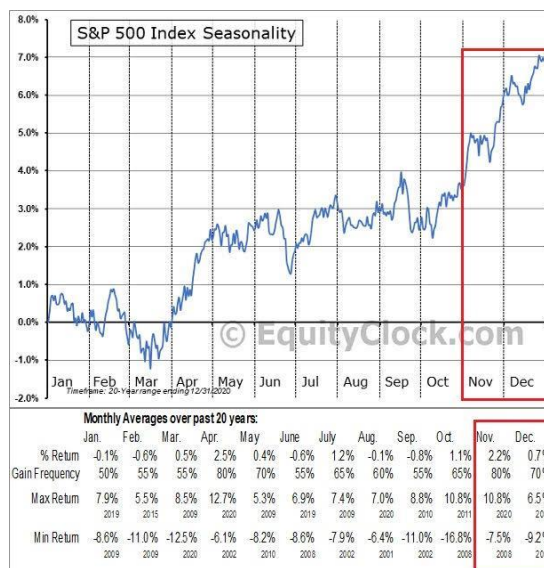
For most in the Western world, this non-linear concept of time can be hard to fathom. However, cultures with "cyclical" views of time, like the Hopi, are actually thought to more closely mirror Albert Einstein's theory of relativity, reflecting time as relative in both space, time and perceived temporality. As with Einstein's theory of relativity, all vectors are seen as equally powerful and valid interpretations of some aspects of physical reality by different observers due to differences in their physical circumstances. Einstein maintained that two given events can legitimately be called simultaneous if and only if they take place at the same point in time and in the same point in space. Therefore, no two events which take place at a spatial distance from one another can legitimately be declared to be simultaneous in any absolute sense, for the judgement of simultaneity or non-simultaneity ultimately depends on the physical circumstances and perceptions of the observers. In this broader sense, TIME, and our perceptions of it, can be thought of as a multidimensional sea. In this sea, some waves, or moments, are perceived as "recent" as a function of distance, speed, scale, and perceived impact.

For much of history, the critical role of time in market structure has been largely ignored, oversimplified and misunderstood. Much of this ignorance is a direct result of the historic dominance of linear assets such as equities, bonds, real estate, or commodities and the analysis of their returns as primary. This primacy of absolute returns is best encapsulated by the popularization of CAPM. The concept of Beta from CAPM has come to permeate all facets of financial markets since its introduction by William

Sharpe in the early 1960's. Yet this linear model fails to contemplate time and the critical role that it plays in performance and risk. With the increasing dominance of multidimensional products such as options and volatility products that better encapsulate the true probabilistic nature of markets, the critical role of time in financial market structure has increasingly moved to the forefront.

Market technicians and chartists have intuitively understood the important relationship between time and asset performance since technical analysis was first introduced by Charles Dow in the late 1800's. Devout followers of Elliot Wave Theory, Financial Astrology, and the Stock Trader's Almanac have plotted price over time to explain cycles and trends for over a century. But few have understood the underlying **effects** of the passage through the waves of time on probability and therefore price itself. This causality has largely been ignored, in favor of the simplistic view of time as a plot through which price itself moves.

Nowhere is the importance of time in investing more broadly accepted, yet universally misunderstood, than as it relates to market seasonality. Tried and true market adages such as "Sell in May, and Go Away," "If Santa Claus Should Fail to Call, Bears May Come to Broad & Wall," and "As Goes January, So Goes the Year," are so widely known that they are among the first things equity investors learn about markets. According to the "Stock Trader's Almanac," the Santa Claus rally period, the final five trading days of the current year and first two of the new year, has seen the S&P 500 positive nearly 79% of the time since 1928 and has gained an average of about 1.7% per rally. That said, to most people, this seasonality is nothing more than a magical, psychologically-driven construct. This couldn't be further from the truth. The forces that drive these seasonal trends are structural and a direct effect of the relative passage of time on probability and therefore price itself.



In markets, much like in the Hopi language, not all time is created equal. This is best on display in the holiday periods of late November through early January, where the calendar compresses due to less activity in markets. During this period the effects of time are accelerated due to more holidays and less participation.

As seen below, 5.5 of 11.5 national bank holidays fall in the 2 month period between November 11th and January 18th. This 9.5 week period, sans holidays, would constitute 49 trading days, instead there are only 43.5 days. But this is just the tip of the iceberg. The holiday period that surrounds the Thanksgiving, Christmas and New Year's Holidays see dramatic reductions in volume and market participation. U.S. volumes are typically only 70-80% of normal on the day prior to Thanksgiving and 45% the day after, while global equity, futures and options volumes all tend to trade at only 50-60% of normal volumes starting Dec. 23 and typically don't return to normal volume until 4 days after New Year's Day. The net result is a 2 month period that by all accounts, is only 70-80% of the volume-weighted time as the rest of the year.

Bank Holidays

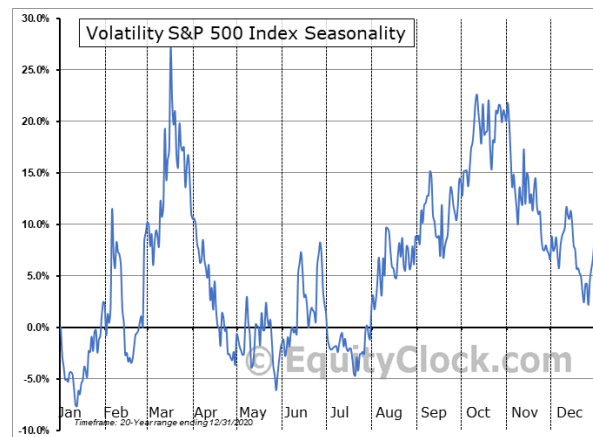
Holiday schedule observed by the Federal Reserve

Holiday	2021	2022	2023	2024	2025
New Year's	January 1	January 1	January 1	January 1	January 1
MLK Day	January 18	January 17	January 16	January 15	January 20
Presidents'	February 15	February 21	February 20	February 19	February 17
Memorial Day	May 31	May 30	May 29	May 27	May 26
Juneteenth	June 19	June 19	June 19	June 19	June 19
Independence	July 4	July 4	July 4	July 4	July 4
Labor Day	September 6	September 5	September 4	September 2	September 1
Columbus	October 11	October 10	October 9	October 14	October 13
Veterans Day	November 11	November 11	November 11	November 11	November 11
Thanksgiving*	November 25	November 24	November 23	November 28	November 27
Christmas	December 25	December 25	December 25	December 25	December 25

*Thanksgiving includes a half day off on the following Friday

As shown in the figure below, the net effect of reductions in volume and market participation in this window is ultimately dramatically less volatility. As with the Hopi's

perception of time, a placid time without volatility, when taken in the context of a linear, Gregorian calendar, has the effect of reducing market time even more than the actual market holidays.

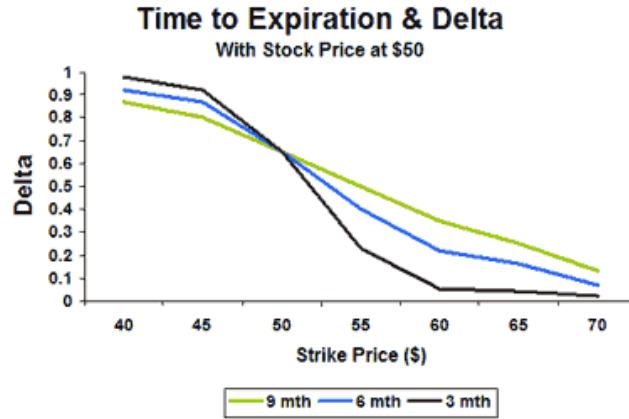


This seasonal compression of time and volatility is ultimately the key factor that underpins mid-November to mid-January equity outperformance. It has several transmission mechanisms that ultimately lead to higher returns during this period.

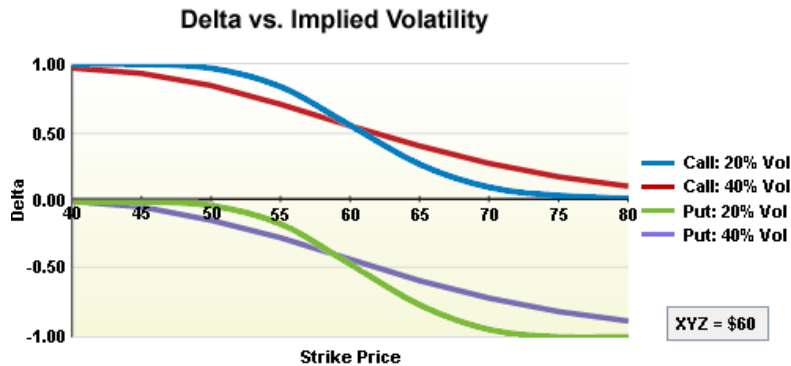
First, the shorter time and volatility directly reduce the probability of downside risk in the market place. This reduces the price of market “insurance” making it easier for participants to hedge, driving more leverage and “risk on” during this period. This support in market ultimately drives even more implied volatility compression, creating a circular “positive feedback loop.”

Even more important, is the actual direct equity demand driven by derivative contracts and structured products that are constructed with Gregorian expiration calendars in mind. Both the shorter time (charm) and lower volatility (vanna) directly reduce the probability (delta) of these hedges being in-the-money. Seeing as investors are long assets and implicitly hedge their downside exposure, market-makers and banks, the insurers underwriting these hedges, are essentially always net short put options and net long call options. As explained below, this lopsided positioning has the effect of accelerating significant buyback of short equity hedges by these “dealers” during this window of implied volatility and time compression. This effect has become particularly important in recent years, given that option and structured product notional volumes now exceed underlying equity demand in markets.

Options Charm – measures delta change for a given change in linear time. As out of the money put options decay, dealers have to buy back stock they have been short as a hedge against this positioning. As you can see in the chart below, as time passes an option's delta changes. Each day that passes, out of the money put options require less delta hedging and the dealer must buy back more shares.



Options Vanna – measures delta change for a given change in implied volatility. Short puts and long calls have positive vanna. As out of the money put option implied volatility declines, dealers are forced to buy back stock they have been short as a hedge against this positioning. As you can see in the charts below, as implied volatility declines the hedging requirements change. Seeing as dealers are short market puts & long calls, you can see that the out of the money delta moves toward zero as implied volatility drops. Therefore dealers must buy the market as implied volatility declines.



Lastly, many liquidity providers back away from markets altogether at the end of the year, as they close their books for the year and reduce risk limits. This makes for an illiquid backdrop for these positive equity flows, with limited supply available to counteract the surge in underlying demand. Ultimately, this dynamic serves to reinforce the underlying positive price momentum, creating an even bigger market surge during

this time of the year. These circumstances serve as the foundation of the old market adage, "Never short a dull market!"

As if this reflexive dynamic tied to broad compression of linear time and probability were not enough, during this period, seasonality is exacerbated by several other reinforcing factors. The volatility compression that occurs during this period is most concentrated over the Thanksgiving and Christmas holidays. Both of these holidays, uniquely, follow the week of options expiration. As seen in the figure below, this week of the option and structured product expiration cycle is historically the most dangerous period for markets. This tends to be the case because it represents a period of less supportive vanna and charm flows (as explained above) as well as follows the expiration of institutional hedges tied to these monthly contracts. Compressed implied volatility during these windows of accentuated market risk, help to subdue volatility, during what would normally be the most dangerous weeks of the monthly expiration cycle.



Last but not least, beginning of the year flows tend to play a significant reinforcing role as well when annual market returns are positive. This is the case in approximately 75% of rolling annual returns. There are nearly \$50 trillion in domestic public equities, \$100 Trillion global public equities and nearly \$500 Trillion in total long assets. The majority of these assets are illiquid and only provide liquidity on monthly, quarterly or annual intervals. The reinvestment of profits generates significant positive flows in these positive years that are concentrated around the first of the month, quarter and year. Market participants historically get out in front of these flows in the final days of the preceding month. At no times are these positive flows more important than in the last and first days of the year. When the S&P 500 has already seen solid gains, the final six

sessions tend to be positive. Since 1980, there have been 10 instances where the S&P 500 was up 20% or more going into the last stretch of trading and in nine of those years, it ended the final six days higher.

Though the risks of this period are significantly diminished by all of these powerful forces, positive outcomes during this seasonal period are obviously hardly guaranteed. Though this understanding serves to justify the “risk on” positioning during this supportive period, maybe its greatest value is using the period as a barometer for market health. After all, what relative strength in this important period says about the state of market health given the overwhelming underlying strength is important. This has instinctively been known by market technicians for decades and breathes new meaning into the adages, *“If Santa Claus Should Fail to Call, Bears May Come to Broad & Wall,”* and *“As Goes January, So Goes the Year.”*

At no time is this understanding more important than at this critical market crossroads. We sit on the back end of a 111% rally from the March 2020 low, with an almost 30% annual return YTD and the Federal Reserve accelerating its path of tapering monetary policy to counteract increasing inflation. Despite this we continue to be risk on during this overwhelmingly positive seasonality. That said, we are systematically observing the internals and momentum of this market in this critical window of time, testing the vital signs and pulse of the market. Momentum was weak in late November and we sit prepared, aware that continued weakness in the context of the season’s compressed time and volatility speaks loudly about what lays ahead.

Happy Holidays!



Cem Karsan

Managing Partner / CIO
Kai Volatility Advisors

A handwritten signature in black ink that reads "Cem Karsan". The signature is fluid and cursive, with a long horizontal stroke extending to the right.

As always, these longer-term macro views only represent a small portion of the factor inputs used in our models for predictive distributions for underlying market moves and implied volatility. Our models are focused on capturing daily moves and in the immortal words of Bruce Lee are always focused on not being dogmatic, instead being flexible,

“...formless, shapeless, like water.”



CONTACT US: If you have any questions, concerns, or need any information please feel free to reach out to us at any time by contacting ir@KAIvolatility.com

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