SWAN GLOBAL INVESTMENTS

The Vanishing VIX:

Implications of Low Volatility on the Market and the DRS

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CONTENTS

REVISIONS

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INTRODUCTION

The purpose of this document is to continue exploring the surrounding landscape and the changes to the financial markets that could or are currently impacting the Defined Risk Strategy (DRS). This paper will discuss new financial concepts and theories and will focus mostly on volatility related matters and their impact on the DRS.

There has been an extreme amount of attention placed on simple volatility metrics and this study attempts to assist the reader in going "beyond." In ascertaining other topics that either directly or indirectly impact the volatility spectrum, readers will acquire a more comprehensive understanding through an integrated approach. The DRS has and will survive the test of time, but it is critical to examine and have a thorough understanding of the constantly evolving markets to fully understand how the DRS works in all environments.

EXECUTIVE SUMMARY

This analysis will tackle some of the developments facing the financial industry with specific focus on market dynamics and the drastic change in volatility over the last year that continues to baffle many investors. First, a review of the current risk premia levels will be provided followed by a discussion on risk parity products and their imprint on volatility-based strategies. Second, there will be a section discussing whether shorting options for yield enhancement has become a "crowded" trade. Third, a framework for why volatility has decreased will be hypothesized by examining equity correlations. Fourth, an in-depth assessment of skew will be presented and its significance as it relates to the income component of the DRS. Finally, new metrics will be introduced that can be used to gauge market volatility beyond simply relying on the Chicago Board Options Exchange (CBOE) VIX calculation. Even though Swan is continuously tasked with adapting to a changing landscape, there is no question that Swan Global Investments is up to the challenge and is constantly exploring every conceivable advancement to remain the current and future preeminent leader in hedged equity and option-based strategies.

"*There are three principal means of acquiring knowledge…observation of nature, reflection, and experimentation. Observation collects facts; reflection combines them; experimentation verifies the result of that combination.*" – Denis Diderot, 1745

RISK PREMIA REVIEW

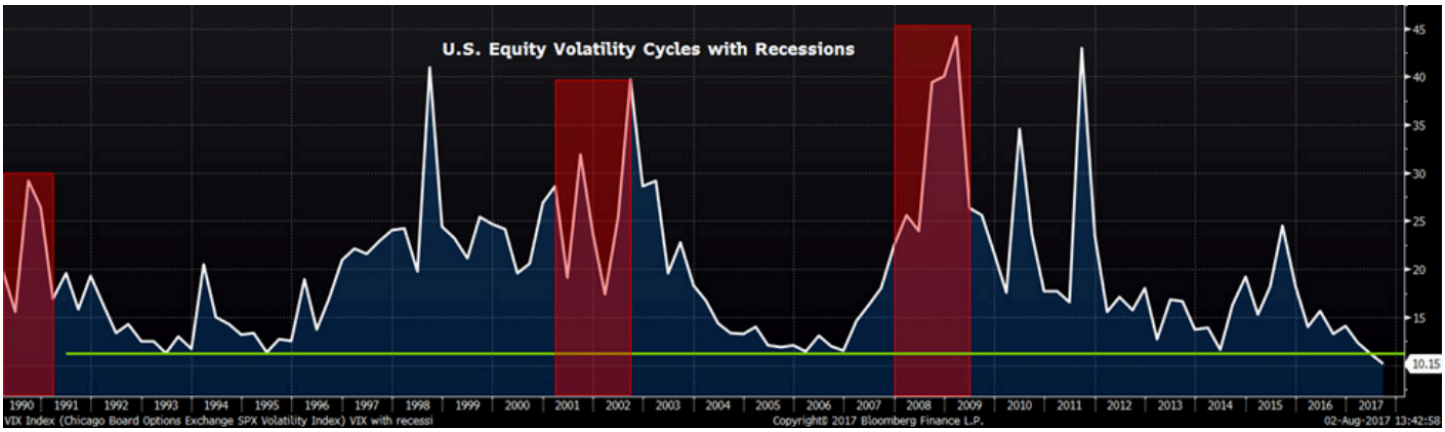
World markets have had an impressive run recently posting one of the best bull runs since 2009. The move up in world markets in and of itself is not a harbinger for impending catastrophe. Nonetheless, both implied and realized volatility has been suppressed as confidence in asset prices remains high. This begets the question, has this affected the risk premia and the ability to harvest option premium? Risk premia refers to the phenomenon that option-implied volatility tends to exceed realized (historical or actual) volatility over time. As can be seen from the graph below, 20-day (trading days) historical volatility of the Standard and Poor's 500 (SPX) remains near 10-year lows. However, historical volatility has been at these levels before and is nothing new. It is these low levels that makes premium harvesting strategies profitable.

SPX Historical Volatility

Source: Bloomberg

A risk premia exists in option prices because markets are continuously overpricing corresponding underlying movements. Moreover, the difference suggests that the severity and frequency of extreme events, historically, actually occur less than what implied option volatility indicates. The risk premia can cycle depending on if market participants are in "risk-on" or "risk-off" mode. More specifically, the market's movement or potential for movement, is directly related to option implied volatility and thus directly related to the level of risk premia. As stated previously, an important fact about the current volatility environment is that we have been here before. Remember, volatility cycles between periods and the VIX experienced bouts of low volatility in 2005 and 2006 while the DRS income component produced positive returns. All market cycles undergo some degree of change either through external stimuli or simple evolution.

Volatility and Recessions



Source: Bloomberg

The VIX recently set an all-time low at 8.84 breaking a 24-year old record at 8.89. Even though the VIX in absolute terms may be "low" by historical standards, it does not translate directly to a lower risk premia. Ultimately, the key component is the relationship between option implied volatility and realized volatility. If the stock's realized volatility remains lower than what is implied, then harvesting premium strategies should still produce positive results in theory. As of June 30, 2017, the 10-year daily spread between the VIX and SPX historical volatility was nearly in the 60th percentile. Meaning, that over the last 10 years, 60% of the observations were below where the difference between current implied and historical volatility resides. This can hardly be interpreted as an "unhealthy" risk premia environment.

When option implied volatility rises dramatically, it does so for a reason. That reason is because the underlying index is moving in a way that was not anticipated via the option markets. It is under these circumstances when harvesting premium can be challenging. One should not misinterpret the current volatility environment and this is by no means a recommendation to sell volatility ad nauseum. It is however, a historically good environment to harvest premium through sound and time-tested risk management techniques that do not underestimate the potential downside risks and that exert caution when warranted.

The following table shows data (as of 6/30/2017) for the CBOE volatility indices in the following products: SPX, NDX, RUT, EEM, EFA, and GLD.

RAW VOLATILITY (daily closing data)

	VIX Since Inception	VXN Since Inception	RVX Since Inception	VXEEM Since Inception	VXEFA Since Inception	GVZ Since Inception
Mean	19.53	25.97	24.54	24.10	16.46	20.79
Median	17.65	20.61	21.54	22.72	16.11	18.80
Mode	12.42	15.16	22.34	28.29	15.54	18.65
Standard Deviation	7.85	13.97	9.70	7.27	3.74	7.70
Sample Variance	61.65	195.11	94.14	52.79	14.00	59.31
Kurtosis	7.72	2.02	7.39	4.75	2.64	6.02
Skewness	2.11	1.63	2.41	1.89	1.20	2.21
Range	71.55	72.18	73.59	50.82	28.67	54.36
Minimum	9.31	10.31	13.67	13.28	7.57	10.16
Maximum	80.86	82.49	87.26	64.10	36.24	64.52

	VIX: 1 year	VXN: 1 year	RVX: 1 year	VXEEM: 1 year	VXEFA: 1 year	GVZ: 1 year
Mean	12.62	14.56	17.57	19.36	13.91	14.81
Median	12.25	14.33	17.46	19.29	13.35	14.97
Mode	12.02	12.31	18.04	20.53	12.87	12.41
Standard Deviation	2.03	2.10	1.89	3.12	2.62	2.35
Sample Variance	4.12	4.39	3.58	9.75	6.87	5.51
Kurtosis	4.14	1.44	1.67	0.36	-0.33	0.03
Skewness	1.63	0.90	0.88	0.63	0.39	0.33
Range	12.76	12.72	11.50	15.93	13.30	13.09
Minimum	9.75	10.31	13.78	13.28	7.57	10.16
Maximum	22.51	23.03	25.28	29.21	20.87	23.25

Source: TradeStation

A low VIX does not automatically equate to a lower risk premia nor does it automatically equate to a poor option income producing environment. The daily closing historical average (since 1990) of the VIX has been slowly declining and now stands at 19.5. Many perceive that volatility is a mean reverting product, and this assumption is correct. The problem lies in the time frame of the expected mean reversion. To say the VIX should mean revert towards its long-term average is simply incorrect. The VIX will trade correspondingly to levels of historical volatility, more specifically, the actual movement of the stock or index. The VIX is calculated using option prices that are 30 calendar days out (https://www.cboe.com/micro/vix/vixwhite.pdf). Every new data point is simply added to the existing inventory. As the inventory grows, data from the past has less predictive value for the future. If markets have evolved and are much more sophisticated today, then what is the value of using "old" data from a decade or two ago? If information is more readily available today, we should expect the VIX to move more in sync with expected movements of the underlying and relying on legacy or heritage data can be misleading. That said, because of the basic risk-reward parameters of options, the risk premia will always be present in some form or fashion. There may be times when a stock or

index moves more than the anticipated movement as disseminated through option prices but this does not negate the overall existence of future risk, because in essence, the risk premia is an attempt to predict the risk in the future and that unknown cannot be quantified at any given point in time. Volatility is not fear, but rather a measurement of supply and demand manifested through the actions of market participants though active buying and selling.

The following table shows data (as of 6/30/2017) for risk premia in the following products: SPX, NDX, RUT, EEM, EFA, and GLD.

RISK PREMIA (daily closing data)

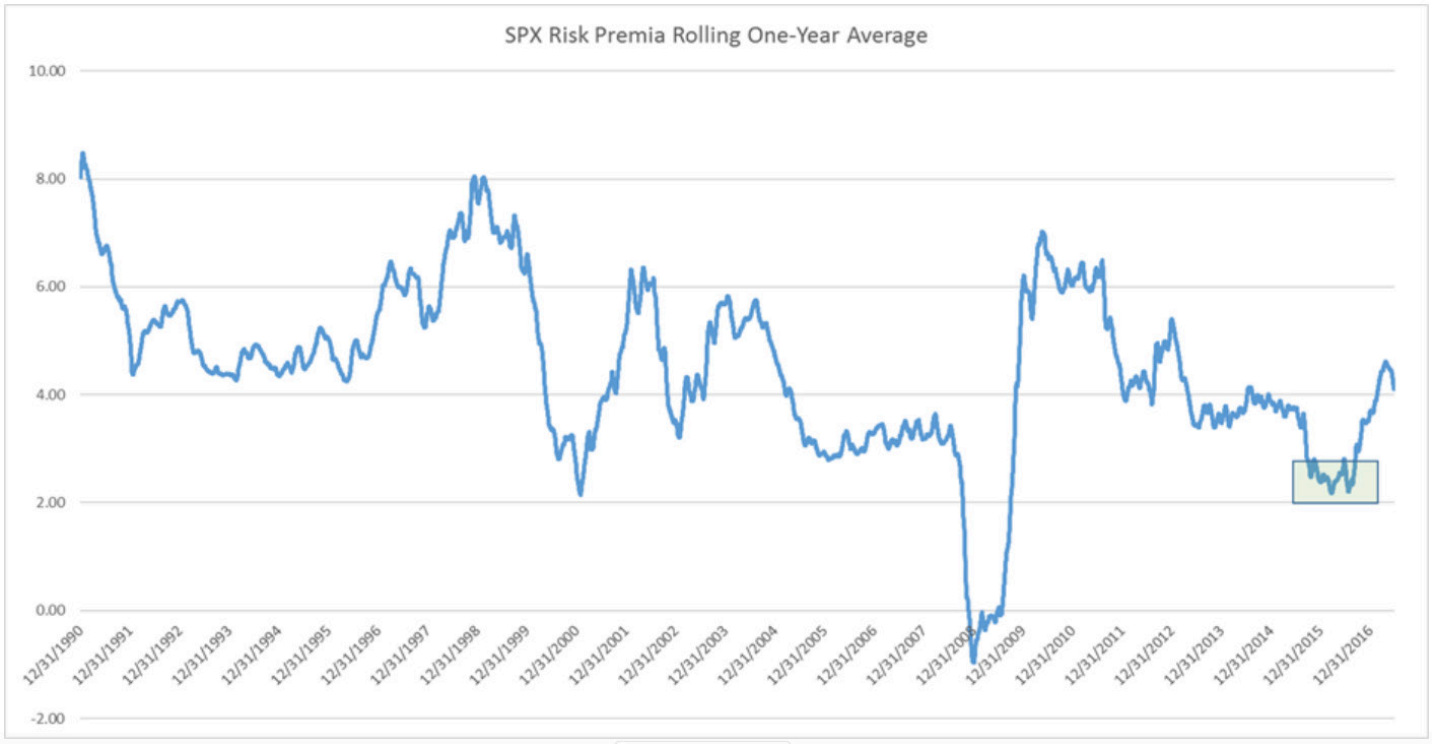
	VIX Since Inception DIFF: 1/2/1990	VXN Since Inception DIFF: 2/2/2001	RVX Since Inception DIFF: 1/2/2004	VXEEM Since Inception DIFF: 3/16/2011	VXEFA Since Inception DIFF: 7/1/2013	GVZ Since Inception DIFF: 8/4/2008
Mean	4.57	4.60	3.90	4.47	2.79	3.67
Median	4.70	4.29	4.33	4.60	3.49	3.73
Mode	3.68	6.61	4.13	4.11	4.48	0.03
Standard Deviation	4.14	5.55	4.78	4.76	4.80	4.10
Sample Variance	17.13	30.75	22.82	22.66	23.03	16.82
Kurtosis	6.38	3.80	7.47	2.92	10.08	3.80
Skewness	-1.02	0.19	-1.70	-0.36	-2.23	-0.79
Range	58.95	65.24	48.18	49.58	41.31	37.16
Minimum	-33.77	-28.12	-27.85	-17.49	-23.38	-19.00
Maximum	25.18	37.12	20.33	32.09	17.93	18.16

	VIX DIFF: 1 year	VXN DIFF: 1 year	RVX DIFF: 1 year	VXEEM DIFF: 1 year	VXEFA DIFF: 1 year	GVZ DIFF: 1 year
Mean	4.17	4.15	3.13	3.34	2.42	3.03
Median	4.69	4.93	3.61	4.05	3.71	2.98
Mode	4.70	1.42	2.97	8.59	6.42	3.51
Standard Deviation	3.53	3.70	3.62	4.95	7.02	2.71
Sample Variance	12.46	13.73	13.13	24.52	49.23	7.32
Kurtosis	2.89	1.46	3.31	1.42	6.54	2.72
Skewness	-1.02	-0.97	-1.18	-0.93	-2.42	-0.01
Range	23.04	20.36	22.53	27.77	36.94	19.03
Minimum	-7.13	-7.04	-9.15	-12.08	-23.38	-5.26
Maximum	15.91	13.32	13.38	15.69	13.56	13.77

Source: TradeStation

The Standard and Poor's 500 (SPX) risk premia had been steadily declining since 2009, but a "double-bottom" was observed in March and July of 2016 (highlighted). This indicated a higher than normal probability that risk premia levels would begin to increase again. At the end of 2015, rolling average one-year risk premia levels were hovering near 2. Since then, they have moved up closer to their historical average and ended the second quarter of 2017 just north of 4.

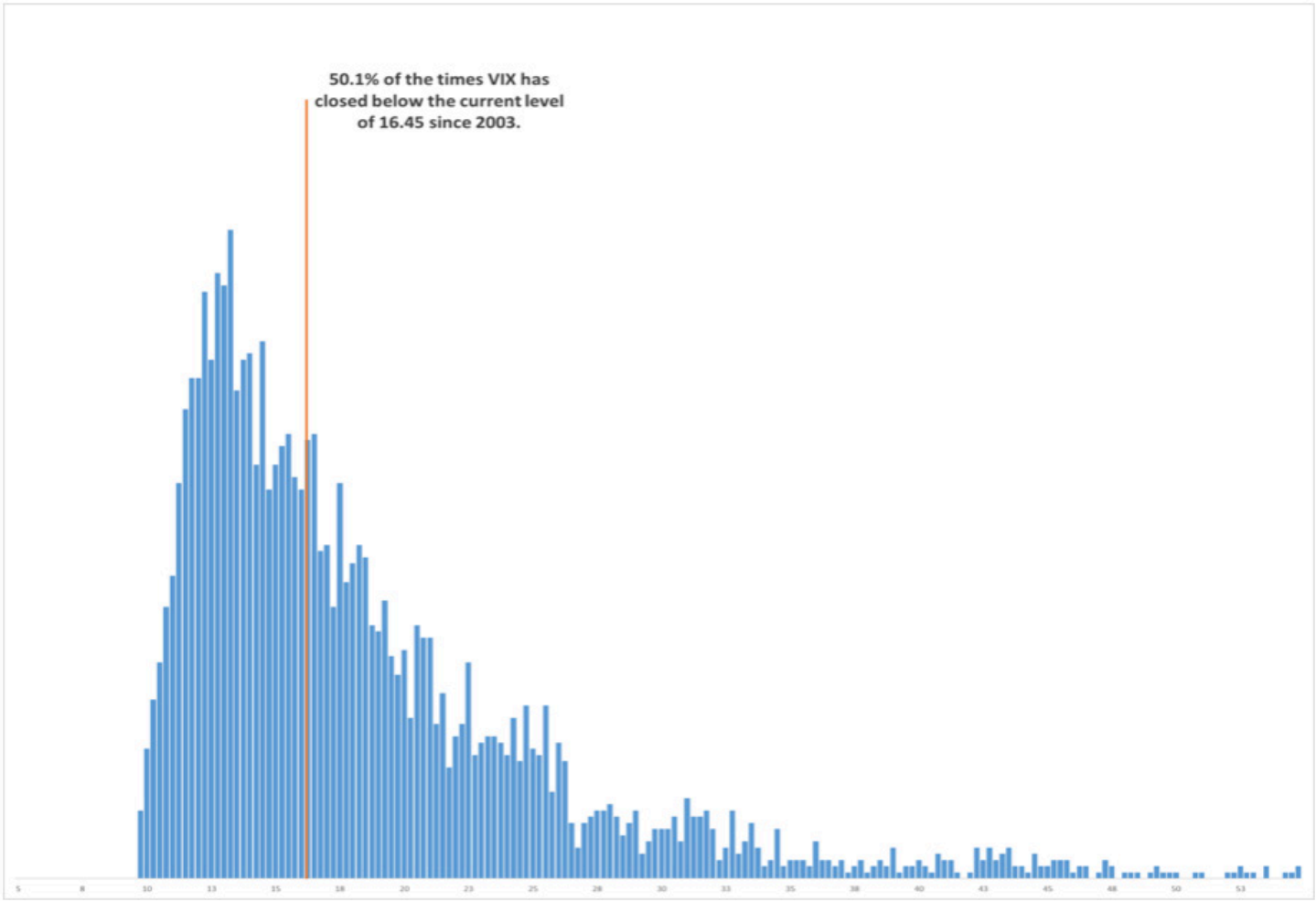
SPX Risk Premia One-Year Average



Source: TradeStation, Swan Global Investments

Since 2003, the VIX has closed approximately 50% of the time below 16.45 and half of those occurrences have been under 13.5. When dissecting a historical return histogram, normality is not present in neither daily nor weekly observations. There are simply too many outliers or extreme values in the data to support a normal distribution. Therefore, it is important when assessing data to also look at the mode, or the number of observations in a numerical bucket (traditionally defined as the value that appears most frequently). By employing this approach, a VIX in the 12-13 range is not surprisingly "low." The DRS' income component has actually performed best in a VIX range of 12-18, again much lower than the too often quoted historical average. This zone seems to be the "sweet spot" area between implied and realized volatility where maximum premia harvesting can be more effectively attained over the long run. Environments above or below 12-18 can still be profitable, but likely more challenging or at least more volatile over time in capturing the risk premia.

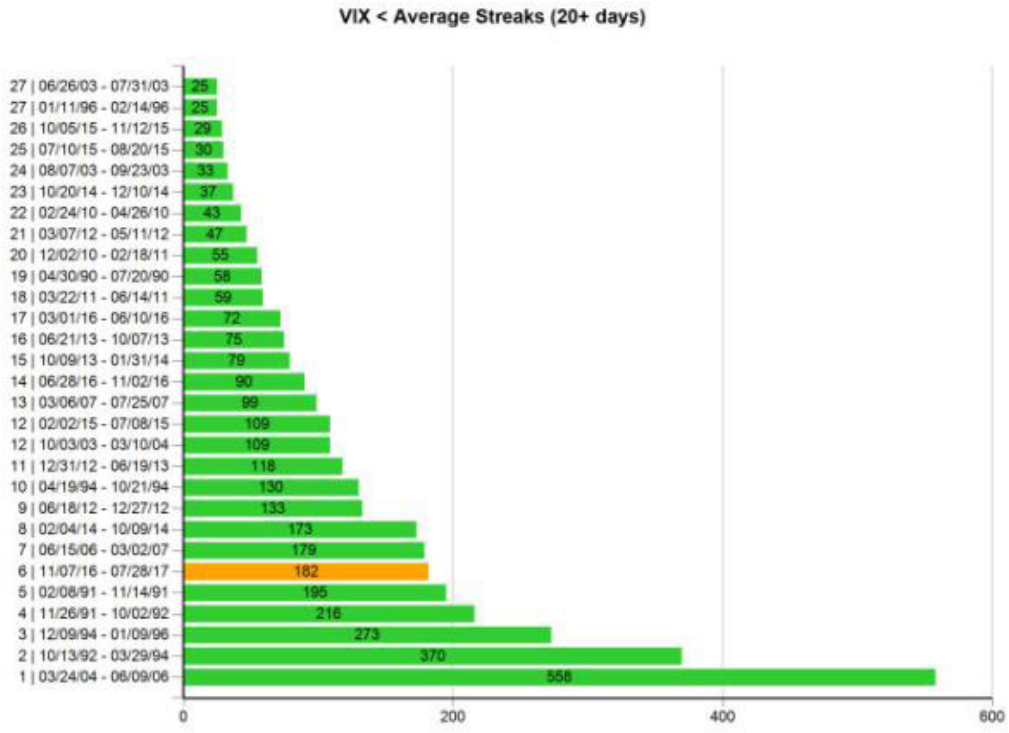
VIX Occurrences Since 2003



Source: TradeStation, Swan Global Investments

Without question volatility levels have been muted recently and one must now ask: How long will it last? The current streak of no VIX closes above 20 is only the sixth longest in history. The longest one occurred between 2004-2006 and lasted 558 days. Another notable period was between 1991 and 1996 when central banks were also accommodative in a pro-business environment. Going back to 1928, comparable low volatility (historical) periods have had a median length of 15-16 months (Goldman Sachs, 2017) and there were several periods that lasted more than three years. Thus, it is plausible that the current volatility regime extends further in time. A break of the "new normal" will be dependent on increasing leverage and interest rates and a reduction of central bank balance sheets.

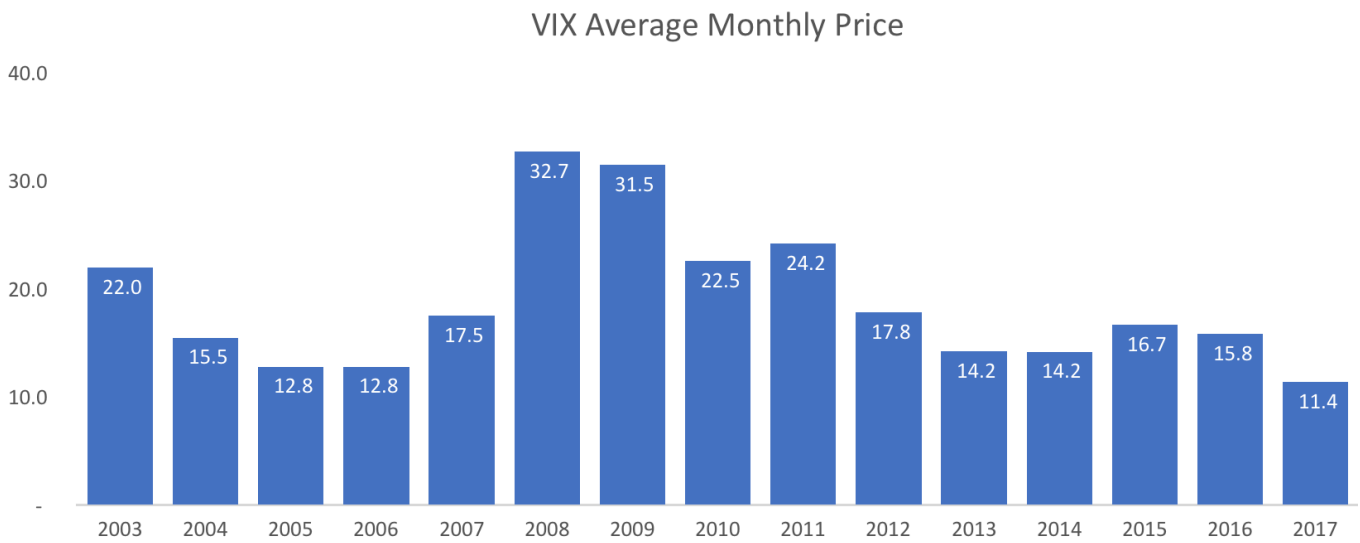
VIX Streaks



Source: VIXCONTANGO

Thus far in 2017, the monthly average of the VIX is on pace to be the lowest in 15 years, yet short premium strategies have still been doing relatively well during the year.

VIX Monthly Average

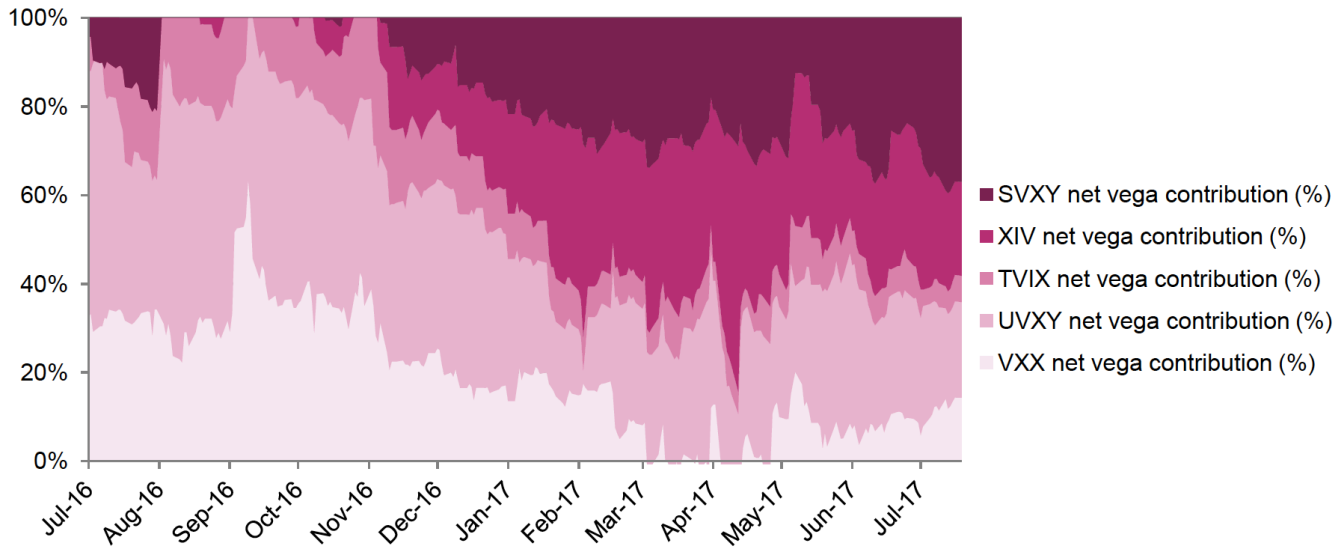


Source: TradeStation, Swan Global Investments

SYSTEMATIC STRATEGIES

Speculative positions in short VIX futures and an increasing trend towards higher leverage may exacerbate future spikes in volatility. Aggregate net vega in VIX ETNs is at an all-time high according to Société Générale (August 2017). Funds that manage short gamma exposures usually rebalance their risk daily. The rebalance process could contribute to sizeable spikes in short-term option volatility. In other words, when volatility increases, short volatility ETNs must reduce their exposure by purchasing volatility. This in turn drives volatility higher rather quickly and explains why we have been noticing an increase in VIX spikes. For instance, the current low volatility climate has produced 3 of the top 20 daily VIX (since 1990) spikes in 2017 (close to close) and 2 of those are in the top 10. In fact, 40% of the largest VIX spikes have occurred during the 2015-2017 period.

VIX ETNs Contribution to Total Vega Exposure

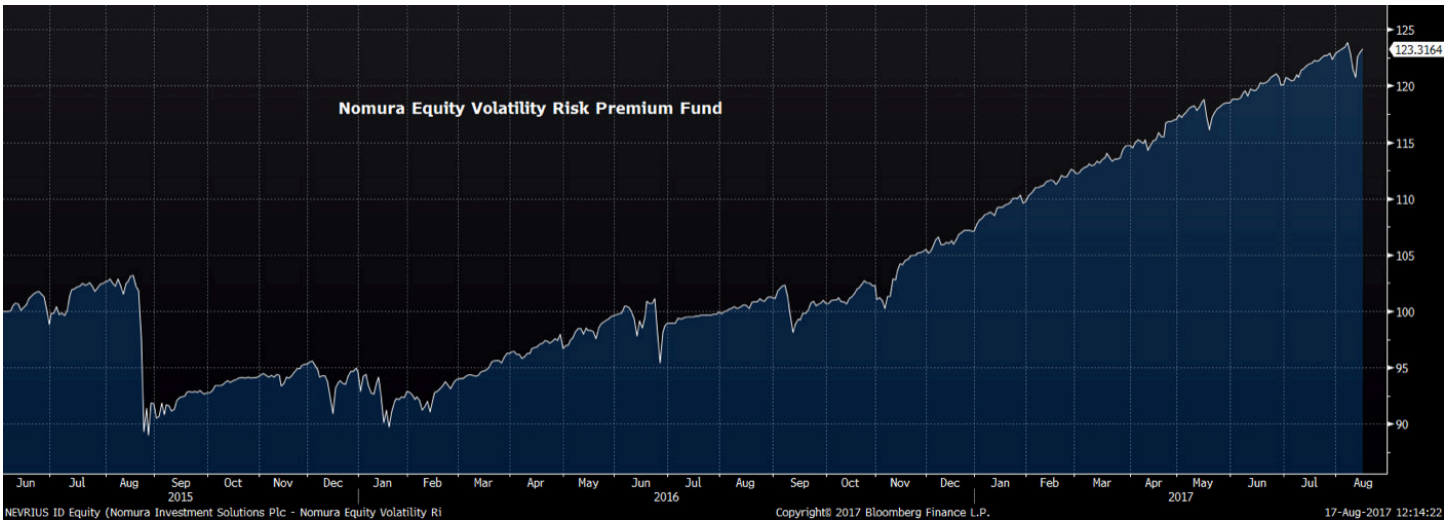


Source: SocGen

Systematic strategies such as risk parity, volatility targeting, machine learning, and exchange traded products all create a "shadow gamma," or short convexity. These strategies can create feedback loops that must coordinate the effects between long/short option gamma and trigger rebalancing derived from volatility, spot prices, and correlation among assets. If a "super-spike" were to occur in the VIX, it could have catastrophic consequences for such products as thresholds are surpassed forcing the unwinding of positions. Furthermore, risk control strategies attempt to maintain a targeted or constant volatility and are forced to sell assets when volatility increases to maintain their targeted volatility exposure, which in turn contributes to heightened volatility.

The short volatility trade, as measured via inverse VIX and volatility-linked products, is on track to have one of its better performance years. The Nomura Equity Volatility Fund is just one example of a short volatility fund that has posted excellent performance over the last two years. At this stage, it is doubtful that this kind of performance can continue for too much longer. The volatility of volatility would need to remain subdued and now only mild pull backs in the market can create substantial spikes in the VIX.

Nomura Risk Premium Fund



Source: Bloomberg

As previously mentioned, speculative short VIX future positioning is near all-time highs which could usher in a wave of short covering and thus contribute to the acceleration of a VIX spike. Even small point moves in the VIX now represent large percentage changes that can create challenges for VIX based funds.

VIX Futures Non-Commercial Net Total/Futures Only

Source: Bloomberg

OVERCROWDED TRADE

The Federal Reserve continues to promote its "goldilocks" environment while snuffing out market volatility. Low interest rates are the equivalent to an invitation to sell volatility. If you want to attend the "party," there is no shortage of volatility products available to anyone that wants to soak their toes in the water. Most products are packaged and sold as "robotic" approaches to harvesting risk premia. These products attempt to profit from several aspects of volatility: term structure, risk premium, aggregates, momentum, speed, and exposure.

The mean reverting aspect of trading volatility has contributed to this strategy's popularity, which has been increasing since 2009. Muted stock market declines and the evaporation of volatility has lured many into the volatility game creating overconfidence that stocks are destined to trend higher infinitum. The simple mantra of "buy-the-equity-dip" and "sell-the-vol-spike" has changed the dynamics of the VIX. Central banks have been the catalyst driving risk expansion and the era of violent unwinds of positions. Even though we may be more exposed to volatility spikes, the opposite is also true because of the increased competition in the short volatility space. The table below shows the largest volatility "crashes." The top 10 observations are all post 2009. The lone observation thus far in 2017 started from the lowest "Start" level (15.59) of any of the top 20 observations.

Volatility Index (VIX): Largest 4-Day Declines (1990-2017)

Rank	Start Date	End Date	Start	End	% Change
1	6/24/2016	6/30/2016	25.76	15.63	-39.3%
2	12/28/2012	1/4/2013	22.72	13.83	-39.1%
3	10/15/2014	10/21/2014	26.25	16.08	-38.7%
4	6/27/2016	7/1/2016	23.85	14.77	-38.1%
5	8/24/2015	8/28/2015	40.74	26.05	-36.1%
6	12/16/2014	12/22/2014	23.57	15.25	-35.3%
7	11/3/2016	11/9/2016	22.08	14.38	-34.9%
8	5/7/2010	5/13/2010	40.95	26.68	-34.8%
9	11/4/2016	11/10/2016	22.51	14.74	-34.5%
10	7/9/2015	7/15/2015	19.97	13.23	-33.8%
11	1/15/1991	1/21/1991	36.16	24.33	-32.7%
12	11/20/2008	11/26/2008	80.86	54.92	-32.1%
13	8/19/1991	8/23/1991	21.19	14.41	-32.0%
14	7/8/2015	7/14/2015	19.66	13.37	-32.0%
15	10/29/2008	11/4/2008	69.96	47.73	-31.8%
16	**5/17/2017**	**5/23/2017**	**15.59**	**10.7**	-31.4%
17	3/16/2011	3/22/2011	29.4	20.21	-31.3%
18	7/23/2002	7/29/2002	44.92	31.33	-30.3%
19	1/14/1991	1/18/1991	36.2	25.39	-29.9%
20	10/15/2013	10/21/2013	18.66	13.16	-29.5%

Source: Pension Partners

Since 2009, total call and put volume on the SPX has been steadily increasing. However, according to the Options Clearing Corporation (OCC), open interest has been flat. Both single stock and ETF volumes and open interest have also been rather flat since 2009. Therefore, if short premium strategies were beginning to become overcrowded, one would expect a rise in open interest. However, that has not materialized. Granted, there are many ways to achieve short volatility exposure, but from a plain-vanilla options perspective, there is no indication that shorting index premium has become overcrowded.

CORRELATION

In concurrence with a tectonic shift into passive funds (buy and hold), cross-asset volatility has declined this year driven predominantly by quant flows, sector and thematic trading. In fact, passive and quantitative investors account for approximately 60% of equity assets as opposed to less than 30% ten years ago (J.P. Morgan 2017). Passive investors rarely sell and quantitative strategies are less reactive to market moves as they characteristically limit directional bets. Moreover, the less active managers the fewer trading counterparties available for trading desks and market-makers. Think of it simply as "less poker players at the table."

The MS Global Correlation Index dropped precipitously at the end of 2016 signaling the descent in volatility across asset classes. The Index is still not at levels seen in 2005-2006 and thus there may be further declines ahead. If correlations remain low, then one can expect lower overall volatility.

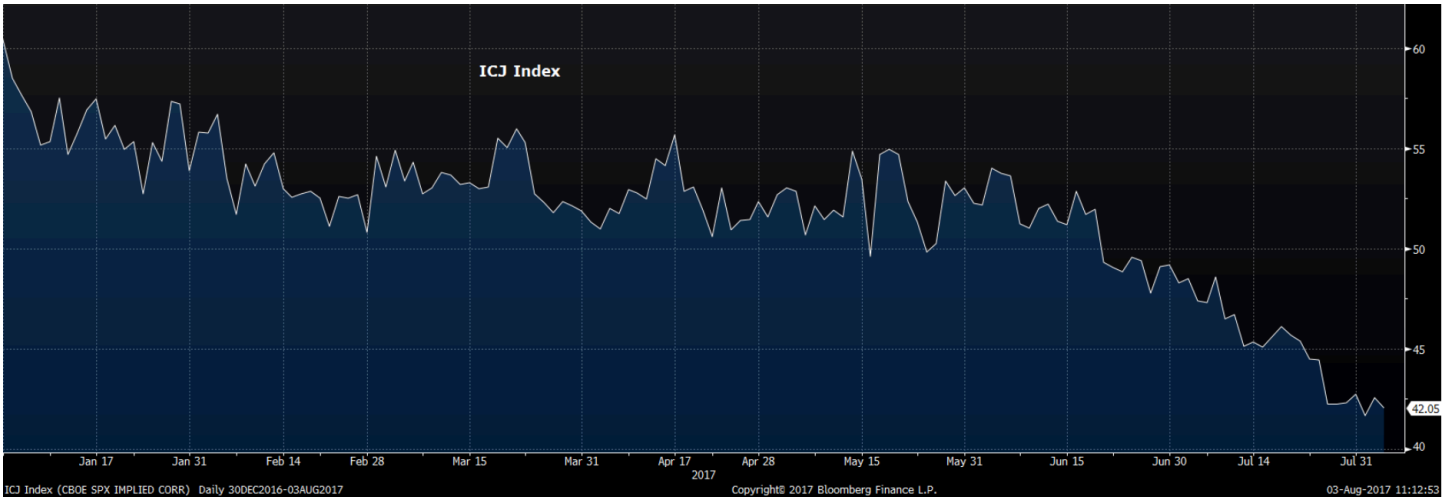
MSGC Index

Source: Bloomberg

Domestically, the S&P 500 Index implied correlation index (ICJ Index) continues to drop. The index calculates the expected average correlation of price returns on the 50 largest companies in the SPX via options with January 2019 expiration dates. This is the "longer" part of the volatility curve and the reason why volatility in back months, or longer dated maturities, has been declining. It is not appropriate to equate short-term volatility movements with longer-term volatility. While the VIX can be very reactive, long-term volatility is less sensitive to short-term events and more susceptive to structural shifts. These structural shifts can occur because of differing phases in

the business cycle (weakness in economy or slow-down in corporate earnings), or as in the case today, asset correlations dropping. In short, index volatility is a function of single stock volatility and if single stock correlations remain muted, this translates into lower index volatility.

ICJ Index



Source: Bloomberg

Consequently, the cost of hedging a portfolio has been reduced to at or near ten-year lows. Even so, many portfolio managers are electing to forego hedging in a feeble attempt to add "alpha," ignoring the possibility of systemic market declines. The overvaluation of stocks reduces future expected returns making it difficult for portfolio managers to use capital for hedging purposes. The decision to not hedge, or reduce hedging activity has had an impact on volatility simply because there are less buyers of option premium. Short-term hedging can be utilized, however, if the catalyst of the event does not take hold, portfolio managers quickly cut the hedges which in turn contributes to the drastic moves experienced in short-term volatility.

IMPACT OF SKEW

Volatility is a random variable that is a function of underlying price movements and is neither known ahead of time nor is it constant. Options allow you to protect yourself and profit from down moves in the short-term that otherwise would have resulted in a loss if you simply elected to hold long stock. However, many people do not want to pay for this protection and thus fund downside put purchases by selling upside calls (zero-cost collar), or they simply sell upside calls against long stock to enhance overall returns in a sideways market. Historically, downside movements have been much greater and faster than movements to the upside. The tendency to purchase downside protection when markets move down is much greater than the tendency to purchase upside calls when the market moves up. This has created what we call the volatility skew which places additional premium to downside risk.

The relationship between downside put strikes and upside call strikes continues to steepen as the market steadily pushes higher. Currently, the number of SPX upside calls one can purchase versus selling downside puts (equal % from spot) is at one of the highest ratios in 5 years. The

shorter the maturity, the better the ratio. However, even structures that are 6 months out still show attractive ratios. The structure of the DRS' income component is impacted by the relative levels of skew in the marketplace. Consequently, the increased skew places a higher probability of risk premia capture towards downside strikes vis-à-vis upside strikes.

ALTERNATIVE RISK METRICS

Contrary to popular belief, the VIX does not measure fear nor does it represent a viable sentiment for risk in the marketplace. The "fear" factor has now moved towards VIX options and the convexity offered from upside strikes. In recent months, there have been massive buyers of upside VIX calls and VIX call spreads which has had a dampening effect on SPX option volatility. Phrased differently, a shift has occurred from portfolio managers using SPX options to directly hedge their portfolios to using VIX calls to hedge increases in volatility.

The VIX is not broken because it continues to measure what it was always designed to measure. However, the reliability of the VIX as a predictor of future market movement has suffered in recent years and many incorrectly interpret this as that it simply does not work anymore. Again, this is due to the multitude of factors that have changed the investment landscape, especially with respect to volatility. If anything, the VIX can be used as a barometer as to how much portfolio insurance is being purchased via SPX options. Insurance can be purchased for protecting downside market movements or upside movements, the latter in the attempt to participate with market gains. We are simply in what is known as a "soft market" for portfolio insurance where premiums are historically on the lower end of the spectrum.

Unfortunately, the VIX has donned a reputation that it should accurately measure the risk in the marketplace and serve as a "one stop shop" indicator. The intertwined relationships in the financial markets today requires a deeper assessment of volatility and the potential risks that may be on the horizon. There are other metrics that can be incorporated to better reflect the state of volatility.

1. CBOE SKEW Index - This index measures SPX tail risk, or moves that are outside two standard deviations. It does not measure skew in the traditional sense that option traders and market makers are accustomed to but approaches it from a statistical perspective. When SKEW increases, it shows there is more demand for very out of the money options and better reflects the markets perception of tail risk (https://www.cboe.com/products/vix-index-volatility/volatility-indicators/skew).

2. Global Financial Stress Index (GFSI) - Introduced by Bank of America Merrill Lynch, this index not only considers hedging demand but also cross market measures of risk and investor flows in the global financial system. This is a more robust indicator that incorporates global credit, equity, interest rates, forex, and commodity markets. Used as an indicator, it can aid in detecting turning points in the market place.

3. MOVE Index - The Merrill Lynch Option Volatility Estimate MOVE Index calculates a weighted index of implied volatility on 1-month Treasury options. Equity and Treasury option volatility do not behave in the same fashion. The equity market may at times discount the effects of inflation, deflation, and government debt, but Treasury yields cannot ignore this and option implied volatility can reflect this. Essentially, the MOVE Index is the bond market's "VIX."

4. Credit Suisse Fear Barometer - This indicator measures investor sentiment by pricing 3-month zero-cost collars. The collar begins by selling a 3-month 10% out of the money call and using the proceeds to purchase an out of the money put with the same maturity. The distance between the underlying spot price and the out of the money put is used to calculate the index. The higher the reading, the higher the cost of downside protection relative to out of the money calls.

As the concept of volatility as an asset class has taken hold over the years, new entrants in the volatility measuring space have emerged. Bats Global Markets introduced the T3 SPY Volatility Index (SPYIX) which calculates an index using the SPDR S&P 500 ETF (SPY) and is very similar to the VIX's methodology. Nations VolDex (VOLI) also uses SPY options in its calculation but instead of using a strip of options, it only focuses on at the money options thus eliminating the skew and kurtotic properties inherent in option pricing. Both measurements have extremely high correlations to the VIX and the claim that they provide "better" volatility calculations can certainly be contested. Nonetheless, alternatives do exist, and it implores the volatility community to move forward in accepting that risk cannot be quantified with just one metric.

CONCLUSION

The low interest rate environment coupled with steady economic growth has produced higher than average equity market valuations. Fixed income products have not carried their weight in the traditional 60/40 mix leaving the stock market to bear the burden of higher returns. Central banks have had a pivotal role in suppressing equity volatility and starving investors of both yield and alpha. Additionally, the move from active to passive investments, the impact of risk parity funds, the proliferation of systematic volatility premium harvesting programs, and macro decorrelation have all contributed to the subdued volatility, creating asymmetric risks. The CBOE's VIX Index can only measure one facet of the risk spectrum and it is best to use a basket of risk indicators when making investment and risk management decisions.

The Greek philosopher, Heraclitus of Ephesus, succinctly stated, "Everything changes and nothing stands still." This is certainly the case in the financial markets, and Swan has navigated multiple volatility regimes over the years. Constant evaluation and examination of the many factors that contribute to income collection strategies are paramount in today's competitive, changing landscape and key to proper risk management. Whether in a low or high volatility environment, our process is built to work in conjunction with our underlying investment and hedge. Understanding the various market cycles and environments is an important step of this process and vital for Swan in assessing not only the current risks, but those that may be on the horizon. One thing is clear, a program that incorporates hedging in conjunction with a thorough assessment and implementation of premium harvesting may likely endure the challenges of an ever-evolving marketplace.

At some point in time, world markets will correct and many will not be prepared for it. Strategies that benefit from low equity correlations have not quite had enough time to blossom. The S&P 500 has not declined from a high by over 5% in over a year which ranks as the 4th longest streak without such a correction. Once it begins, history dictates correlations will begin to move back towards one, and we suspect this move will be extremely quick and powerful leaving many improperly or even completely unhedged and ultimately vulnerable. A famous boxer once stated, "Everyone has a plan until they get punched in the mouth." At Swan Global Investments our plan has never changed: "Always invested, always hedged."

FOOTNOTES

Important Disclosures:

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The Defined Risk Strategy Select Composite demonstrates the performance of all non-qualified assets managed by Swan Global Investments, LLC since inception. It includes discretionary individual accounts whose account holders seek the upside potential of owing stock, and the desire to eliminate most of the risk associated with owning stock. The composite relies on LEAPS and other options to manage this risk. Individual accounts own S&P 500 exchangetraded funds, LEAPS associated with the ETFs, as well as option strategies based on other widely traded indices. The Defined Risk Strategy Select Composite includes all nonqualified discretionary accounts which are solely invested in the Defined Risk Strategy. The Defined Risk Strategy was designed to protect investors from substantial market declines, provide income in flat or choppy markets, and to benefit from market appreciation. Stock and options are the primary components of the strategy. The performance benchmark used for the Defined Risk Strategy is the S&P 500 Index comprised of 500 large-capitalization stocks, and which does not charge fees. 246-SGI-092917

ABOUT SWAN GLOBAL INVESTMENTS

Randy Swan started Swan Global Investments in 1997 looking to supply investment management services that were not available to most investors. Early in his financial career, Randy saw that options provided an opportunity to minimize investment risk.

His innovative solution was the proprietary Swan Defined Risk Strategy, which has provided market leading, risk-adjusted return opportunities through a combination of techniques that seek to hedge the market and generate market-neutral income.

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