



A November 2020 Commentary from: Greg Miller CPA, Founder, Chairman and CEO, Michael Miller, President and CIO, Howard Needle, Portfolio Manager and Jim Buckham CFA, Portfolio Manager

CONVERTIBLE BONDS AND VOLATILITY

Convertible bonds and volatility go hand in hand given the optionality embedded in a convertible security. At times convertibles act more like stocks and at other times more like bonds. This paper explores that concept and the thesis that **higher volatility as expressed by the VIX⁽¹⁾ has historically been a positive for convertible bond performance relative to the S&P 500 Index and a 60% equity/40% fixed income mix⁽²⁾.**

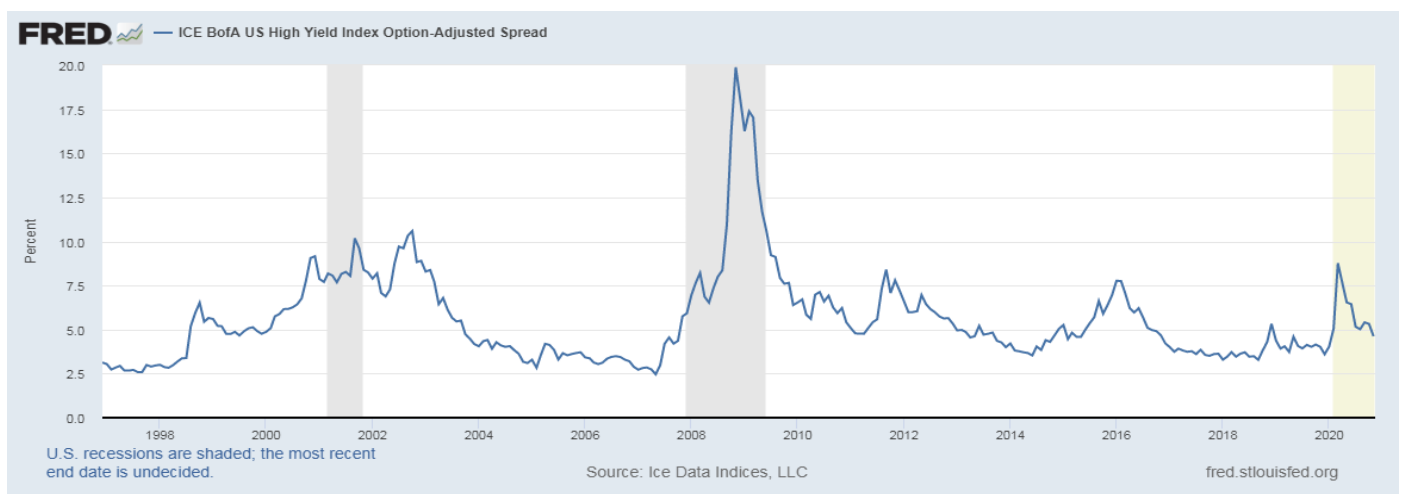
HISTORY AND CURRENT

By way of explanation and utilizing historical data, volatility as expressed by the CBOE’s VIX – a real time market index that represents the market's expectation of 30-day forward-looking volatility – and other options-related measures continues to be high by historical standards (display #1 below). Since inception in the mid-1980s the average level of the VIX has been 19.45. The last time the VIX traded below 19 was on February 20, 2020 or almost 9 months ago! As of this writing, the VIX, or widely known “fear gauge,” is trading at about 23; and traded north of 40 about two weeks ago. The VIX is a generally considered a “fear gauge” because it rises when equities drop as investors bid up the price of near term put options, or **insurance** for their stock portfolios. Like all insurance, its cost is frequently highest in the midst of a storm. **It’s strange, therefore, that the VIX remains around 20-30% above its historical average given an S&P 500 Index making new highs and markets seemingly immune to geopolitical, economic or health-related events.**



Display #1 – VIX from 1990 to present (11/13/2020)

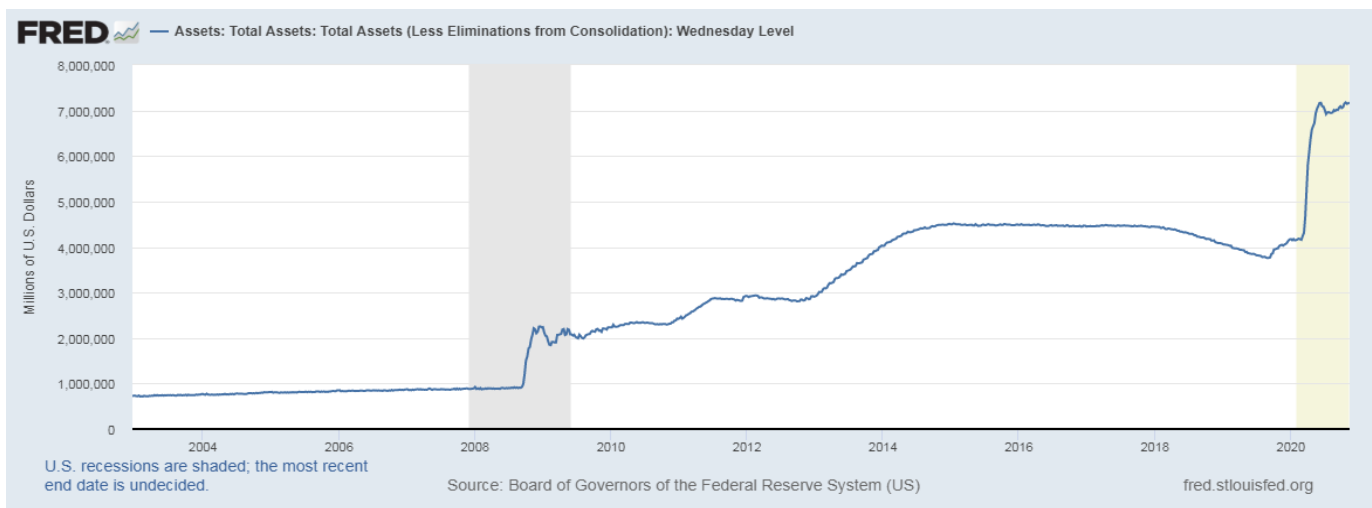
Moreover, it is not only equities that are doing well, but credit in general. Average high yield spreads after widening explosively to +1087 bps in March, 2020 have tightened to about +422 bps (display #2 below), while investment grade spreads have dropped to about +119 (display #3 below). Corporate America has generally been refinancing high coupon with low coupon debt, and terming out balance sheets⁽³⁾. The U.S. economy is awash with liquidity provided by a Federal Reserve whose own balance sheet has ballooned from about \$2 trillion at the peak of the 2008 financial crisis to well over \$7 trillion today (display #4 below). Like equities, credit markets appear strong and show little signs of stress. Given this backdrop of generally sound and improving asset prices, resolute credit markets, and central banks providing seemingly endless liquidity, one would expect the “fear gauge” to be well below as opposed to well above historical averages.



Display #2 - High Yield Spreads, 1990 to present



Display #3 – Investment Grade Spreads, 1990 to present



Display #4 – Federal Reserve Balance Sheet, 2003 – present

Regardless of the reason, which is pure conjecture at this point, volatility as expressed by the VIX remains curiously elevated relative to historical norms and is signaling investors anticipating more sizeable equity price movements over the short term than average. High periods of volatility are not unusual, however, and the VIX by definition does spend considerable time above its long term average (display #1 above). Again, it is just strange that the VIX is elevated when markets are doing so well; but what is...is.

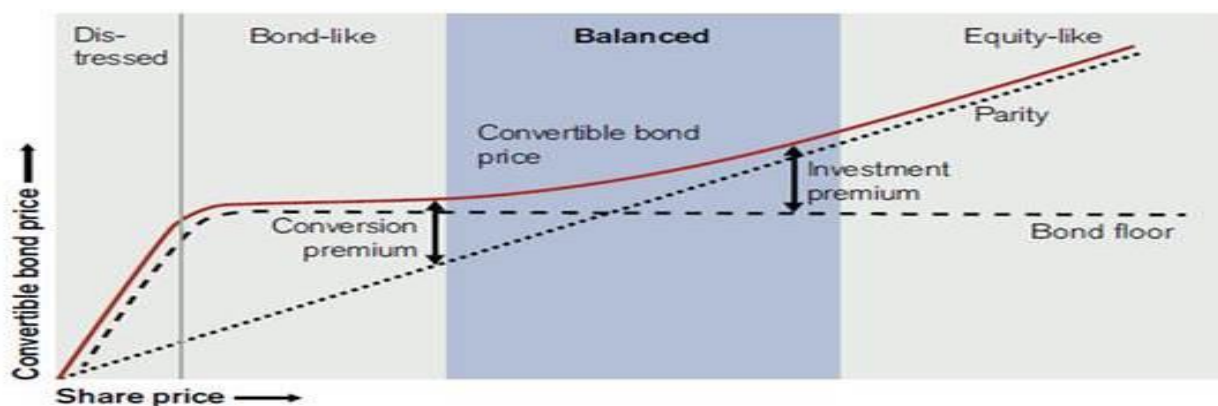
SECULAR OR CYCLICAL VOLATILITY

Importantly, regardless of *why* the VIX remains elevated, higher than average levels of volatility tend to be secular as opposed to cyclical and **often last years as opposed to months.** For example, from 1/1986 to 7/1991 (5.5 years) the VIX (at that point referred to as the “VXO”) averaged a closing price of about 23⁽⁴⁾. Remember, the 1987 and 1989 crashes, and the failure of Drexel? From 1/1997 to 5/2003 (6.5 years) the VIX averaged about 25, and from 11/2007 to 12/2011 (4 years) it averaged about 27.60. On the other hand, more recently, the VIX jumped to extreme levels in 2015, 2018 and 2019, but just as quickly moved lower, well below its historical average. It seems, however, that 2020 is far different than the more recent data points given the VIX is close to completing a full year of not dropping below 19. 2020 has not been a period with a quick spike up in the VIX and rapid retreat. Instead, 2020 is far more akin to the quintessential periods when the VIX stayed elevated for years as opposed to months. If history is a guide, once elevated for a few months, the VIX often stays that way for many years. Only time will tell however.

PERFORMANCE AND VOLATILITY

Fortunately, **higher than average volatility or a heightened VIX has historically been a tailwind for convertible bonds as expressed by the Thomson Reuters Global Convertibles Focus Index enabling convertible bonds to outperform equities and a 60% equity/40% fixed income mix⁽⁴⁾(display #6 below).** As many familiar with the asset class already know,

convertibles love volatility. That makes intuitive sense given the optionality embedded in convertible bonds – options are worth more when volatility is high, i.e. the probability of a convertible bond’s underlying common stock to be “in the money” increases with higher volatility⁽⁵⁾. In addition, the bond-like nature of convertible bonds (they are debt and therefore a liability of the issuing corporation) will provide increased investor protection relative to equities during periods of increased volatility (display #5 below). Again, a convertible bond is by definition a bond, has a coupon, a date-certain maturity, and is higher in a company’s capital structure than equity.



Source: Credit Suisse

Display #5 – Bond Floor of a Convertible Bond

Unsurprisingly, data over 28 years bears that out (display #6 below). When analyzing performance from 1/1990 to 10/2018 (28 years of data) and segregating those 28 years into periods when the VIX was between 17-21 (19% of the time) convertibles outperformed the S&P 500 Index by 29 bps monthly or 348 bps annually. But, it gets even better. **As the VIX rises, historical outperformance of convertibles relative to the S&P 500 Index increases.** When the VIX was between 21-25 (13% of the time) convertibles outperformed the S&P 500 Index by 52 bps monthly or 624 bps annually. When the VIX was between 25-29 (8% of the time) outperformance jumped to 83 bps monthly or 996 bps annually, and above 29 (10% of the time) the outperformance skyrocketed to 197 bps monthly or 2364 bps annually. Furthermore, when looking at the most recent higher volatility time period beginning this year (1/2020 to 11/2020) and a VIX that has averaged about 30 YTD, convertibles have markedly outperformed the S&P 500 Index. **2020 in many ways puts an exclamation point on the hypothesis that convertibles outperform equities when volatility or the VIX is high.**

To be fair, the opposite obviously held true when the VIX was below 17 – convertibles underperformed the S&P 500 Index. When the VIX was between 13-17 (27% of the time) convertibles’ underperformance was 50 bps monthly or 600 bps annually, while below 13 (23% of the time) convertibles’ underperformance to the S&P 500 Index grew to 55 bps monthly or 660 bps annually.

VIX LEVEL	<13	13-17	17-21	21-25	25-29	>29
Converts	2.19	1.35	0.57	0.33	-2.41	-1.59
S&P 500	2.74	1.86	0.28	-0.18	-3.24	-3.56
Difference between S&P 500 and Converts	-0.55	-0.50	0.29	0.52	0.83	1.97
% of occurrences	23%	27%	19%	13%	8%	10%

Display # 6 – Convertible performance versus S&P 500 Index. Difference between S&P 500 and Converts is displayed on a monthly basis(6)

Convertibles have also historically outperformed a 60% equity/40% fixed income mix when volatility has been elevated. During the period from 1/2006 to 12/2015 when the VIX averaged 20.29, convertibles delivered annualized outperformance of 85bps relative to 60% equity/40% fixed income mix⁽⁷⁾. That compares to dramatic underperformance from 1/2016 to 10/2018 when the VIX averaged 14.39 and convertibles underperformed a 60% equity/40% fixed income mix by 329 bps on an annual basis. Once again, 2020 is insightful with a VIX that has averaged about 30, helping convertibles to deliver returns that have soundly outperformed equities, fixed income and a 60% equity/40% fixed income mix by all measures.

VOLATILITY AND CONVERTIBLE NEW ISSUANCE

Finally, the interplay between increased volatility and **convertible bond new issuance** is telling. It is more than a coincidence that with volatility elevated in 2020, the convertible bond new issue market which is often seen as the life-blood and a health barometer of the convertible market has seen the highest volume of new issuance in 20 years. U.S. convertible issuance records were initially set during the high volatility period of 2001 and 2003 with about \$106 and \$87 billion of new paper issued respectively. That was followed by robust issuance of \$95 billion in 2007 – another high volatility period. Basically, when volatility is high, companies are more inclined to issue convertibles.

One factor for this increased issuance is a corporation's desire to monetize the **increased** value of the option embedded in a convertible bond. Again, options are worth more when volatility is high. In essence, corporations subsidize convertible bond coupons and dilution with more valuable options.

A robust new issue convertible market is important on a few fronts. New issue convertible bonds are often attractively priced in order to be easily digested by market participants. In addition, underlying equity prices typically drop the day new convertible paper comes to market

given the associated dilution which allows for a more attractive entry point for the prospective portfolio manager. The combination of these two dynamics provides a performance tailwind for convertibles.

Further, given convertible bond new issues come to market at par (i.e., 100 cents on the dollar), a healthy price resetting occurs since convertibles trading close to par are more balanced and less correlated to equity prices than convertibles trading well north of par (display #5 above). With a robust new issue calendar, the average price of bonds in the convertible bond market decreases. **In an almost Darwinian way, the convertible market is organically de-risking at the perfect time – during periods when volatility is high and by definition equity markets more risky.** Empirically, owning a convertible bond portfolio with a lower average bond price will be by definition a portfolio that is less sensitive to equity market swings, and could be one more reason why convertibles outperform the S&P 500 Index during periods of elevated volatility (display #6 above).

CONCLUSION

The bottom line is higher levels of volatility have historically helped convertibles outperform the S&P 500 Index and a 60% equity/40% fixed income mix. Whether volatility remains elevated for a prolonged period of time is anyone's guess, but with history as a guide, months often turn into years. Will 2020 be the start of a multi-year period of elevated volatility? If the case, will convertibles have the wind at their back? Only time will tell; and no one possesses a crystal ball that can predict the future. But, having a good grasp of how convertibles have behaved in past high volatility environments is a valuable and insightful tool that at a minimum should be analyzed and understood.

DISCLOSURES

Past performance is no guarantee of future results.

The information in this presentation is for illustration and discussion purposes only. The reader should not rely on this information for investment purposes. An investment in convertible securities involves a risk of loss and may not be suitable for all investors.

Convertible Bond Risk. Convertible bonds, like all fixed income securities, are subject to increased loss of principal during periods of rising interest rates and are subject to various other risks including changes in credit quality, market valuations, liquidity, prepayments, early redemption, corporate events, tax ramifications and other factors. Lower-rated securities are subject to greater credit risk, default risk, and liquidity risk. Convertible bonds will fluctuate in value with the price changes of the company's underlying stock. Before purchasing convertible bonds, investors should carefully review the bond prospectus and consult with a financial advisor who has experience in investing in and trading convertible bonds. Individual convertible bonds should be purchased based on risk tolerance, time horizons and other factors in concert with an investment professional.

Definitions:

(1) The Chicago Board Options Exchange ("CBOE") Volatility Index, or VIX, is a real-time market index representing the market's expectations for volatility over the coming 30 days. Investors use the VIX to measure the level of risk, fear, or stress in the market when making investment decisions.

(2) Equity as represented by the MSCI All Country World Index. Fixed Income is represented by the Bloomberg Barclays Global Aggregate Total Return Index Unhedged. Convertible Bonds are represented by the Thomson Reuters Global Convertible Focus Index. Market volatility is represented by the VIX Index. Data from January 1990 through October 2018 as provided by Morgan Stanley, Global Fixed Income Team, 2019 Market Outlook: Convertibles.

(3) See Wall Street Journal, 9/2/2020, Nina Trentman, "Companies Issue New Bonds to Pay Down Short-Term Debt Amid Pandemic".

(4) Per data compiled via the CBOE website

(5) See Black Scholes Option Pricing Formula

$$C = N(d_1)S_t - N(d_2)Ke^{-rt}$$

$$\text{where } d_1 = \frac{\ln \frac{S_t}{K} + (r + \frac{\sigma^2}{2})t}{\sigma\sqrt{t}}$$

$$\text{and } d_2 = d_1 - \sigma\sqrt{t}$$

C = call option price

N = CDF of the normal distribution

S_t = spot price of an asset

K = strike price

r = risk-free interest rate

t = time to maturity

σ = volatility of the asset

(6) Source Bloomberg. Data from January 1990 through October 2018 as provided by Morgan Stanley, Global Fixed Income Team, 2019 Market Outlook: Convertibles.

(7) Source as provided by Morgan Stanley Global Fixed Income Team, 2019 Market Outlook: Convertibles. Equity is represented by the MSCI All Country World Index. Fixed Income is represented by the Bloomberg Barclays Global Aggregate Total Return Index Unhedged. Convertible bonds are represented by the Thomson Reuters Global Convertibles Focus Index. Market volatility is represented by the VIX Index.

The S&P 500 Index or the Standard & Poor's 500 Index is a market-capitalization-weighted index of 500 of the largest publicly traded companies in the U.S.

The Bloomberg Barclays US Aggregate Bond Index, or the AGG, is a broad base, market capitalization-weighted bond market index representing intermediate term investment grade bonds traded in the United States.

The Thomson Reuters Global Convertible Index serves to represent the active convertible market. The Thomson Reuters Index is administered by Refinitiv who make all decisions regarding Adds, Reselections, changes to Index Methodology and index calculation.

The MSCI ACWI Index, MSCI's flagship global equity index, is designed to represent performance of the full opportunity set of large- and mid-cap stocks across 23 developed and 26 emerging markets. The index is built using MSCI's Global Investable Market Index (GIMI) methodology, which is designed to take into account variations reflecting conditions across regions, market cap sizes, sectors, style segments and combinations.

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