Wellesley Asset Management
Convertible Bond Specialists

THOUGHT **LEADERSHIP**

CONVERTIBLE ARBITRAGE - **FOR PROFESSIONAL USE ONLY**

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A non-correlated, low volatility portfolio solution designed to take advantage of market volatility.

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Over 30 Years Industry Experience

SUMMARY OF BENEFITS:

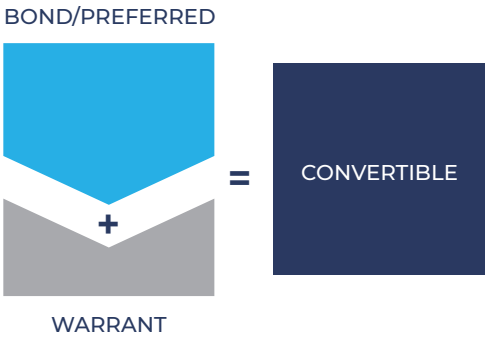
- Hedge Fund Strategy available now in Lower Cost, Liquid Alternative Mutual Funds
- Diversifier: Non-correlated to Equities, Fixed Income, and other Alternative Asset Classes
- Potential to Deliver Positive Returns in any Market Environment
- Historically Low Volatility
- Potential to Exploit Market Volatility
- Alternative Source of Income

Convertible arbitrage, a long-established hedge fund strategy, has seen increased interest from investors over the last several years. The strategy aims to generate steady returns coupled with low volatility, equity beta and low correlation to other asset classes. Alpha generation from security mispricing and exposure to volatility sets convertible arbitrage apart in the field of relative value strategies. Asset allocators can utilize convertible arbitrage and its low correlation as a diversifying investment enabling them to expand their risk/return and efficient frontier. Finally, with equity markets near all-time highs in price and value, convertible arbitrage can be an attractive alternative for investors looking to modify their investment risk profile.

WHAT ARE CONVERTIBLE BONDS?

What is a convertible bond? Most investors only know of convertible bonds in passing, from a chapter in an investment or accounting textbook. They are definitely not something mainstream investors pay much attention to. Yet, convertible bonds have been part of the investing landscape for quite a long time, since the expansion of railroads across the United States in the mid-19th century. Since then, they have been a key source of capital for companies across a myriad of industries and sectors.

A convertible bond is exactly what it sounds like. It is a bond, like any other corporate bond, with one distinct difference. It can convert into the issuing companies' shares. This conversion feature is what makes these bonds so interesting for investors who take the time to learn how to analyze these quirky instruments. The conversion feature is very much like a stock option and to simplify our understanding of convertible bonds we often describe them as a bond plus an option.

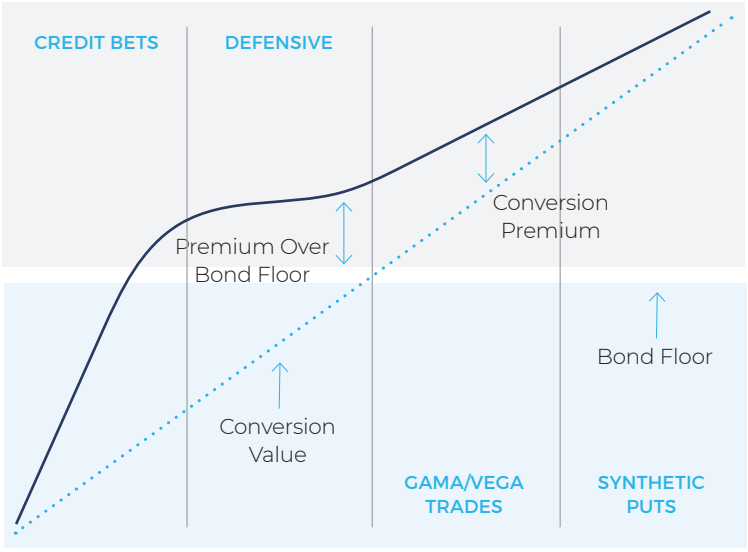


WHAT ARE CONVERTIBLE BONDS? (CONT.)

One plus one equals three! The bond plus option framework is great in describing the convertible structure, but it lacks the depth and complexity that convertible investing can bring. There are interactions and dependencies between the bond and conversion feature that only become clear when viewing the return profile of a convertible bond (CB). Below is a commonly used depiction of the return profile of a convertible.

As you study the convertible profile chart you should get the sense that the price behavior of the CB is ever changing. And it most certainly does. Interactions between bond valuation dynamics, such as credit spreads, interest rates, term structure, callability and puts all have impacts. The conversion feature value dynamics like equity value, conversion or strike price, conversion ratio, term structure, and stock volatility also come into play. Mix all these together and convertibles might be a mathematician dream financial instrument! Luckily there have been many smart investors that have developed pricing models based on options theory that have made convertible investing approachable to many classes of investors.

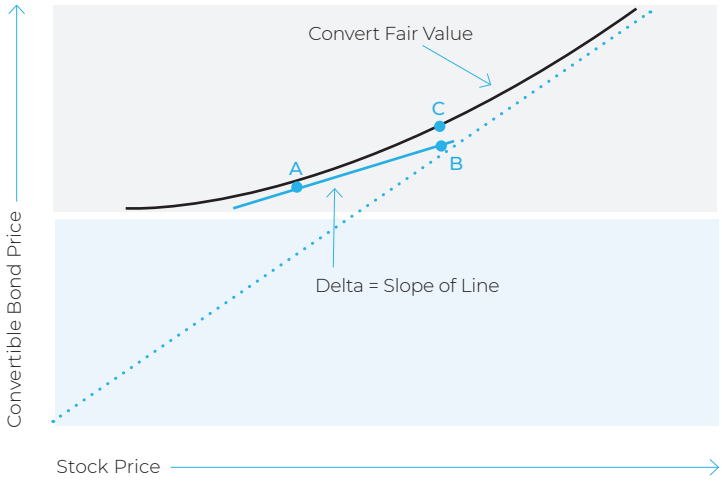
CONVERTIBLE ARBITRAGE CURVE: VARIOUS STRATEGIES



When we look at the return profile of a convertible bond we break it down into four segments, (from right to left on the chart), equity-like, balanced, bond-like and distressed. Investors approach these segments through two main angles, what we call long-only and hedged investing. Long-only is just buying (long) an investment on its fundamental, structural and technical merits. The long-only manager identifies an asset that she feels is undervalued and establishes a position. A common stock fund, a corporate bond strategy, a growth and income strategy all are long-only in nature. When it comes to convertibles, long-only managers are categorized across the four segments. Some focus on equity-like convertibles and propose to have equity like returns and commensurate risk. Balance convertible managers focus on the dynamic convexity of return a convertible offers. Bond-like managers are adept at the credit aspects of convertible investing. Finally, some convertible investors are deep into the domain of distressed investing where company rescues and workouts are the norm. Hedged investing is the topic of this paper and is referred to as convertible arbitrage.

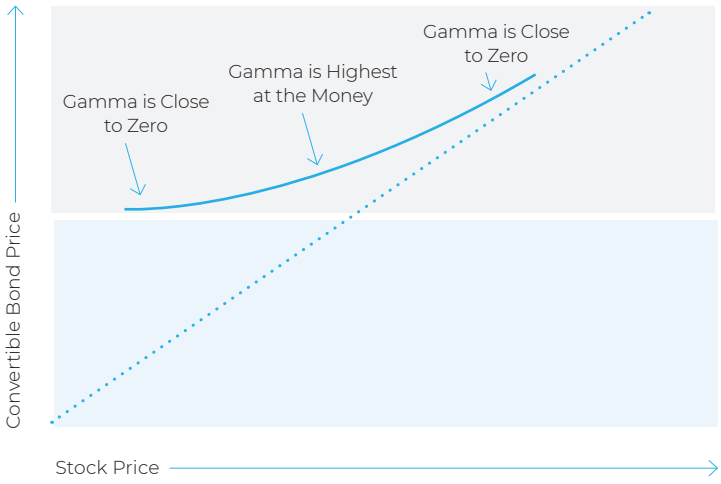
CONVERTIBLE ARBITRAGE

Arbitrage is defined by Merriam-Webster as "the nearly simultaneous purchase and sale of securities … in different markets in order to profit from price discrepancies" and is exactly what convertible arbitrage attempts to do. As we described earlier, there are many variables that come into play when analyzing and valuing a convertible bond. If an investor finds, through this analysis, that a convertible bond's market price is different than the value they identify, there is a potential arbitrage opportunity.



The basic convertible arbitrage trade is one in which an investor purchases a convertible bond and simultaneously sells stock shares in the company short. Selling short is the practice of selling without owning a position, where the investor is then known to be short the position (as opposed to long). A long convertible, short stock position aims to isolate the valuation discrepancy between the convertible bond conversion feature and the price it could receive in the market if it were valued as an independent option.

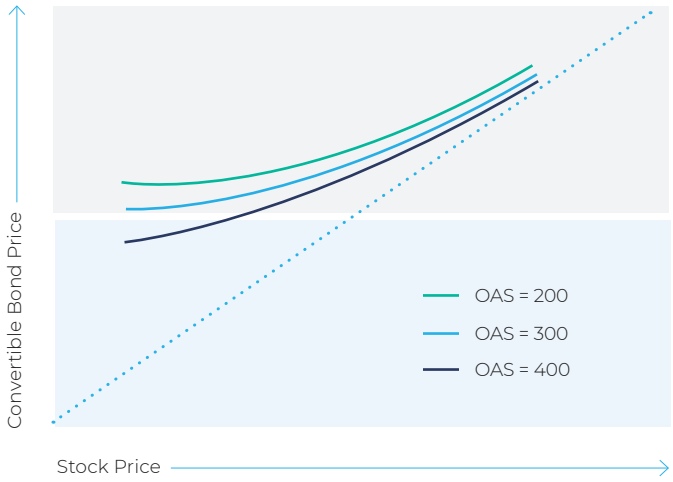
Delta, Gamma, and Vega, Oh My! Like Dorothy in the Wizard of Oz, convertible arbitrage investors are keenly aware of the risks around them and use Greek letters to categorize these variables. These "Greeks" help the arbitrageur right size their short-stock hedge or utilize other instruments to hedge the convertible bond. Delta is the degree to which the convertible bond price changes per changes in the underlying stock price and is paramount to setting up the short stock hedge. Given the dynamic nature of convertible bond price behavior delta alone cannot fully measure the stock risk. For example, Gamma measures the change in delta per change in stock price and is instrumental in profitable convertible arbitrage trading. Other factors like Vega (volatility), Omicron (credit), Rho (interest rate), and Theta (time) are part of the convert arbitrage lexicon and are managed and may be hedged by the convertible arbitrage specialist.



THE GAMMA TRADE: The basic convertible arbitrage trade is long a balanced convertible bond that trades with a valuation disparity and short the underlying stock using the convertible delta as a guide. This is considered a delta-neutral stance as the sensitivity of the convertible to the stock price is matched by the stock short. Gamma now comes into play. Positive gamma equates to the convertible bond gaining more than the short stock position loses as the stock appreciates and the convertible bond losing less than short-stock position gains as the stock depreciates.

THE GAMMA TRADE (CONT.): The arbitrageur trades the gamma by re-hedging to the new delta as the underlying stock moves up or down, capturing incremental value along the way. Additionally, the investor can monetize the valuation discount over time as the convertible trades toward its inherent fair value.

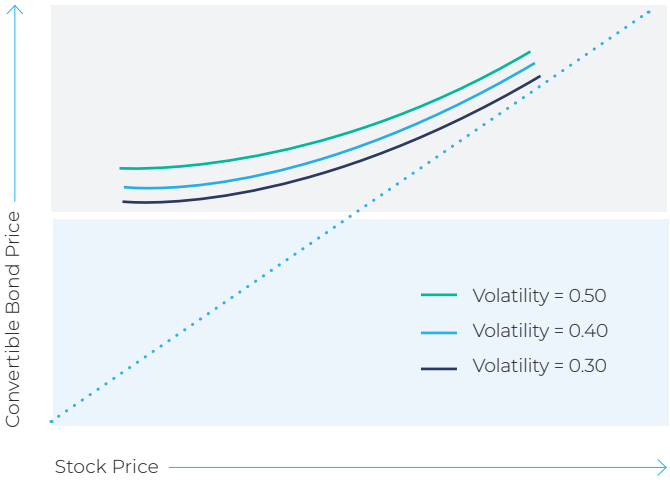
SYNTHETIC PUT TRADE: A convertible bond that is well in-the-money or highly equity sensitive can be used to create what is called a synthetic put. A long high delta equity like convertible is hedged with short stock with the expectation that if the stock price falls precipitously the high value bond will provide a floor, limiting the convertible losses. The stock short side will profit well beyond the convertible loss as the linear return of the short outstrips the convex return of the convertible. In essence, the in-the-money conversion feature coupled with a short stock position creates an out-of-the-money put.



CONVERTIBLE CREDIT TRADE: In general, the further a convertible bond trades below par the more it behaves like a regular corporate bond. The delta falls and the equity price behavior becomes less relevant, though still important. Here a convertible with a strong credit profile is a candidate for a credit orientated trade. The convertible is still hedged, mainly on a lower delta stock short hedge, but potentially using credit default swaps or put options too. The value gained is mainly through the income generated by the convertibles yield to maturity. The upside is the exposure of an out-of-the-money convertible option coupled with a short stock position creates an essentially “free” well out-of-the-money option, what we refer to as the “lottery ticket”.

EVENT-DRIVEN / SPECIAL SITUATIONS: One of our favorite convertible arbitrage techniques zeros in on specific company fundamentals. Many times, companies face special situations that can have an immense impact on their stock price. Focusing on things like mergers and acquisitions, business integrations, new product launches, drug discovery, or anything that creates a level of expectation and uncertainty from a fundamental factor is a key to event-driven convertible arbitrage. Here the set-up is the same as for the basic strategy, but the expectation is the driver of return is the special situation.

REVERSE HEDGING: Sometimes markets price convertible bonds in such a way where the value greatly exceeds what a structure analysis suggests the value should be. In these overvalued situations it can be profitable to position a reverse hedge. Here an arbitrageur shorts the convertible bond and takes a long position in the stock. Just like the basic strategy, the disconnect in value is expected to coalesce toward fair value over time. Given the cost of borrowing and carrying costs these trades are usually short-term in nature.



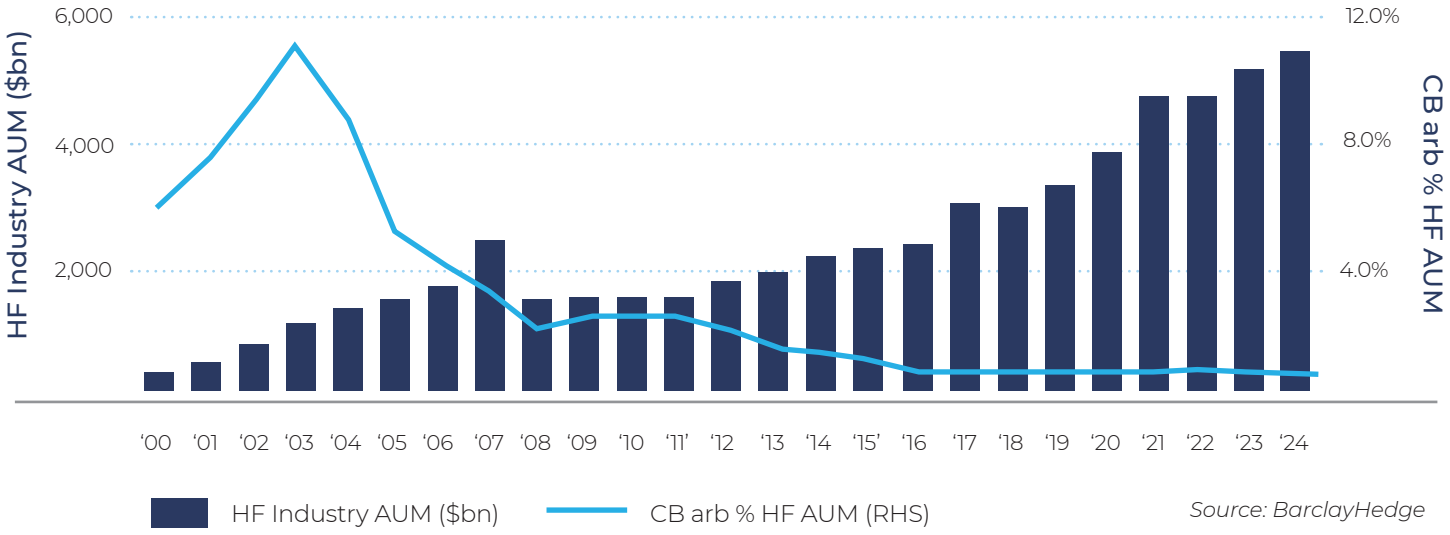
VOLATILITY TRADE: There are two aspects of volatility trade in convertible arbitrage. Important to both is that convertible bonds implied volatility trades at a significant discount to where listed options or market volatility trades. The first aspect would be to set up the same as the basic strategy, but the driver of return is less about the convexity of return (gamma) and more about the discount converging toward fair value. The second angle is the opportunity to sell matched call options on the underlying, monetizing the higher level of market volatility. This is especially useful when the expectation is the level of market volatility will fall to converge toward the convertibles implied volatility.

HISTORY, RETURNS AND IMPLICATIONS

As early as the 1930s investors contemplated what we consider convertible arbitrage. The book Arbitrage in Securities by Myer Weinstein essentially outlined convertible arbitrage trades, although the hedging was not optimized as modern tools and techniques where lacking. The quantitative approach to convertible arbitrage can trace its routes back to the 1960s and the book Beat the Market by Dr. Edward Thorp and Sheen Kassouf. The book established Dr. Thorp as the father of quantitative investing. Dr. Thorp developed a mathematics-based approach for hedging warrants and the first mathematical approach to convertible investing. He outlines the forethought, development and execution of the strategies which we refer to today as convertible arbitrage. Not only did Dr. Thorp legitimize convertible arbitrage, but his hedge fund Princeton Newport Partners also generated ~ 19% annualized returns for more than twenty years. Steady returns from convertible arbitrage established it as a core hedge fund strategy during the 1990s.

In fact, between 1990–2007, the Hedge Fund Research (HFR) convert arb index generated returns of ~ 10 percent coupled with annualized volatility of ~ 5%. During this period convertible arbitrage was considered one of the core hedge fund strategies and had peak assets of over $100 billion. The luster did come off during the market crash of 2008. The financial crisis and liquidity drain resulted in devaluations of convertible bonds. High levels of leverage, an unbalanced market and capital calls doomed convertible arbitrage returns and funds generally experienced ~ 40% drawdown during 2008.

Post 2008 the convertible arbitrage market normalized. Leading up to the financial crisis, leverage in convertible arbitrage strategies ranged anywhere from 5–20X, yet a decade later was a mere 2X. Additionally, prior to 2008 convertible arbitrage controlled over to 66% of the market, creating that unbalanced market. Today, per Bank of America, convertible arbitrage is ~ 53% of the convertible market, but at ~ $33 billion AUM is only 1% of total hedge fund assets. The graph below tells the story.



Source: BarclayHedge

As noted, the returns for convertible arbitrage were steady with relatively low volatility for a long period of time. The strategy also shone very bright post the 2000 tech bubble as risk assets made little headway, but convertible arb posted steady returns. After the financial crisis the strategy rebounded strongly, but investors, stung by the losses of 2008, shied away. It is only now that interest in the strategy has rebounded in earnest. Maybe that is because the tech bubble has similarities to today's stock market valuation and risk? Or it could be the strong results post the short-lived, but deep Covid bear market. Convertible arbitrage returns, as measured by the Barclays Convertible Arbitrage Index, from April 2020 through November 2024, annualized ~ 10% with a low equity beta of only 0.44. The low vol, steady return profile is attractive to allocators looking to diversify risk. In many respects convertible arbitrage return characteristics, with low correlation to other asset classes, improves the efficient frontier of an asset allocation. You can see on the right as the correlation to bonds and stocks for the Bloomberg Convertible Arbitrage Index is low versus mainline indices.

CORRELATION

Monthly 1994–2024

S&P 500	0.634
Bloomberg US Agg	0.486
Bloomberg US Corporate	0.188

Source: Bloomberg

CONCLUSION

Convertible arbitrage offers investors an opportunity to gain exposure to a specialized asset class in a risk-controlled way. Convertible risk is multi-faceted, with interdependency and non-linearity creating complex measurement problems. Using sophisticated quantitative modeling and hedging techniques, the strategy can generate uncorrelated returns with low volatility and equity beta. This profile can aid in expanding the risk/reward paradigm for asset allocators, especially in uncertain market environments with higher levels of volatility.

Important Disclosures
Past Performance is not indicative of future returns Investments in convertible securities are subject to the risks associated with both fixed-income securities and common stocks. All fixed-income securities are subject to two types or risk: credit risk and interest rate risk. Lower rated fixed-income securities are subject to greater risk of loss of income and principal than higher-rated securities. When the general level of interest rates goes up, the prices of most fixed-income securities go down. When the general level of interest rates goes down, the prices of most fixed income securities go up. In general, stock and other equity security values fluctuate, and sometimes widely fluctuate, in response to activities specific to the company as well as general market, economic and political conditions.

This presentation is meant for broad discussion purposes only and is not intended as a recommendation to buy or sell any security. The reader should not rely on this information for investment purposes. An investment in convertible securities involves a risk of loss. The value of an investment in convertible securities may decrease as well as increase.

Index Descriptions:
Indexes do not include management fees, transaction costs or other expenses. You cannot invest directly in an index.

The S&P 500 Total Return is an unmanaged composite of 500 large capitalization companies. This index is widely used by professional investors as a performance benchmark for large-cap stocks.

Bloomberg Barclays US Aggregate Bond (Agg. Bond) is a market capitalization-weighted index often used to represent investment grade bonds being traded in United States. The index includes Treasuries, government agency bonds, mortgage-backed bonds, corporate bonds and a small amount of foreign bonds traded in U.S.

The Bloomberg U.S. Corporate Index is a benchmark for investment-grade corporate bonds in the United States. It's used to measure the performance of taxable, fixed-rate corporate bonds in the U.S. dollar.

HFR's comprehensive suite of indices are considered the institutional standard for hedge fund industry performance benchmarks. DB01282025-1-23