



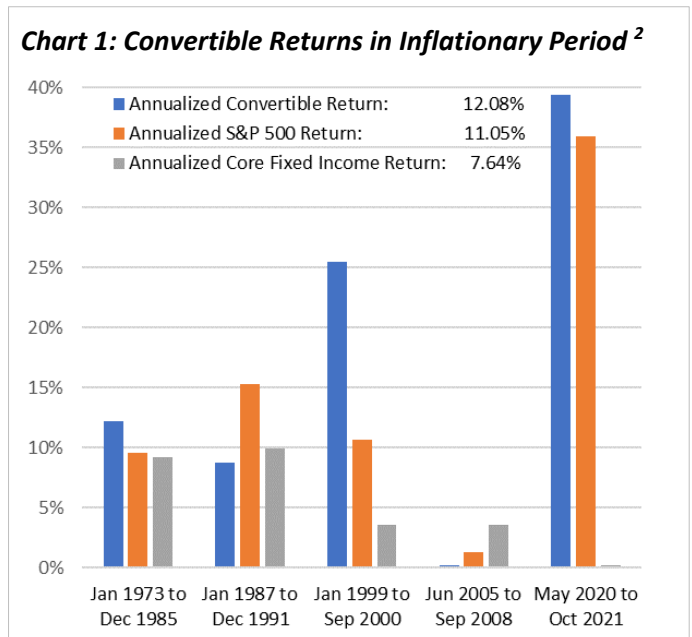
Navigating Inflation Cycles with Convertibles¹

December 2021

I. Executive Summary

The convertible asset class has proved time and time again its ability to successfully weather periods of high and hyper-inflation. Understanding how and why these assets were able to do so is key to enabling investors to pursue inflation-aware strategies for the current environment. Historical examples demonstrate the clear benefit of adding convertibles to an investment portfolio during such inflationary periods.

- **Allocating to convertibles can help to enhance a portfolio’s returns and reduce portfolio volatility during inflationary periods.**
- Proof of this can be found in historical data showing **convertibles returned 12.08% during periods with rising or high inflation, outperforming core fixed income by 444 basis points and the S&P 500 by 104 basis points with 20% less volatility on an annualized basis.**
- **Inflation creates conditions favorable for strong convertible performance.**
- Future inflation scenario stress tests demonstrate the **vulnerability of core fixed income and growth-oriented equity to sharp inflationary spikes.**



II. A Historical Perspective: High Inflation Outperformance

Historically, there are a number of catalysts which have ignited higher inflation, such as supply-side shocks to prices, capacity constraints on materials, increased import or export duties, currency weakness, trade barriers, taxes, aggressive expansion of money supply and asset bubbles. Periods of rising or high inflation have peak year over year (“YoY”) inflation as measured by the Consumer Price Index (“CPI”) of at least 3.8% for at least 3 months².

Over the 13-year period between 1972 through 1985, the S&P 500 returned 9.6% annualized, while convertibles outperformed by 260 basis points, returning 12.2% annualized, and with substantially less volatility, 13.9% standard deviation as compared to 19.9% for the S&P 500² (See Chart 1). In 1999 and the first three quarters of 2000, as technology stocks reached “irrationally exuberant” levels, wealth effect³ inflation began to affect consumer prices with

¹ Paper co-authored by Daniel Partlow and Scott Reid

² For clarity, the selected periods are measured from the inflation trough through the inflation peak when rates have retreated to normal or below normal levels, subject to the periodicity of available return data, which is yearly from 1972 to 1987, and monthly from 1987 through 2021. While the year over year CPI is the primary inflation metric used to determine cycles, other metrics of in inflation or inflation pressure were used as secondary affirmations of the period such as MoM CPI, PPI, PCE, GDP, and S&P 500 Return (as a wealth-effect inflation pressure). Sources: Ibbotsen Associates for Convertible data prior to 1987 and the ICE BofA All U.S. Convertibles Index excluding Mandatories (VOAO) for Convertible data after 1987, S&P 500 Total Return Index for Equity data (SPXT), the ICE BofA US Corporate Index (BOAO) for Fixed Income data prior to 1976, and the Bloomberg Barclays US Aggregate Bond Index (LBSTRUU) for Fixed Income data from 1976 onwards.

³ The “Wealth-Effect” on demand and price levels results from consumer “balance sheets” strengthening as a result of rising home prices or increased retirement account balances as the result of stock price advances.

the CPI reaching nearly 4%. During this period, convertibles outperformed the S&P by 1500 basis points, and core fixed income by over 2000 basis points. Between May 2020 to October 2021, the CPI rose from 0.1% to 6.2%. During this period, convertibles outperformed the S&P 500 by 341 basis points, returning 39.4% annualized⁴.

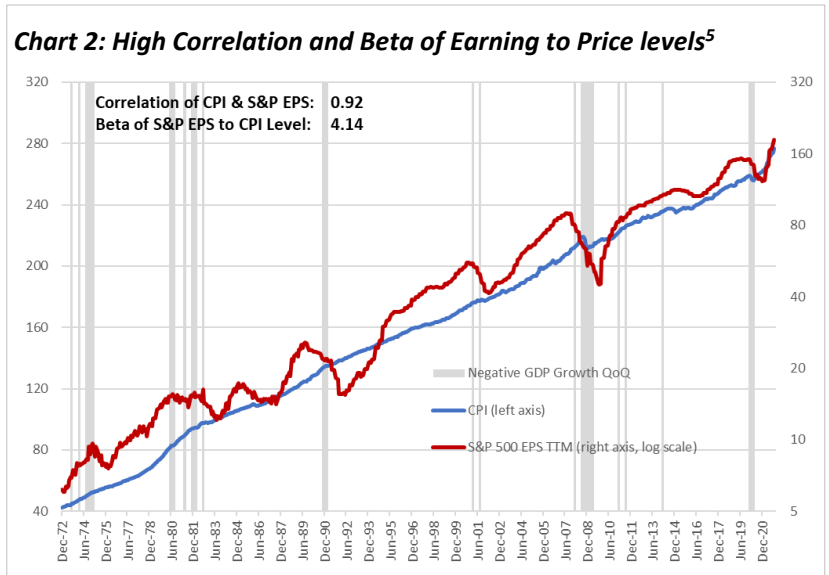
III. Three Inflationary Scenarios Favorable for Convertibles:

Higher Earnings, Higher Interest Rates, and Higher Equity Volatility

1. **Inflation tends to lead to increased corporate earnings** – A strong positive for convertibles.
2. **Low interest rates are consistent with high PE ratios** - Rising rates tend to lead to weaker returns for some equities as valuations compress, yet convertibles tend to perform well.
3. **Inflation tends to cause equity volatility and bond yields to rise** – Rising volatility and bond yields are both positive for convertibles relative to core fixed income.

Corporate Earnings tend to Increase with Consumer Prices, except During Recessions

The connection between corporate earnings and CPI tends to result in **increased earnings as price levels increase** (See Chart 2). The brief periods when earnings fall are generally associated with negative GDP growth during recessions (See Chart 2). In addition, the S&P 500 earnings yield, which is the earnings per dollar of equity, also tends to increase with inflation, and conversely, the S&P 500 PE ratio, the inverse of the earnings yield, tends to decline as inflation rises. However, **as the rate of inflation crests and begins to recede, PE ratios can rise sharply.**



Earnings Yields tend to increase with inflation, and therefore PE ratios tend also to fall...but with positive convexity.

High PE ratios are typically consistent with lower equity returns, but this is largely dependent on the excess earnings yield. When the excess earning yield of stocks relative to 10-year Treasuries is negative; in other words, when Treasury yields are higher than earning yields, and when PE ratios exceed 25, S&P 500 returns are negative. Yet in this scenario, convertibles still perform well, outperforming equities by 850 basis points.

However, **when PE ratios exceed 25 and excess earning yields are positive (as is currently the case in the fourth quarter of 2021), both convertibles and equities have returned over 25% per year⁶, with convertibles outperforming equities by 215 basis points.**

⁴ Sources: ICE Data Services, Bloomberg, S&P.

⁵ Sources: Bloomberg, S&P, and Bureau of Labor Statistics from 12/31/1972 to 10/31/2021.

⁶ Returns from 12/31/1987 to 10/31/2021 for both equities [as measured by the S&P 500 Total Return Index (SPXT)] and convertibles [as measured by the ICE BofA All U.S. Convertibles Index excluding Mandatories (V0A0)] were grouped by initial S&P 500 PE Ratio, and Earnings Yield minus 10 Year Treasury Yield. All returns are annualized.



Historically, there has been a strong negative relationship between S&P 500 returns and PE ratios – with average S&P 500 returns nearly 600 basis points lower (see highlighted area) when PE ratios are in the high twenties, as compared to the high teens (See Table 1). However, the inverse is

Table 1: Convertibles Outperform Equities when PE Ratios are Elevated (12/87 - 10/21)⁷

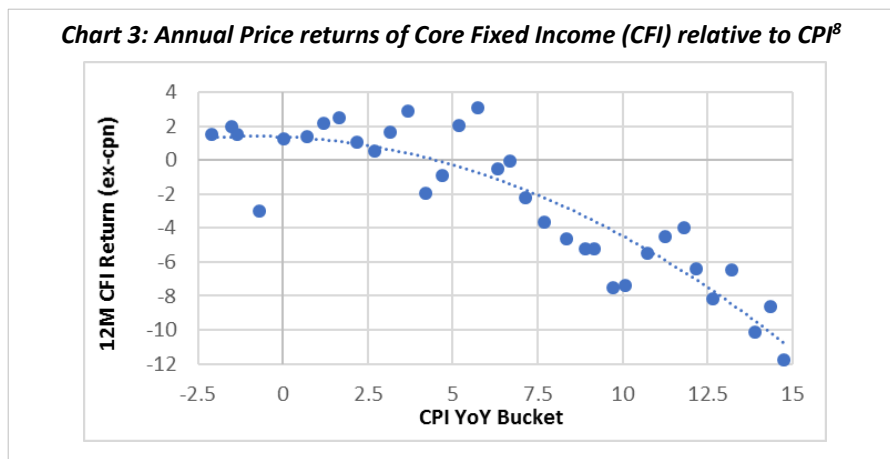
By Earnings Yield Relative to 10 Year Treasury Yields						
S&P 500 PE Ratio (Beg. Of Month)	Overall		Earnings Yield Less than 10Y Treasury		Earnings Yield Greater than 10Y Treasury	
	S&P Return	Conv. Return	S&P Return	Conv. Return	S&P Return	Conv. Return
Low 10 to 15	21.7%	13.8%	19.9%	7.6%	23.9%	21.5%
Moderate 15 to 20	11.2%	7.9%	25.1%	17.0%	7.2%	5.2%
High 20 to 25	10.4%	13.8%	7.2%	7.9%	14.2%	21.0%
Highest 25+	5.2%	12.4%	-0.9%	7.6%	26.4%	28.6%
Total	11.4%	10.8%	11.4%	10.1%	11.4%	11.3%
Highest minus Moderate PE	-6.0%	4.5%	-26.0%	-9.4%	19.2%	23.3%

true for convertibles. **Convertible returns, when PE ratios are at their highest (above 25) were 450 basis points higher than convertible returns when PE ratios were more moderate (15-20), as convertible issuers typically have growth rates which support higher valuations.**

Inflation tends to Drive Interest Rates Higher, creating Substantial Losses for Straight Bonds, but Gains for Convertibles

Historically, when inflation is below 2.0%, the average 10-year Treasury yield is 3.2%. Conversely, when inflation is above 2.0%, the average Treasury yield is 7.1% - over 500 basis points higher than it is currently. On the long end of the curve, interest rates increase due to the demand for money for long term investment. On the short end of the curve, interest rates tend to increase as central banks lift short term rates and reduce the money supply. In prior periods, straight bonds had higher coupons to compensate investors for this risk. Today, however, that is not the case. Historically, high levels of inflation tended to lead to capital losses for core fixed income of nearly 10% per year (See Chart 3).

Historically, Higher levels of Inflation led to Capital Losses for Core Fixed Income



⁷ Source: Bloomberg, S&P, and ICE Data Services, the observation period was 12/31/1987 to 10/31/2021.

⁸ Source: ICE Data Services, Bureau of Labor Statistics, Bloomberg and the observation period is 1/31/1977 to 9/30/21. Data represents annualized returns for each CPI bucket. CPI buckets are defined by half point ranges. Analysis conducted on an ex-post basis, bifurcating the valuation component to control for distortions attributable to coupon variance over time. Core Fixed Income (CFI) returns measured by the ICE BofA US Corporate Index (BOA0).



An Increase in Yields could Create Significant Losses for Traditional Fixed Income portfolios, but Gains for Convertible

Today, an increase in yields of 500 basis points could create losses of 23% to 35% for high yield corporate bonds, investment grade corporate bonds, and 10-year Treasuries (See Table 2). Convertibles also tend to carry much lower interest rate risk than high yield or investment grade credit because the embedded option within convertibles increases in value as interest rates rise. Historically, on average, convertibles rose 18% per annum when Treasury rates rose at least 25 basis points on a trailing 12-month basis.

Table 2: The Impact of Interest Rate Changes⁹

	Interest Rate Duration	Interest Rate Convexity	Interest Rates +250bps No chg. Equity	Interest Rates +250bps Equity Up 10%	Interest Rates +500bps No chg. Equity	Interest Rates +500bps Equity Up 10%
10-year Treasury	9.3	0.9	-20.2	-20.2	-34.6	-34.6
Investment Grade Corporate	8.4	1.3	-16.8	-16.8	-25.3	-25.3
High Yield Corporate	4.2	-0.2	-11.1	-11.1	-23.5	-23.5
Convertibles	2.0	0.6	-3.2	7.8	-2.8	8.2

Thus, for illustrative purposes, a reallocation of 10% to convertibles in a portfolio of 10-year Treasuries would reduce portfolio duration by 7.8% and could reduce losses by 280 basis points if interest rates rose by 2.5% or 428 basis points if interest rates rose by 5%.

Since Inflation tends to drive an Increase in Equity Volatility, Convertibles typically Outperform Equities and Core Fixed Income during these Inflationary Periods

When the level of inflation has increased by more than 1% year over year– S&P volatility has typically been 3 volatility points higher than if there was less than a 1% change in the level of inflation. As a result, higher volatility has typically led to significant outperformance of convertibles relative to both equity and core fixed income. **When the VIX is above 20, over the following 3 months convertibles outperform the S&P 500 by 239 basis points per year, and core fixed income by 1207 basis points on an annualized basis.¹⁰**

Some incremental volatility is driven by how inflation works its way through the economy. In other words, price increases are never uniform horizontally (across sectors) or vertically across commodity inputs, labor, or intermediate goods and services, consumer staples, discretionary goods, or home prices.

Convertible arbitrage is a leveraged hedge fund strategy which seeks to hedge the equity exposure of convertibles and benefit from increased systematic and idiosyncratic stock volatility, while maintaining low correlation to equity markets. Such a strategy is especially well suited for a period of increased equity volatility anticipated during inflationary periods.

IV. The Devil is in the Details: Some Inflation Metrics Favor Value...

Inflation impacts different segments of the market differently. Since 1996, both growth and value equity returns have been positively correlated to broad inflation, but value more so. This means that as the CPI or Producer Price Index

⁹ Source: ICE Data Services, Advent Capital Management and based on asset class metrics as of 10/31/21.
¹⁰ Source: Bloomberg, S&P, CBOE, and ICE Data Service and the observation period is 12/31/1989 to 10/31/2021.

(“PPI”) increases, a rotation may occur from growth to value, but as inflation abates, markets typically counter-rotate from value to growth.¹¹

Table 3: Growth Underperforms Value when CPI Increase

	Correlation	Beta
<i>Because Correlation and Beta are negative, growth will likely underperform value as CPI increase:</i>	-0.24	-2.23%

Some inflation metrics favor Value stocks relative to Growth

...while Others Favor Growth

However, an increase in CPI relative to the PPI, or an abatement of inflation fears, favors a rotation from value to growth.

Table 4: Growth Outperforms Value when PPI Core increases

	Correlation	Beta
<i>Because Correlation and Beta are positive, growth will likely outperform value as PPI Core increase:</i>	+0.09	+1.13%

Other inflation metrics favor Growth stocks relative to Value Stocks

...and Others Reflect the Source of Inflation (Supply or Demand)

Relationships between inflation and equity markets over the last 25 years have changed. Prior to 1996, the S&P 500 was negatively correlated to inflation. This is because the periods with the highest inflation metrics were accompanied by deep recessions and inflation was essentially “pushed” through the economy by higher oil prices. But since 1996, the S&P 500 has been positively correlated – at least relative to broad inflation metrics, since inflation was “pulled” through the economy more by wealth-effect demand.

Table 5: The Correlation of Stocks to Inflation has Changed over the last 48 years

	Correlation	Beta
<i>Correlation and Beta of S&P 500 to CPI pre-1996:</i>	-0.27	-1.26%
<i>Correlation and Beta of S&P 500 to CPI since 1996:</i>	+0.12	+1.66%

Stocks have been positively correlated to inflation for 25 years.

These Rotations and Counter-Rotations tend to Increase Equity Volatility...

As inflation works its way through the economy, either pushed through by higher costs, or pulled through by higher demand and monetary expansion, rotations and counter-rotations can cause substantial market volatility. **Historically, convertibles have benefitted from increased volatility. They offer a reduced-risk positively asymmetric way to participate in equity markets, and a way to reduce interest rate duration in fixed income portfolios.**

¹¹ Source: Bloomberg, S&P, BLS, and the observation period is 6/30/1996 to 4/30/2021.

V. Conclusion

Convertibles have historically performed well during inflationary periods. **During the five inflationary periods considered in this paper convertibles returned 12.08%, exceeding core fixed income by 444 basis points and the S&P 500 by 104 basis points with 20% less volatility on an annualized basis.** Convertible outperformance is even more impressive in the periods of highest inflation (from the late 70s through the early 80s), when they outperformed the S&P by 340 basis points per year.

Inflation tends to create favorable conditions for convertibles: higher earnings, higher interest rates, and higher equity volatility. Forward looking inflation stress tests confirm the likely outperformance of convertibles relative to stocks and straight bonds should inflation rates continue to rise. Therefore, **equity investors seeking to reduce risk without sacrificing upside opportunity may wish to consider an allocation to a balanced convertible strategy. Fixed income investors, seeking to reduce interest rate duration exposure and increase opportunities for capital gains, may wish to consider an allocation to a defensive convertible strategy.**

Paper co-authored by Daniel Partlow and Scott Reid



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