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# Convertibles as a structural allocation in a multi-asset portfolio

## Key takeaways

*For investors considering an allocation to convertible bonds, we offer a factor model to show the historical relationship of convertibles with other global asset classes.*

*According to our research, there is compelling evidence that there is additional return to be earned by investing in convertible bonds.*

*We believe convertible bonds offer attractive risk-adjusted returns, with the potential to improve portfolio efficiency for a variety of investors.*

We believe convertible bonds are a unique hybrid asset class that offers many attractive features to investors. Throughout much of their history, though, investors have debated the role convertible bonds serve within a broader, well-diversified multi-asset portfolio. Some view the asset class more as a tactical trade to capture the opportunities often created when acute market stress leaves convertibles trading at a discount to fundamental value. While we at Putnam agree about leaning into convertibles when opportunities arise, we also note ample empirical evidence shows a structural allocation to convertibles offers clear investor benefits.

In this paper, we highlight various return characteristics of convertible bonds and demonstrate the potential for diversification and incremental return embedded in the asset class. Finally, we provide a simple framework for how investors can begin to think about incorporating the asset class in a broader portfolio context.

This paper is part of a series on convertible securities. See additional papers in this series on [putnam.com](http://putnam.com).

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### Modeling the return characteristics of convertibles

Convertibles share many features of equity and fixed income securities while also providing differentiated exposures based on market capitalization and style.<sup>1</sup> Given this, a logical first step for considering a structural allocation is to construct a factor model to better understand the historical relationships among these asset classes. To do this, we regress the historical returns of a global convertible index (ICE BofA Global 300 Convertible Index<sup>2</sup>) for the period January 1997 to June 2022 against six factors (the Model). The selected six factors incorporate the primary exposures convertibles are expected to exhibit: (1) global equities, (2) global small-cap stock premium, (3) global value stock premium, (4) global credit spreads, (5) global duration, and (6) currency. Figure 1 displays the key results of the regression, specifically focusing on the index’s sensitivities to each of the selected factors.

Several observations are immediately apparent and consistent with our initial expectations. First, we see that the Model overall has high explanatory power, with an adjusted R-squared of 89%. This effectively means that the six factors in this model have historically explained 89% of the variance in returns of the ICE BofA Global 300 Convertible Index. Second, all six factors in the model are statistically significant, as evidenced by the T-statistics (T-stat) in the second row. Additionally, we observe that the

index contains modest exposures to global equities, global credit spreads, and global duration. This is a consistent finding for an asset class that shares features of both stocks and bonds. What is also helpful to understanding the data in Figure 1 is the regression coefficient of 0.47 to the global equity factor, which implies that, in isolation, for every 1% move in the global equity factor, the index is expected to move 47 basis points in the same direction. This is very consistent with the balanced profile that the index typically exhibits over time. This means the index is not too equity sensitive and allows investors to capture some equity upside while also protecting on the downside.

These results also confirm additional characteristics of the convertible bond market around market capitalization and style. The positive exposure to the global small-cap factor suggests the index typically is more sensitive to small-cap equities, while the negative exposure to the global value factor indicates the index tends to be more growth oriented. Reviewing more bond-centric factors, the index has positive exposures to both global credit spreads and global duration, which are also consistent with expectations. These results offer empirical evidence that convertible bonds are truly a hybrid asset class, while also giving an astute investor a solid framework for understanding how the asset class is expected to perform relative to the performance of other assets.

FIGURE 1

## ICE BofA Global 300 Convertible Index regression results (January 1997–June 2022)

	Global equities	Global small cap	Global value	Global credit spreads	Global duration	Currency	Adj. R-squared <sup>3</sup> %
Regression coefficient <sup>4</sup>	0.47	0.15	-0.10	0.17	0.29	-0.06	89
T-stat <sup>5</sup>	10.58	4.53	-4.41	4.96	5.64	-3.67	N/A

Source: Putnam Investments. Data from January 1997 through June 2022. Regression based on monthly data. Global equities are represented by Fama-French Global Market; global small cap by Fama-French SMB (small minus big); global value by Fama-French HML (high minus low); global credit spreads by Bloomberg Global High Yield Total Return Index minus ICE BofA 3-5 Year G7 Govt Total Return Index; global duration by ICE BofA 7-10 Year G7 Govt Total Return Index; and currency by the Trade Weighted U.S. Dollar Index.

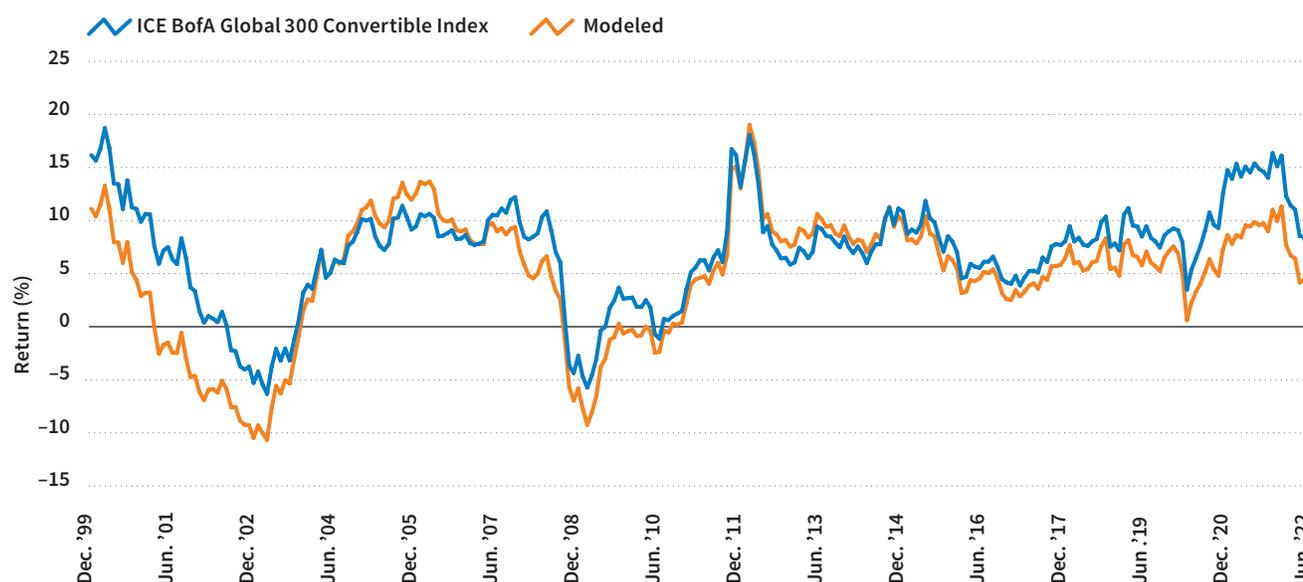
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## Relative return opportunities with convertibles

The data from the returns-based Model is useful in understanding the historical drivers of the returns of the ICE BofA Global 300 Convertible Index. In addition to the results in Figure 1, we can also plot the relationship between the index and the Model return. Figure 2 displays rolling 36-month annualized returns for both the ICE BofA Global 300 Convertible Index and the six-factor Model.

FIGURE 2

### Rolling 36-month returns (index vs. Model<sup>6</sup>) ending June 2022



Source: Putnam Investments. Data from January 1997 through June 2022.

1. Only 67% of the broader convertible market is large cap in size, with the remainder in mid- and small-cap space. From a sector perspective, companies in growth-oriented sectors have dominated the convertibles market (technology, consumer discretionary, and health care are some of the largest sector weights).
2. The stated global convertible market proxy used throughout the paper is the ICE BofA Global 300 Convertible Index ("ICE"). When comparing this index to the Refinitiv Global Focus Convertible Index ("Refinitiv"), there are a few differences worth highlighting: The ICE index is slightly larger, with roughly 300 holdings versus roughly 215 for Refinitiv; ICE has historically had a much larger allocation to the North America region (roughly 70%, versus 50% for Refinitiv); ICE includes mandatory and preferred convertible securities, while Refinitiv only includes straight convertible bonds; and Refinitiv is more rules based regarding price, premium, and size of issuers. Among the similarities between the two indexes are the sector breakdown and the index delta. However, the contribution to delta will likely be different over time due to the various structures the ICE index is allowed to use (i.e., mandatories and preferreds).
3. **Adjusted R-squared** is a modified version of R-squared that accounts for predictors that are not significant in a regression model. R-squared measures the goodness of fit of a regression model. A higher R-squared indicates the model is a good fit.
4. The **regression coefficient** is a statistical measure used to represent the average functional relationship between variables. It is the weight associated with a unit of change in a specific independent variable on the dependent variable, given the relationship to other independent variables.
5. **T-stat** is the ratio of the regression coefficient versus its standard error. The standard error is an estimate of the standard deviation of the coefficient, or the amount it varies.
6. These are not the returns of an actual portfolio Putnam manages and are for illustrative purposes only. Past performance is not a guarantee of future performance. Factor model data has many built-in limitations, some of which are described below. The six-factor model performance results contained herein reflect the application of the current factor model and selection of factors prepared with the benefit of hindsight. No theoretical approach can take into account all of the factors in the markets in general, nor can it reflect the impact of decisions that might have been made during the actual operation of any actual investment portfolio. Factor model performance data is based on criteria applied retroactively with the benefit of hindsight and knowledge of factors that may have positively affected its performance. This may reflect a bias toward factors that have performed well in the past. Actual results may vary, perhaps materially, from the factor model results presented. There are numerous factors related to the markets in general or the implementation of any specific investment strategy. The preparation of factor model results cannot fully account for these factors, and some or all of them could adversely affect actual results. No representation is being made that any account, product, or strategy will or is likely to achieve profits, losses, or results similar to those shown.

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Figure 2 provides further support for the historically strong relationship between the index and the Model, as the two lines track each other closely over time. However, upon further inspection, one observes that the ICE BofA Global 300 Convertible Index marginally outperforms the Model's expected return over the history shown. In fact, we can calculate that over the period from January 1997 to June 2022, the index outperformed the Model's expected return by 2.21% per year (T-stat of 4.23). This outperformance is significant and suggests there has been a structural risk premium to be captured by investing in convertible bonds. Calendar-year performance provides further evidence that

there is potential for investors to achieve an additional risk premium by investing in convertibles. Figure 3 displays the calendar-year performance of the ICE BofA Global 300 Convertible Index as well as the Model's expected returns. The last column shows the excess performance, which is defined as the difference between the ICE BofA Global 300 Convertible Index and the Model's expected performance. Over this nearly 26-year time period, convertibles have outperformed in 16 calendar years (a 62% hit rate) with average outperformance of over 2% annualized, providing further evidence the additional return convertibles have historically generated has been persistent over time.

FIGURE 3

### Calendar-year performance (index vs. Model<sup>6</sup>) through June 2022)

Year	ICE BofA Global 300 Convertible Index	Model	Excess
1997	6.11%	2.74%	3.36%
1998	17.72	17.49	0.23
1999	25.51	13.64	11.87
2000	-8.38	-17.7	9.32
2001	-9.22	-11.61	2.39
2002	2.1	-1.35	3.45
2003	21.21	23.74	-2.54
2004	7.96	12.01	-4.05
2005	0.17	2.88	-2.7
2006	16.02	9.82	6.21
2007	9.8	5.03	4.77
2008	-27.77	-27.58	-0.18
2009	36.78	30.32	6.47
2010	12.34	13.04	-0.7
2011	-5.65	-1.94	-3.71
2012	12.55	12.83	-0.27
2013	16.86	15.31	1.56
2014	3.62	2.14	1.48
2015	1.25	-0.31	1.55
2016	7.34	5.83	1.51
2017	16.06	14.37	1.69
2018	-1.15	-4.87	3.71
2019	13.66	14.38	-0.73
2020	34.5	17.81	16.69
2021	2.45	2.46	-0.01
2022 YTD	-18.34	-16.84	-1.49

Source: Putnam Investments. Data from January 1997 through June 2022. Past performance is not a guarantee of future performance.

Expected returns represent probabilities and possible outcomes, not promises of future performance. Security prices fluctuate in value unpredictably, and returns cannot be predicted with certainty. Expected return scenarios are based on numerous assumptions, are subject to risk, and may not be realized. Changes in such assumptions could produce materially different results. The return expectations discussed are hypothetical in nature, do not reflect actual results, and are not guarantees of future results.

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## How to allocate to convertibles in a multi-asset portfolio

One often-cited explanation for the additional risk premium convertibles have historically generated is the scarcity of buyers, as many investors allocate only to equities and fixed income as they seek to adjust risk in their portfolios. They often struggle with how best to allocate to an asset class that shares attributes of multiple asset classes. The fact that convertibles contain a diversified set of exposures to various asset classes and styles can be useful from a capital efficiency perspective; however, where and how to use the asset class can vary by investor.

To help provide a framework for investors, historical data can help show potential improvements these securities can bring to a portfolio of stocks and traditional bonds. In this analysis, we use data for global equities (MSCI World Index), global bonds (Bloomberg Global-Aggregate Total Return Index), and global convertibles (ICE BofA Global 300 Convertible Index). Figure 4 displays the key metrics used in the optimization.

The data displayed in Figure 4 shows convertible bonds may provide attractive risk-adjusted returns on a stand-alone basis. Additionally, it is apparent that convertibles contain modest correlations to global bonds but have historically maintained much higher correlations to equities. One might assume that, given the higher correlation to equities, convertibles may not provide a significant diversification benefit for investors. To test this assumption, we construct an efficient frontier using the inputs from Figure 4, incorporating an allocation to global convertibles, and then compare it to a simple two-asset frontier using only global equities and global bonds.<sup>7</sup>

FIGURE 4

## Optimization inputs (historical data January 1997–June 2022)

5 years ended 6/30/22	Return	Standard deviation	CORRELATION MATRIX		
			MSCI World Index	ICE BofA Global 300 Convertible Index	Bloomberg Global-Aggregate TR Index
Global equities	7.90%	15.23	1	0.88	0.28
Global convertibles	6.61	10.18	0.88	1	0.45
Global bonds	3.76	5.46	0.28	0.45	1

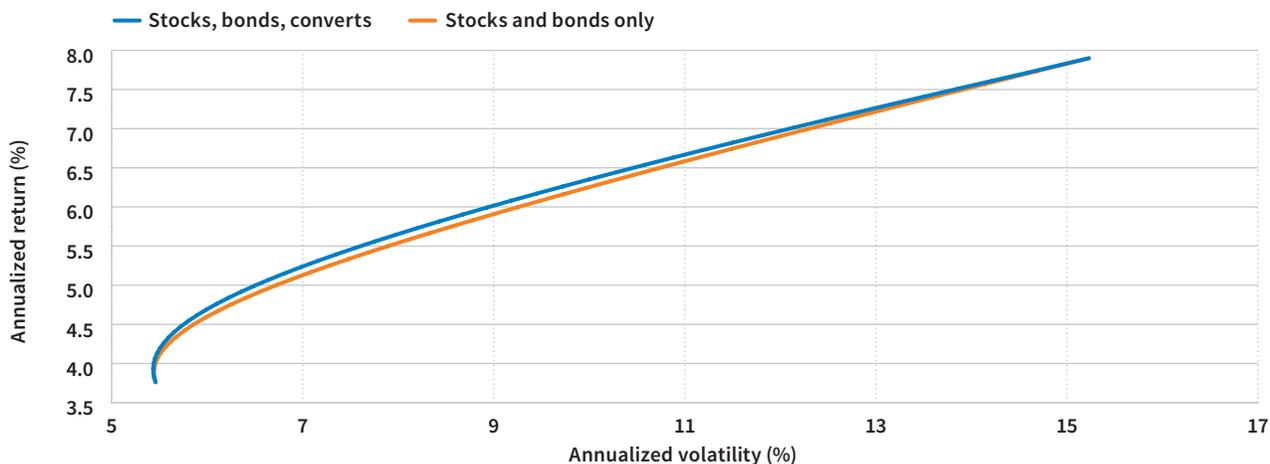
Source: Putnam Investments. Data from January 1997 through June 2022. Global equities are represented by the MSCI World Index, global convertibles by the ICE BofA Global 300 Convertible Index, and global bonds by the Bloomberg Global-Aggregate Total Return Index.

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7. Given that convertibles display a higher correlation to equities, a more stable approach to creating an efficient frontier is to perform a multistage process. First, we cluster the ICE BofA Global 300 Convertible Index with the MSCI World Index, given the higher pairwise correlation, and create a series of efficient allocations between the more similar asset classes. Next, we combine the allocations from part 1 and optimize with the Bloomberg Global-Aggregate Total Return Index to create the finalized efficient frontier.

FIGURE 5

## Historical efficient frontier comparison (January 1997–June 2022)



Source: Putnam Investments. Data from January 1997 through June 2022. The performance of the stocks, bonds, and convertibles portfolio is represented by combining the MSCI World Index, the Global Bonds by Bloomberg Global Aggregate Index, and the Global Convertibles by ICE BofA Global 300 Convertible Index. The performance of the stocks and bonds portfolio is represented by combining the MSCI World Index and the Global Bonds by Bloomberg Global Aggregate Index.

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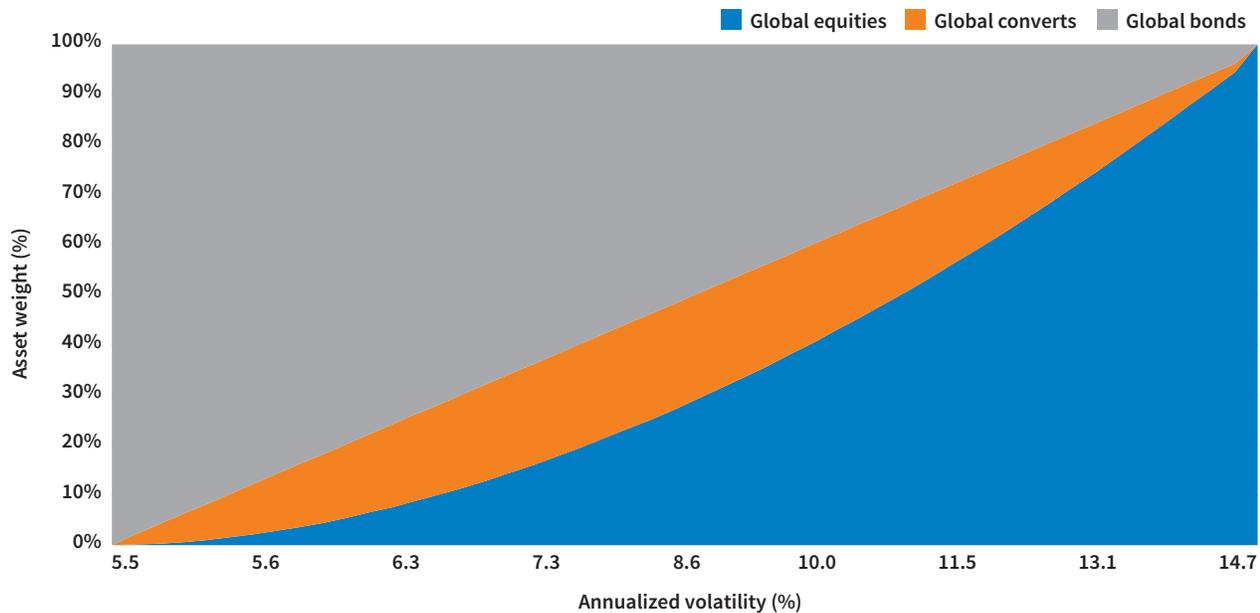
Based on the frontiers shown in Figure 5, it is evident that an allocation to convertible bonds can improve risk-adjusted returns by marginally shifting the frontier up and to the left. The benefits are most clearly seen in the middle part of the frontier, around an annualized volatility of 7%–10%.<sup>8</sup> This result is intuitive given that this volatility range is in line with the stand-alone volatility of global convertibles, allowing portfolios in this range to best take advantage of the attractive risk-adjusted return properties of the asset class. This also happens to be the volatility range where many investor risk tolerances reside, as it often equates to a moderate risk profile. This historical data suggest there is a sizeable role the asset class can play in a portfolio.

We can more closely examine how the allocation among the three assets evolve across the frontier. In Figure 6, the asset allocation is plotted along the volatility axis, where several observations become apparent. First, the allocation to convertibles is greatest at between 7%–10% annualized volatility, with a median allocation of around 20%. As noted previously, this is the point at which the greatest improvement in portfolio efficiency is observed. Second, for the more conservative investor, convertible bonds often serve better as an equity replacement. Finally, for the most aggressive investors, a convertible bond allocation often replaces a traditional global fixed income allocation. All three of these observations are consistent with what most investors may intuitively believe, but this data is the basis for a systematic framework for how best to allocate to convertibles as a separate asset class.

8. It is important to note that a simple mean-variance optimization (MVO) would have suggested a much higher allocation to global convertibles (greater than 50% in many instances), with greater relative improvements to the efficient frontier. Given how highly sensitive an MVO is to the inputs, we believe the multistage optimization process yields more realistic, stable results for investors.

FIGURE 6

## Frontier asset allocation with global convertibles (January 1997–June 2022)



Source: Putnam Investments. Data from January 1997 through June 2022. Global equities are represented by the MSCI World Index, global convertibles by the ICE BofA Global 300 Convertible Index, and global bonds by the Bloomberg Global-Aggregate Total Return Index.

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### Potential to improve portfolio efficiency

Given the unique features and the historical growth of the convertible bond market, we believe investors have attractive opportunities to expand the use of the asset class in multi-asset portfolios. Their hybrid nature allows convertible bonds to provide the attributes of both stocks and bonds, while also providing diversification across style and market capitalization, which is evident when reviewing historical returns. For many investors, this diversification provides capital efficiency, allowing one to get exposure to many attributes in one stand-alone asset class. Beyond capital efficiency, convertibles have historically provided efficient risk-adjusted returns, and compelling evidence shows the potential to earn additional return beyond what can be explained by other asset classes. We believe that maintaining a structural allocation to convertible bonds, when combined with other global stocks and bonds, offers clear investor benefits to improving portfolio efficiency.

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