

# Global Convertibles

## Global Convertibles Primer

Bank of America  
Merrill Lynch



Primer

21 March 2019

### Introduction to global convertibles

Convertible securities originated more than a century ago, when railroad companies in the then-emerging US economy needed to raise capital. Following the success of these early years, the convertible market has evolved into a dynamic and robust global arena where the basic structure of mixing debt and equity in a single investment remains unchanged. Convertibles combine equity and debt features, allowing investors to participate in potential equity price appreciation with limited downside risk, provided by the debt feature. In this primer, we open by introducing readers to the distinct nature of convertible securities with an emphasis on characteristics, behavior, and structure.

### Determinants of convertibles behavior

Two main determinants of a convertible security's performance are parity and conversion premium. Parity, also known as the conversion value, is the value of a convertible security if it were to be converted into stock. The conversion premium is the price an investor has to pay above parity to own the convertible. Additionally, the investment value (or the straight bond value) is independent of the price of the underlying stock, and provides a theoretical floor below which the bond should not trade, given an unchanged interest rate environment. As the underlying equity increases, the parity of the bond also increases, though if the underlying equity declines, the convertible price is supported by the investment value.

### The benefits of convertible investing

Longstanding analysis shows that convertibles, when added to a portfolio of stocks and bonds, can provide improved risk/return characteristics for investors, and can be considered as part of a broad asset allocation strategy. What's more, since convertibles are not perfectly correlated with either stocks or bonds, their addition to a portfolio can dampen overall volatility. In this primer, we include an analysis of long-term returns (absolute and risk-adjusted), correlations, and portfolio allocation, before turning to a review of the global primary and secondary convertible markets.

### Global primary and secondary market overview

From the 1990s through pre-crisis 2008, the convertible market grew steadily, albeit cyclically. Not surprisingly, following the financial crisis issuance declined significantly through 2012, but has since rebounded. Each year from 2013 through 2018 saw flat to positive global net issuance on an annual basis, and new supply volumes are off to a strong start in 2019. Despite a contraction in market capitalization in the years immediately following financial crisis, the convertible market has managed to maintain the adaptability that prevailed from the early days. Today's convertible secondary market has a market value of \$308bn as per main regions, more than half of which is concentrated within the US. The global market is now skewed toward lower-delta yield alternative names and traditional coupon-pay structures. Dominant sectors include tech, financials, and healthcare.

### Terminology, metrics, and indices

Please refer to our appendices for relevant convertible terminology and metrics, sensitivity measures, and a complete listing of the ICE BofAML global convertible indices.

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**Refer to important disclosures on page 41 to 43.**

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Timestamp: 21 March 2019 06:12PM EDT

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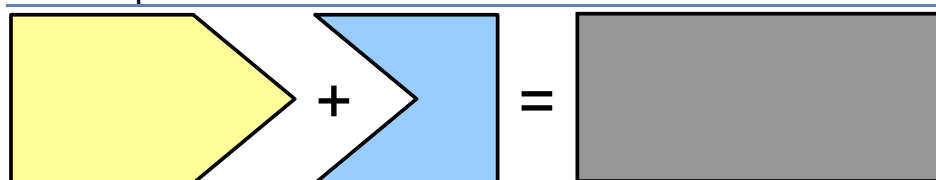
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# Introduction to global convertibles

The humble beginnings of convertibles date back to the 1800's. Convertible securities originated more than a century ago, when railroad companies in the then-emerging US economy needed to raise capital. By combining the option to convert bonds into equity, investors were attracted by the prospect of participating in equity appreciation in the growing US market, while at a minimum receiving interest and principal payments on their investment should the equity price fail to rise. In short, investors were able to partake in upside returns while enjoying some protection on the downside. Following the success of these early years, the convertible market has evolved into a dynamic and robust global arena where the basic structure of mixing debt and equity in a single investment remains unchanged.

Convertible securities are a hybrid financial instrument traditionally defined as an investment security which is not currently common stock, but which can be converted into common stock at the holder's option. This includes commonly known securities such as convertible bonds and preferreds but also extends to more exotic securities. Convertibles combine both equity and debt features, allowing the investor to participate in equity price appreciation with more limited downside risk, generally provided by the debt feature.

**Exhibit 1: Simplified convertible structure**



**Bond/Preferred**

**Warrant**

**Convertible**

Source: BofA Merrill Lynch Global Research

The debt feature of a convertible bond is derived from the convertible's stated coupon and claim to principal. As such, its price is subject to changes in interest rates and the creditworthiness of the issuer. The debt feature protects the convertible from a decline in the price of the equity (more on this in the sections below). The equity feature is derived through the call option, or warrant, embedded in the bond and enables the convertible bond to participate in equity price appreciation. Accordingly, the value of the embedded option is significantly affected by the volatility of the underlying stock.

**Table 1: Factors influencing convertibles**

Change in Variable	Value of Convertible
<b>Bond Effect</b>	
Increase in Credit Spreads	-
Increase in Interest Rates	-
Addition of Investor Puts	+
<b>Warrant Effect</b>	
Increase in Stock Price	+
Increase in Volatility	+
Increase in Common Dividends	-
<b>Combined Effects</b>	
Increase in Issuer Call Risk	-

Source: BofA Merrill Lynch Global Research

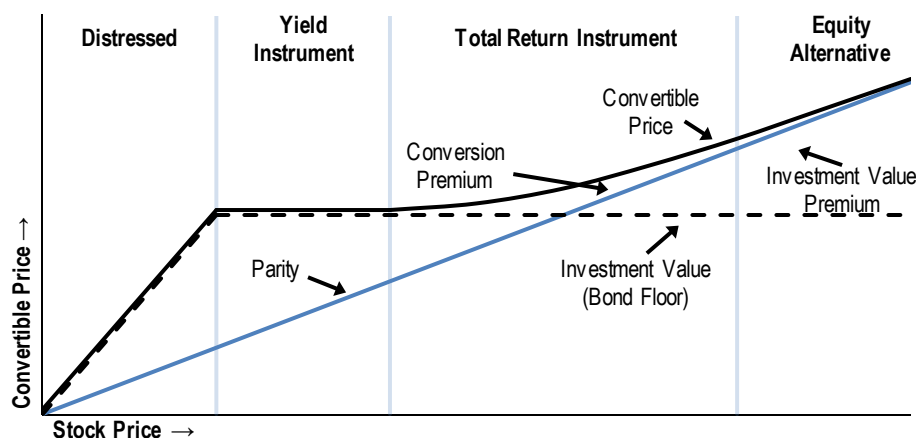
## Determinants of convertible behavior

Two main determinants of a convertible security's performance are parity and conversion premium. Parity, also known as the conversion value, is the value of a convertible security if it were to be converted into stock. The conversion premium is the price an investor has to pay above parity to own the convertible. Generally, convertibles can be characterized into one of the following categories based on their delta, a

measure of equity sensitivity showing the relationship between a percent change in stock price and corresponding expected percent change in convertible price:

- **Distressed debt:** Convertibles in this category are characterized by distressed credit which has caused the straight bond value of the convertible to break down. Convertibles in this segment of the market tend to trade more like equity than debt as the price of the bond converges to parity and the conversion premium collapses. This type of convertible is illustrated in the far left-hand side of Chart 1 below. We consider securities with deltas below 0.1 to be distressed.
- **Yield instrument/straight debt alternative:** Convertibles in this category are characterized by high yields and high conversion premiums. Given that the equity option is so far out of the money, the security behaves almost like a pure debt instrument with little regard given to the option value. This type of convertible is illustrated in the left-hand side of Chart 1 below. We consider securities with deltas between 0.1 and 0.4 to be yield instruments.
- **Total return instrument:** Convertibles in this category exhibit ideal characteristics of a convertible investment, characterized by moderate yields/conversion premiums and a good level of equity sensitivity. This type of convertible is illustrated in the middle section of Chart 1 below. We consider securities with deltas between 0.4 and 0.8 to be total return instruments.
- **Equity alternative:** Convertibles in this category behave very close to a pure equity investment, characterized by lower yields/conversion premiums and a high degree of equity sensitivity. This type of convertible is illustrated in the right hand side of Chart 1 below. We consider securities with deltas greater than 0.8 to be equity alternatives.

**Chart 1: Hybrid behavior of a convertible bond**



Source: BofA Merrill Lynch Global Research

The investment (straight bond) value is independent of the price of the underlying stock and therefore appears as a flat line in Chart 1. It provides a theoretical floor below which the bond should not trade, given an unchanged interest rate environment. For very low values of equity, however, the convertible price drops with the stock price because such low equity levels are associated with worsening credit and a reduced probability of corporate survival.

As the underlying equity increases, the parity (conversion value) of the bond also increases because parity is directly proportional to the price of the underlying equity. Provided the convertible bond is not about to be called or the common does not out-yield the convertible, the convertible price lies above the greater of parity and straight bond value. A bondholder can always get parity by converting the bond to equity. In addition, in the event of a fall in the stock price, the convertible price is supported by the investment value of the bond.

### Illustrative examples

We have constructed the following examples which illustrate convertible behavior in reaction to stock price changes and subsequent shifts along the parity line and conversion premium changes. For reference, below are the formulas we use to calculate parity and conversion premium:

$$\text{Parity} = \text{Conversion Ratio} \times \text{Current Stock Price}$$

$$\text{Conversion Premium} = \frac{\text{Convertible Price} - \text{Parity}}{\text{Parity}}$$

To provide an idea of how a convertible security reacts to changes in the underlying equity price, we have provided a working example of a convertible security (Table 2) and summarized the results for both a 25% increase in stock price and a 25% decrease in stock price. As shown, the convertible has risen in price significantly since issue (\$163.25 current price), suggesting the underlying equity has performed well. The conversion premium will generally decline as the stock price rises. In this example, the conversion premium is only 1.63%, suggesting that both the stock and the convertible have enjoyed considerable appreciation since issuance. As a result, the convertible now exhibits extreme equity sensitivity. For a 25% increase in the stock price, the convertible's price increases 24.9%, and for a 25% decline in the stock price, the convertible's price declines 21.6%. This example is characteristic of an "equity alternative," as illustrated in the right hand side of Chart 1.

**Table 2: Illustrative convertible (high equity sensitivity)**

Metric	Value	Metric	Stock +25%	Stock -25%
Issue Price	\$100.00	Convert Price	\$203.91 (+24.9%)	\$128.03 (-21.6%)
Current Price	\$163.25	Stock Price	\$58.75	\$35.25
Stock Price	\$47.00	Conversion Premium	1.57%	6.29%
Delta	0.93	Current Yield	1.29%	2.05%
Conversion Premium	1.63%	Conversion Ratio (per \$1000)	34.17	34.17
Coupon	2.63%	Parity	\$200.75	\$120.45
Current Yield	1.60%			
Conversion Ratio (per \$1000)	34.17			
Conversion Price	\$29.27			
Parity	\$160.62			

Source: BofA Merrill Lynch Global Research

Table 3 illustrates a second convertible example with lower equity sensitivity. When looking at the sensitivity analysis below, there are considerable differences between these two convertible examples. As illustrated, the convertible increases 6.5% to \$88.58 from \$83.19 on a 25% increase on the stock. As the underlying equity price increases, parity increases and the conversion premium declines. Conversely, the convertible declines 3.8% to \$80.00 for a 25% decline in the stock. As the underlying equity price declines, parity also falls and the conversion premium grows even larger. This convertible demonstrates only modest equity sensitivity on the upside, given that the convertible increases only 6.5% for a 25% increase in the stock. While this does not allow for much upside appreciation, it does provide yield with much greater downside protection than owning the underlying stock.

**Table 3: Illustrative convertible (low equity sensitivity)**

Metric	Value	Metric	Stock +25%	Stock -25%
Issue Price	\$100.00	Convert Price	\$88.58 (+6.5%)	\$80.00 (-3.8%)
Current Price	\$83.19	Stock Price	\$7.58	\$4.55
Stock Price	\$6.06	Conversion Premium	32.03%	98.73%
Delta	0.27	Current Yield	4.23%	4.69%
Conversion Premium	54.98%	Conversion Ratio (per \$1000)	88.57	88.57
Coupon	3.75%	Parity	\$67.09	\$40.26
Current Yield	4.50%			
Conversion Ratio (per \$1000)	88.57			
Conversion Price	\$11.29			
Parity	\$53.67			

Source: BofA Merrill Lynch Global Research

## Advantages of convertibles for the investor

The hybrid nature of convertibles, that is to say their unique combination of debt and equity features, tends to make the convertible asset class attractive to a diverse investor base. As such, we highlight in the following the potential advantages convertibles can offer investors over straight debt and equity instruments.

### Current yield advantage over equities

Convertible bonds generally offer a current yield advantage over the underlying equity, which on average is currently approximately 1.67% for the ICE BofAML G300 Global Convertibles index (VG00) and 2.52% for the ICE BofAML All US Convertibles index (VXA0). We note, however, that the yield advantage range is quite wide and can vary significantly from one individual security to another. The value of the convertible relative to its underlying stock increases with its yield advantage.

### Equity upside participation with less downside

The fixed income aspect of the security tends to provide downside support, while the embedded call option supplies the potential for participation with the common stock's gains. In the event of a bankruptcy, convertibles rank higher in the capital structure than common stock. Further, the bond investment value serves as a theoretical "floor" for the convertible price. The price of a convertible security will normally not rise as rapidly as the common stock in a very bullish market environment, nor will it be quite as defensive as a pure straight bond in a declining stock market environment. Nevertheless, a portfolio of convertibles may exhibit comparable or even superior behavior to either instrument over complete market cycles (see "Equity-like returns with less risk").

### Improved risk profile of a portfolio

Because convertibles are not perfectly correlated with either stocks or bonds, the addition of convertibles to portfolios of stocks or bonds can decrease the overall risk level of the portfolio, while maintaining or improving return levels. Notably, convertibles generally exhibit higher Sharpe ratios than equities, indicating more favorable risk-adjusted returns (see "Convertibles can reduce overall portfolio risk").

### Broader investment opportunities

The diversity of convertible structures and their investment characteristics can offer alternatives to meet a variety of investment objectives. Equity investors with a minimum yield requirement may be able to invest in a company through the convertibles as opposed to the common stock. In addition, risk-averse equity investors may look to convertibles as a way to hold a more defensive instrument.

Bond investors who cannot hold straight equity may be able to gain access to the company through a convertible. Fixed income managers looking to add "alpha" to their performance can consider convertibles as a way to obtain some equity exposure by sacrificing a certain amount of income.

## Arbitrage opportunities

Convertible arbitrage is a trading approach based on hedging specific risk components of a convertible security, namely the equity, credit, or interest rate risk. While taking place over a broad range of securities, arbitrage tends to be most easily accomplished with an equity equivalent issue. For example, if a convert is cheap relative to the underlying stock, an investor might take a long position in the bond and short position in the equity.

## Advantages of convertibles for the issuer

Convertible issuers are as diverse as convertible securities themselves, ranging from small-cap and fast-growing to mature large-cap issuers looking to raise capital at favorable terms. From this broader context, we have distilled the potential advantages of convertibles into three areas, namely cost dynamics, financial flexibility, and market dynamics.

### Cost dynamics

- **Lower coupon/YTM:** Because the investor has the advantage of upside equity appreciation, a convertible issuer is able to pay a lower interest rate than on straight debt, which can provide significant cash savings for the company.
- **Premium equity:** The issuer is effectively issuing equity at a premium to the underlying equity price.
- **Less dilutive:** The issuer is raising equity capital on a deferred basis; actual dilution is deferred until conversion of the convertible.
- **Monetizing equity volatility:** The higher the volatility of a company's stock price, the greater the option value of the convertible (as with a higher volatility, the chance for equity appreciation improves). As discussed above in "Lower coupon/YTM," this enables the issuer to pay a lower coupon.
- **Tax treatment:** Interest payments on debt are partially tax deductible whereas dividends come from after-tax profit, so from a tax perspective convertible debt securities are preferable to issuing equity. Note that the US tax reform bill passed in 2017 limited the tax-deductibility of interest payments up to 30% of adjustable taxable income. While this reduces the tax advantage converts structured as coupon-pay bonds currently have over equity, it increases their advantage over straight bonds, which pay higher coupons. In other words, straight bonds are relatively more expensive as their previously larger interest deductions are capped.

### Financial flexibility

- **Fewer restrictive covenants:** Generally speaking, convertibles have fewer restrictive covenants and can minimize the impact on senior debt capacity if the convertible is issued as a subordinated issue.
- **Liberal call provisions:** Convertibles typically have shorter call protection than straight debt.
- **Customization of structure:** Features can easily be added to a convertible structure to fit a company's financial situation.

### Market dynamics

- **Access to debt markets:** Converts allow companies with a weaker credit profile access to the public debt markets at reduced interest rates relative to straight corporate bonds.
- **Broad investor appeal:** Due to their hybrid nature, convertibles attract a variety of investors with different financial objectives.

## Issuer objective drives structure choice

Convertible products can range from very debt-like to very equity-like, depending on the exact type of product and terms. The structure employed by issuers will depend on a variety of internal and external considerations, including those that follow.

### Internal considerations

- **Desire for debt versus equity:** A company's desire to maintain a certain debt to equity ratio will impact its choice of a more debt- or equity-like security.
- **Time frame:** What maturity of a company's convertible best fits into its strategic plan?
- **Tax position:** Interest from bonds is partially tax deductible for the issuer while dividends on preferred stock are not (see our note on this above). "Phantom income" on some bonds results in a company deducting more interest than it is actually paying.
- **Ranking:** Converts can be senior, subordinated, or preferred. This will be affected by covenants in a company's bank and senior debt.

### External considerations

- **Rating agency pressure:** Does the company care about how the issuance of the convertible will affect the credit rating of the company?
- **Stock market outlook:** In a bullish stock market environment, a company will not want to give away its stock too cheaply.
- **Interest rate outlook:** Anticipation of a rise in interest rates will make a company want to lock in longer-term debt at lower rates.
- **Supply/demand factors by market:** The type of instruments investors are looking for in the market environment.

## Convertible structures

Convertible structures vary greatly, covering a wide spectrum of payoff ranges. Accordingly, the flexibility of convertibles lends itself to the broad appeal of the convertible asset class for both issuer and investors alike. Over time the popularity of structures has varied just as issuer needs and market dynamics have changed. Currently, the secondary and primary markets are dominated primarily by cash-pay bond structures, though zeros are common in Asia and Japan, and their popularity has grown in Europe. Over the years, however, expansion of the convertible market spawned product innovations tailored to issuer and investor wants. These product innovations generated a plethora of brand names, confusing to even the most seasoned convertible user.

What follows is a look into convertible structures, starting with traditional cash-pay bonds and preferreds, as well as mandatory convertibles. Next we look at additional structure variations (listed alphabetically), some of which are less common nowadays, but worth mentioning for reference. From an investor's point of view, most convertible products are likely to fall into one of these categories.

### Cash-pay bonds and traditional preferreds

Convertible bonds and convertible preferreds share the basic fixed income structures of their namesakes—a fixed coupon or dividend rate, priority in regard to income and liquidation, a fixed maturity (outside of perpetuals), early redemption provisions, anti-takeover features and put options. For fixed coupon securities, coupon frequency is usually semi-annual, though annual and quarterly coupon frequency does exist in Europe.



Of course, they are also convertible into stock. Hence we will discuss these structures together. Typically these structures have the following features:

- **Conversion privilege:** The conversion privilege is usually described in terms of a conversion price or a conversion ratio (number of shares obtainable by converting one share of preferred or one bond). When initially sold, the conversion price may be set anywhere above the market price of the underlying common stock (conversion premium). Notably, some securities are issued with a “contingent conversion” feature which limits an investor’s ability to convert unless pre-set conditions are met, while other issues may offer conversion at the option of the investor over the life of the issue.
- **Coupon:** Coupon and dividend rates are generally set below what the issuer would have to pay in the non-convertible market. The coupon or dividend rate is typically above the common stock yield.
- **Maturity:** Convertible bond maturities can vary. Some bonds offer longer-term maturities (e.g., 20-30 years) with 5-7 year puts at a holder’s option, which effectively shorten the bond’s maturity. The puts are generally at par or the accreted value of the convertible. Traditional convertible preferreds are often perpetual but a number of issues can include mandatory redemption features. This effectively sets a “maturity date” that can be as short as ten years after issue.

### **Mandatory convertibles**

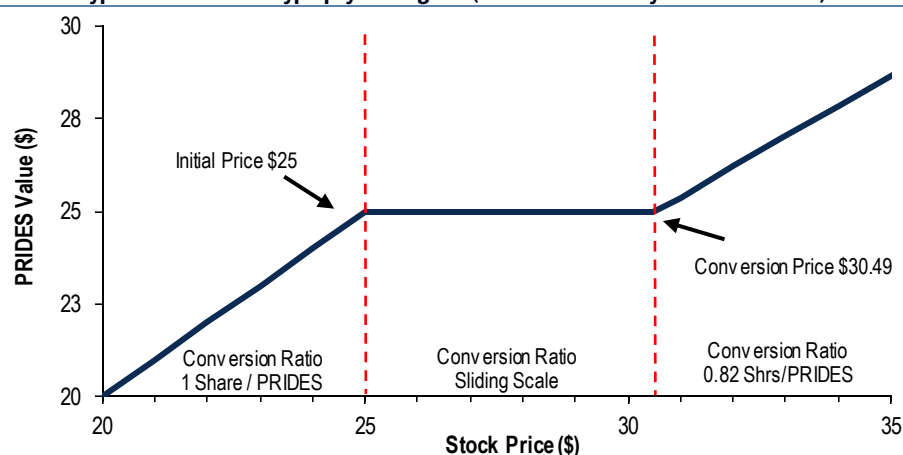
Mandatory convertibles differ from traditional convertibles in that an investor will automatically receive shares at maturity rather than cash at redemption. Since these securities mandatorily convert into stock at maturity they resultantly have no discernible bond floor. Therefore, mandatory convertibles can be effectively thought of as yield-enhanced common stock. There are a variety of names assigned to mandatory convertibles, though generally structures have similar characteristics. For illustrative purposes we delve further into PRIDES and PERCS below, though PERCS have diminished in popularity over the past few years.

### **PRIDES-type mandatory preferreds**

PRIDES-type (Preferred Redeemable Increased Dividend Equity Securities) mandatory preferreds are preferred shares which are exchangeable at a premium any time (at the holder’s option) into common shares, but mandatorily convert to common stock at maturity. The number of shares received per security is a function of the stock price on the conversion date. When the underlying stock price moves beyond the maximum conversion ratio or below the minimum conversion ratio, the value of the bond can vary, allowing for upside potential but limited downside protection. This creates a unique structure that makes PRIDES among the most equity-sensitive structures.

As depicted in Chart 2 below, there are three possibilities for the value of PRIDES at maturity: (1) the stock closes below the initial price and the PRIDES converts into one share of common, (2) the stock closes between the initial price and conversion price, and the PRIDES is converted into stock according to a sliding scale designed to give the holder shares equal in value to the initial issue price, or (3) the stock exceeds the conversion price at maturity resulting in the PRIDES being converted into the optimal conversion number of shares.

**Chart 2: Hypothetical PRIDES-type payoff diagram (value at mandatory conversion date)**

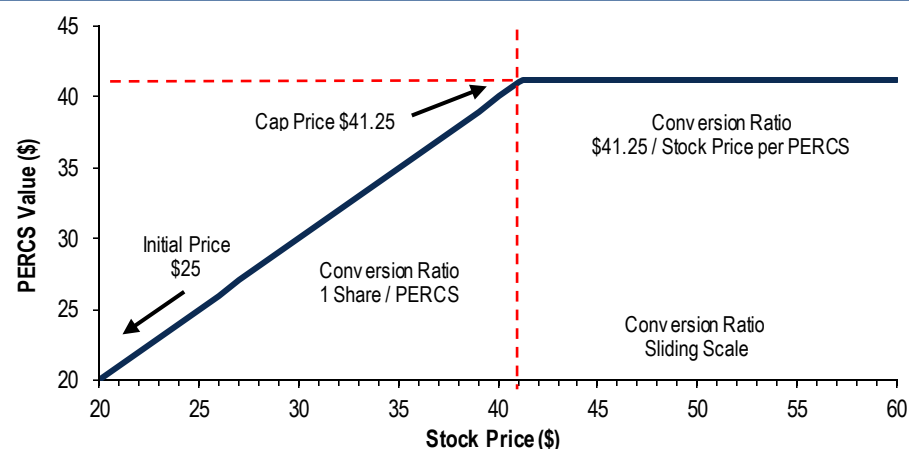


Source: BofA Merrill Lynch Global Research

### PERCS-type mandatory preferreds

PERCS-type (Preferred Equity Redemption Cumulative Stock) mandatory preferreds are preferred shares which offer limited upside participation with the underlying stock and mandatorily convert into common stock at maturity. Thus, PERCS, like PRIDES, are among the most equity-like convertible securities, offering a different risk/reward tradeoff from traditional convertible securities (Chart 3). Unlike PRIDES, however, the upside of PERCS is capped. Most notably, other than their yield advantage, PERCS provide no protection from a decline in the price of their underlying stock (i.e. the downside risk is in line with the common stock).

**Chart 3: Hypothetical PERCS-type payoff diagram (value at mandatory conversion date)**



Source: BofA Merrill Lynch Global Research

### Cash-to-zero-coupon bonds

These are a pure hybrid between a cash-pay bond and a zero-coupon bond. These securities are issued at a deep discount to their face value and pay a coupon until the first call date (their effective accreted value stays flat equal to the at-issue price); afterwards, they stop paying the coupon and begin accreting to their face at maturity at the same (or similar) rate as the coupon's. These structures have been used by issuers who are flush with cash at the convertible's issuance, but are not sure whether they will have enough cash to make interest payments down the road.

### Exchangeable convertibles

Exchangeables convert into the stock of an entity other than underlying issuer. Through this structure, an issuer can monetize the value of a holding in a tax-efficient way. The issuer benefits by receiving proceeds when the exchangeable is issued, while not having

to pay capital gains taxes until the bonds are actually converted. Exchangeables are attractive from an investor standpoint as well, since the underlying shares are inaccessible from the issuing company, and are thereby protected from any claim on the issuer in a default.

As a general rule, conversion is not a taxable event. An investor's basis in the convertible is carried over to the stock received upon conversion. The main exception to this is for exchangeable convertibles, where conversion is into stock of a different corporation than the issuer.

### **Floating-rate coupon bonds**

In a low-interest environment, issuance of floaters can be popular, since it allows issuers to offer even lower than traditional coupons, while investors receive protection against future rises in interest rates. Most convertible floaters are pegged to a three-month LIBOR rate, which is reset quarterly and coincides with coupon payment dates.

### **Foreign convertible bonds**

Foreign convertible securities are denominated in a currency different from that of the underlying equity. These securities are issued outside of the underlying's domestic market, and are denominated in the currency where they are traded. An example would be a European company issuing a USD-denominated convertible in the US. Convertibles also come in the form of a Eurobond, issued in a currency that is different from the market where the issue is traded. An example would be a German issued and listed USD-denominated convertible on a US company. Exchange rates changes are an imperative consideration in terms of risk and valuation given the conversion value of the convertible security is now a function of exchange rates as well as the underlying equity price.

### **High premium convertibles**

High premium (HiPr) structures are high premium convertible securities with additional non-detachable warrants stapled to them. HiPr's offer issuers the unusual combination of both high premiums and low yields, but compensate investors by effectively increasing the conversion ratio (through the additional warrants) as the stock price passes the strike price of the warrants. The high conversion premium reduces the impact of stock dilution at issuance. However, as the stock rises through the warrant strike price, the increasing conversion ratio increases dilution. Issuers consider this as a "quality" problem because if the stock has risen sufficiently for the warrants to kick in, this must be in an environment where the company's stock price is outperforming and shareholders can tolerate the extra dilution.

### **Original issue discount convertibles**

Original issue discount (OID) convertible bonds have below-market coupon levels and are offered at a steep discount to their par (or face) value, and they gradually accrete to their face value at maturity. The most extreme version of an OID is the zero-coupon bond. In between the zero-coupon and the full coupon, almost any combination of coupon and discount is possible.

The bond component of return on an OID convert comes partly from the coupon and partly from accretion of the discount. Upon conversion, the accretion is not paid, so realization of this portion of total return becomes an either/or situation. Either the stock appreciates faster than the growth in accreted value, or the accretion is paid at maturity or earlier redemption. The steeper the initial discount, the more significant this accretion factor becomes. The accretion of OID is treated as ordinary income and is taxable, just as with zero coupon bonds. Depending on the amount of accretion relative to the coupon payments, the income taxation can result in negative cash flow for investors.

## Reverse convertibles

A reverse convertible is a synthetic convertible that gives the option of equity conversion to the issuer, not the holder. The typical structure involves issuing a note whose payoff structure is dictated by the performance of an underlying stock. Provided the stock price stays above pre-determined thresholds, the holder is expected to be paid back cash for the full par at maturity (no equity). If the stock declines, a conversion feature may be triggered, resulting in the investor receiving equity and losing a certain amount of principal. These structures carry significant differences in investment risk and return potential than traditional convertible bonds which should be fully considered by investors.

## Step-up convertible bonds

In the convertible security spectrum, “step-up” converts fall between coupon pay and OID bonds. The distinguishing feature of these bonds is straightforward; after a certain period of time, the initial interest rate is stepped up to a higher rate. In most cases, this is scheduled to occur at the first call date. If the stock has performed well since the convert was issued, the bond may be called to “force” conversion and the issuer never has to pay the higher coupon. If the stock has not risen sufficiently to force conversion, the higher coupon may provide an incentive to the issuer to refinance.

## Step-down convertible bonds

There have been convertibles issued with a coupon that steps down after a certain period of time. In most cases, this is scheduled to occur at the first call date. This allows the issuer to make the convertible more attractive for investors in the earlier years, while having an option to leave the bond outstanding after the call date at a lower interest cost.

## Trust preferreds

Convertible trust preferreds are essentially convertible preferred securities that pay quarterly dividends. From a holder’s standpoint, these securities are essentially the same as other convertible preferreds. Major differences are (1) trust preferreds are non-perpetual (usually 30 year maturity), and (2) the income payments are treated as interest. However, trust preferreds rank above other preferreds in the capital structure (roughly equivalent to subordinated debentures). The issues offer a measure of downside support, though not as strong as traditional convertible bonds, while typically offering higher current yields.

These securities were designed to provide tax and rating advantages to the issuer through the use of a Delaware statutory business trust. The primary issuer sets up a trust, which sells the convertible trust preferred to the public investor. The trust then uses the proceeds to purchase convertible subordinated debentures from the primary issuer with the terms virtually identical to those of the trust preferred. The coupon payments from the sub note are then used to pay the regular payments on the trust preferred. As a result of this structure, these payments are not entitled to the dividend received deduction and are treated as interest.

Since the primary issuer has sold convertible subordinated debentures to the trust, it is entitled to deduct the coupon payments for tax purposes. However, the debentures do not appear on the primary issuer’s balance sheet. Instead, the primary issuer consolidates its financial statements with those of the trust and the convertible shows up as a minority interest. This consolidation allows the primary issuer to receive partial equity treatment from the rating agencies.

## Zero-coupon bonds

To create zero-coupon convertibles, the standard convertible bond was redesigned in two important respects: (1) the bonds were reconfigured as deep discount zero coupon instruments; and (2) one or more relatively short-dated put options were added. Issued at deep discount, the bonds accrue to face value and have no regular interest payment. Puts allow the holder to redeem the bonds and thereby realize accreted income prior to

maturity. This provides significant downside price support and ensures holders a minimum total return equal to the yield to put, provided the issuer remains solvent. The accretion to face value is treated as ordinary income. For zero-coupon bonds, this results in negative cash flow for investors for a period of time. More recently, amid record low interest rates, investors have been willing to accept less yield, and many zero coupon converts have not been issued at a discount to par as they had in the past.

## Prospectus fundamentals

The prospectus contains the relevant terms and conditions of a convertible security. As such, careful review of the prospectus is paramount since investors do not want to overlook essential information. In this section, we aim to highlight key issues investors should consider when reviewing a convertible prospectus.

**Call protection:** A typical convertible bond or preferred contains some form of protection to prevent the issue from being called for some period of time. Call protection is one of the most important factors influencing convertible performance since it effectively determines the minimum life of the embedded equity call warrant. Once call protection has expired, the option's life becomes dependent on the stock price since once parity is above the call price the convertible becomes a forced conversion candidate. The holder of a convertible faces a dilemma if the issue is called to force conversion: whether to hold the stock and risk downside, or to sell the stock and possibly forgo further upside. By contrast, during the period of call protection the holder has the luxury of continuing to participate in the stock's upside while still enjoying a degree of downside protection should the stock fall.

When considering two identical issues with the exception of their call protection (one issue has protection, the other does not), for a convertible without call protection the convertible's return will converge with that of the stock as parity approaches the call price. This reflects the fact that the issuer may exercise his call privilege and "force" the convertible holder into the stock. The call protected issue, by contrast, participates more fully in the stock's upward move.

Restrictions on the issuer's right to call a convert come in two forms, hard and soft call protections, which sometimes are combined in the same issue. Hard call protection simply prohibits redemption under any circumstances until a certain date. Provisional or soft call protection prohibits redemption unless the underlying common stock reaches a certain threshold price level. For example, redemption might be prohibited unless the closing price of the underlying stock is at least 130% of the conversion price for any 20 out of 30 consecutive trading days. Like other terms, this is subject to change with market conditions.

**Subordination:** Convertibles can rank at various levels of seniority within the capital structure, a basic illustration of which is shown in Table 4. A large portion of convertible bonds are senior unsecured debt, ranking equally with other senior unsecured obligations. There are also convertible bonds classified as senior subordinated or subordinated debt, ranking junior to any senior unsubordinated debt, whether existing or prospective.

Convertible trust preferreds generally rank at the level of the debt underlying it; most have subordinated debt passing through the interest payments on the preferred. Traditional perpetual convertible preferreds, as a type of equity, rank below all debt but ahead of common stock in the capital structure. In most cases, they rank equally with other preferred stocks. Preferreds may be further stratified using the designations "junior" or "second," if the terms of another series of preferreds give it priority.

**Table 4: Basic capital structure hierarchy**

Structure	Seniority
Senior secured debt holders	Most senior
Senior unsecured debt holders	.
Senior subordinated debt holders	.
Junior debt holders	.
Preferred stockholders	.
Common stockholders	Most junior

Source: BofA Merrill Lynch Global Research

**Change of control put provision:** Various forms of “poison puts” are a feature. The goal of these provisions is to allow the investor to exit a position at par in the event of mergers that are potentially harmful to the conversion option. There are several variations. Generally, poison puts are triggered by a “Change of Control”, in which a third party obtains a defined level of voting control of the company. Some simply provide for a cash-put at par plus accrued interest; others aim to adjust the ratio so that parity will equal par.

Not all mergers will qualify (e.g., all-stock mergers typically do not trigger the put) and the terms of issues can be unique, thus each issue needs to be looked at individually. While the change in control put benefits out-of-the-money convertibles trading below par, for convertibles trading at-the-money or in-the-money this put option is worthless. Moreover, these convertibles get hurt the most from the loss of their option value associated with an all-cash or mostly-cash merger.

**Cash takeover protection provision:** Since convertibles lose all of their option value in a cash takeover, and hedged investors can experience severe losses on short positions in the underlying stock, convertible investors have demanded cash takeover protection (“CTP”) from new convertible issues. The most common type of cash takeover protection is the “additional shares” one.

Additional shares protection method is most common and calls for an increase in the conversion ratio over a limited period of time, based on a matrix of prices and dates. The price-date matrix contains stock share amounts equivalent to a hypothetical premium over parity that would be lost at a future time at a given takeover offer price. The price-date matrix values for the additional shares protection method are generally predetermined at the convertible issue date, based on spread, volatility and interest rate assumptions prevalent at that time. This protection usually expires by the first call date.

Cash takeover protection language includes other features besides protection type, which can affect a convertible’s ability to qualify for compensation, like protection triggering actions (most require conversion), protection triggering forms of merger consideration (only cash versus any non-stock consideration), minimum triggering non-stock portion (most allow “10% or more” non-stock), protection expiration (most expire after the first call date), and presence of a “public acquirer” clause (this clause effectively transforms a non-stock merger into a stock-for-stock merger from the convertible bondholder’s view). Like other terms, cash takeover protection is subject to change with market conditions.

**Cash on conversion:** Convertibles that come with a cash-out option can be settled with either cash or shares. Upon receipt of a conversion notice from the convertible investor, an issuer has the option to deliver cash or shares. When settled in cash, the value received by the investor will be equal to parity. However, if there is a look back period associated with the cash out option, than an averaging period will be used in determining the cash payout. The look back period begins upon receipt of the conversion notice, and an average closing price of the underlying share is calculated. As such, the average price becomes the main determinant for the issuer in deciding to deliver cash or stock to the investor.

**Contingent conversion:** This feature limits a holder's ability to convert voluntarily, by requiring specific conditions. The most common form of contingent conversion requires the stock price to appreciate through a specific hurdle (usually, 120% or 130% of the conversion strike price), and stay above the hurdle for a minimum period. Some issues also allow conversion if the credit rating is downgraded below a set level and most have conversion provisions for a change-in-control, issuer call, or significant asset distribution to stockholders.

**Contingent payment/accretion:** Contingent payment or accretion allows for additional small coupon payments triggered by a certain contingency, such as the stock price appreciating through a specific hurdle. This feature has been rare in new converts, but still exists in older ones.

**Anti-dilution provision:** Most convertibles protect the convertible investor in the event of actions on the company's part which might dilute their equity interest. These can include issues of equity at a discount (e.g., rights issues), subsidiary spin-offs, stock splits or one-time extraordinary dividends. The conversion ratio can be adjusted in such events. Convertibles commonly have anti-dilution protection against initiation or increase of the underlying common stock's regular dividend.

**"Screw clause":** Convertible investors are likely familiar with the provision that says "upon conversion, no adjustment will be made for interest or dividends." In other words this means that when one converts, he doesn't get the income accrued since the last payment. The main exception is upon a call-forced conversion (that is, when the issuer calls a convertible whose parity is above the call price and holders are forced to convert to get the higher value) during the period between the record and payment dates for the interest.

However, that exception usually protects only the interest payment near the first call date, since after that the issuer can call the bond at any time outside of the record-to-payment period. Sometimes, convertibles are structured to look like there is no "screw clause" at the first call date, but small technicalities of the conversion rights negate such language. Therefore, investors should become fully aware of such provisions by reading the prospectus, as this can have a material impact on investment returns.

**Make-whole clause:** A typical convertible has call protection in the early years of the security's life. Some issues have built in the option to force conversion immediately if the stock has had a strong run. Issuers pay for this privilege with the "make-whole" payment, which requires them to compensate the holder for this early redemption. Make-whole payments have fallen into two categories: (1) premium or (2) forgone income (coupon).

A "premium" make-whole compensates the holder for the premium paid at issuance. This premium payment is stepped down over time, deducting dividends/coupons as they are paid. A "dividend/coupon" make-whole compensates the holder for the foregone future cash flows he would have received under a hard call scenario, generally three to five years. As in the case of a premium make-whole, the payment is reduced over time to reflect coupons received.

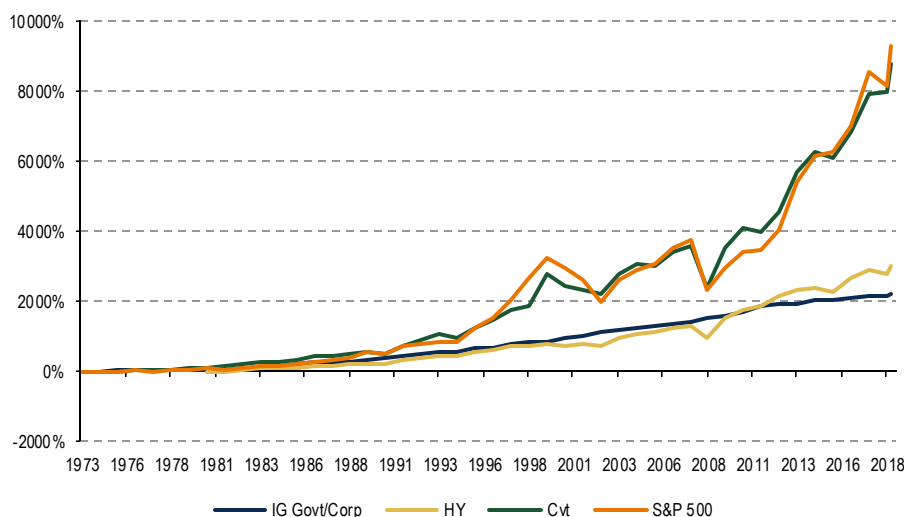
# The benefits of convertible investing

Long standing analysis suggests that convertibles tend to offer superior risk-adjusted returns to equities and bonds. Given the versatility of convertibles and their hybrid nature, their inclusion in a portfolio allows customization in terms of risk tolerance as convertibles can be used as part of a fixed-income allocation or as a lower risk equity alternative. To better illustrate the return profile of convertibles, we look at the historic risk and return profile of convertibles across regions over the past decade, correlations, and portfolio optimization.

## Upside participation with less downside

Convertibles are hybrid securities, offering a fixed income component that provides downside support in addition to an embedded call option that supplies the potential for participation with the underlying common stock's gains. Additionally, in the event of a bankruptcy, convertibles typically rank higher in the capital structure than common stock. As discussed in the preceding section "Determinants of convertible behavior", the bond investment value serves as a "floor" for the price of the convertible.

**Chart 4: Cumulative total returns from January '73 to present show that converts offer comparative returns to stocks over full market cycles**



Source: BofA Merrill Lynch Global Research, ICE Data Indices, LLC, Bloomberg  
\*Data as of March 20, 2019

Due to the hybrid nature of convertibles, the price of a convertible security will normally not rise as rapidly as the common stock in a very bullish market environment, nor will it be quite as defensive as a pure straight bond in a declining stock market environment. Nevertheless, a portfolio of convertibles will often exhibit comparable or even superior behavior to either instrument over complete market cycles. Chart 4 illustrates cumulative total annual returns going back to 1973 for stocks, convertibles and bonds, based on the US dataset where we have the longest reliable historical data.

## Equity-like returns with less risk

In comparison with their underlying stock, convertibles generally provide higher yields, greater downside protection, and seniority over common with regard to income distribution and in cases of liquidation. This has enabled convertibles to offer superior *risk-adjusted* returns compared to equity indices over complete market cycles (we use the Sharpe ratio, which measures the return above the risk-free rate in relation to the risk borne, as our measure of risk). The tables below illustrate the historic risk adjusted returns for the global market by region using annualized monthly USD-denominated return data since 1997.



**Table 5: US Sharpe ratios**

US	Ann'd Rtn	Ann'd Stdev	Sharpe
Govt	4.75	4.32	0.59
IG	5.87	5.10	0.72
HY	7.22	8.73	0.57
Eqty (S&P 500)	9.40	14.99	0.48
Cvt (VXA0)	8.68	12.44	0.52

Source: BofA Merrill Lynch Global Research, ICE Data Indices, LLC, Bloomberg

\*Data from December 31, 1996 to February 28, 2019

Based on total return time series. Note convertible indices contain investment grade, high yield, and not rated securities

**Table 6: Europe Sharpe ratios**

Europe	Ann'd Rtn	Ann'd Stdev	Sharpe
Govt	4.96	10.47	0.26
IG	4.71	10.69	0.23
HY	7.19	16.54	0.30
Eqty (Stoxx 600)	5.67	17.92	0.19
Cvt (VE00)	6.22	12.50	0.32

Source: BofA Merrill Lynch Global Research, ICE Data Indices, LLC, Bloomberg

\*Data from December 31, 1996 to February 28, 2019

Based on total return time series. Note convertible indices contain investment grade, high yield, and not rated securities

**Table 7: Asia-ex Japan Sharpe ratios**

Asia	Ann'd Rtn	Ann'd Stdev	Sharpe
Govt	6.28	5.69	0.72
IG	6.97	6.18	0.77
HY	8.53	12.20	0.52
Eqty (MSCI Asia-xJ)	8.24	21.49	0.28
Cvt (VASI)	6.74	10.97	0.41

Source: BofA Merrill Lynch Global Research, ICE Data Indices, LLC, Bloomberg

\*Data from December 31, 1996 to February 28, 2019

Based on total return time series. Note convertible indices contain investment grade, high yield, and not rated securities

**Table 8: Japan Sharpe ratios**

Japan	Ann'd Rtn	Ann'd Stdev	Sharpe
Govt	3.07	11.06	0.08
IG	2.33	10.75	0.01
Eqty (Topix)	3.70	17.50	0.08
Cvt (VJEU)	5.35	9.52	0.33

Source: BofA Merrill Lynch Global Research, ICE Data Indices, LLC, Bloomberg

\*Data from December 31, 1996 to February 28, 2019

Based on total return time series. Note convertible indices contain investment grade, high yield, and not rated securities

As seen in the tables above, convertibles on average performed better than the comparable equity index on a risk-adjusted basis across all regions. On an absolute returns basis convertibles exceeded equity market returns in Europe and Japan. During sideways-to-moderately-upbeat equity markets and stable-to-improving credit markets, convertibles tend to perform their best, providing upside participation with rising stocks while retaining downside protection of bonds in case of a pullback. As a result, the Sharpe ratio for each class of convertibles compares much more favorably to stocks. This represents an unusual situation because typically, greater return is often associated with greater risk.

## Convertibles can reduce overall portfolio risk

An investor knows that there is a risk-return tradeoff, and that in order to obtain greater returns on investments, the investor must be willing to take on greater risk. Yet for a specified level of return, a rational investor will prefer less risk to more risk. It is standard to measure risk in terms of the standard deviation of return. A portfolio is said to be efficient if no portfolio offers the same return with a lower standard deviation. The efficient frontier is the collection of all efficient portfolios. To construct the risk/reward profiles of these portfolios, we need their historical returns, standard deviation, and correlation with other assets.

### Importance of correlation in reducing portfolio risk

We believe investors that have the ability to allocate between stocks and bonds can consider convertibles as an additional asset class for enhancing portfolios. Convertibles tend to be more highly correlated with equities and high yield bonds, while offering low correlations to investment grade bonds (see the correlation matrix tables below). Since convertibles do not move in perfect unison with stocks and bonds, their addition to a portfolio can dampen the overall volatility of a portfolio.

**Table 9: US correlation matrix (last 10 years)**

	US Cvt	US Govt	US IG	US HY	US Eqty
US Cvt	1.00	-0.39	-0.06	0.68	0.92
US Govt		1.00	0.80	-0.21	-0.45
US IG			1.00	0.30	-0.17
US HY				1.00	0.58
US Eqty					1.00

Source: BofA Merrill Lynch Global Research, ICE Data Indices, LLC, Bloomberg

\*Data from January 23, 2007 to March 15, 2019

**Table 10: Europe correlation matrix (last 10 years)**

	EU Cvt	EU Govt	EU IG	EU HY	EU Eqty
EU Cvt	1.00	0.73	0.80	0.89	0.87
EU Govt		1.00	0.95	0.80	0.45
EU IG			1.00	0.89	0.50
EU HY				1.00	0.68
EU Eqty					1.00

Source: BofA Merrill Lynch Global Research, ICE Data Indices, LLC, Bloomberg

\*Data from January 23, 2007 to March 15, 2019

**Table 11: Asia ex-Japan correlation matrix (last 10 years)**

	AS Cvt	AS Govt	AS IG	AS HY	AS Eqty
AS Cvt	1.00	0.31	0.29	0.63	0.84
AS Govt		1.00	0.83	0.38	0.26
AS IG			1.00	0.48	0.15
AS HY				1.00	0.54
AS Eqty					1.00

Source: BofA Merrill Lynch Global Research, ICE Data Indices, LLC, Bloomberg

\*Data from January 23, 2007 to March 15, 2019

**Table 12: Japan correlation matrix (last 10 years)**

	JP Cvt	JP Govt	JP IG	JP Eqty
JP Cvt	1.00	0.67	0.69	0.47
JP Govt		1.00	0.99	-0.10
JP IG			1.00	-0.08
JP Eqty				1.00

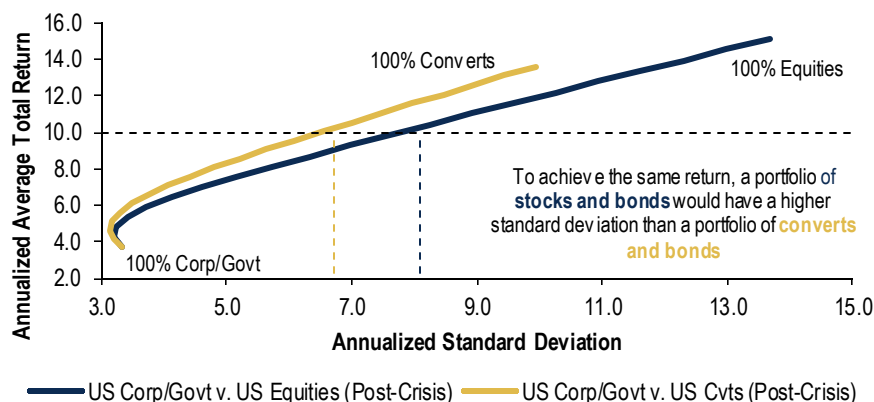
Source: BofA Merrill Lynch Global Research, ICE Data Indices, LLC, Bloomberg

\*Data from January 23, 2007 to March 15, 2019

### Convertibles can add return potential with lower risk

In terms of quantifying the role convertibles can play in portfolio management, we have constructed two hypothetical sets of “efficient” portfolios for the US market using post-crisis annualized returns (since the beginning of 2009). The first portfolio has been allocated between stocks and corporate and government bonds, and the second between convertibles and corporate and government bonds. As evident in Chart 5, an investor would have needed to take on higher levels of risk to achieve the same return when employing a stock and bond portfolio versus a convertible and bond portfolio. For example, to achieve an annualized return of about 10%, a portfolio of stocks and bonds would have a standard deviation of around 8.1% while a portfolio of converts and bonds would have a standard deviation of around 6.7%. Please note that these numbers represent hypothetical historical results and similar results in the future cannot be guaranteed.

**Chart 5: A portfolio of converts and corporate/government bonds can achieve a higher efficient frontier than a portfolio of equities and corporate/government bonds**



Source: BofA Merrill Lynch Global Research, ICE Data Indices, LLC, Bloomberg

\*Data from December 31, 2008 to February 28, 2019

## Convertible investment strategies

We discuss five investment strategies for convertible holders. While there are many additional strategies that can be used, we provide an example of strategies that we believe are applicable in a wide range of market conditions for individual investors.

- **Aggressive equity sensitivity:** high delta, low premium, deep-in-the-money convertibles
- **Equity-like with a yield enhancement:** mandatory convertibles
- **Total return alternatives:** high gamma, balanced convertibles
- **Low-risk yield:** high grade short-dated puts
- **Higher-risk yield:** speculative grade “busted” convertibles

### **Aggressive equity sensitivity: high delta, low premium, deep in-the-money converts**

Deep in-the-money converts, characterized by high deltas and low conversion premiums, are extremely equity-sensitive. Since their prices are so far above their “bond floors,” they have very little downside protection. Although they are not particularly interesting to more traditional convertible investors looking for more “balanced” converts, these low premium bonds frequently still out-yield and offer seniority over the underlying common for very bullish equity investors who do not want to give up virtually any upside participation (and are less concerned with the downside).

### **Equity-like with a yield enhancement: mandatories**

Mandatory convertibles are generally short-dated preferreds, typically issued with a three-year life, that mandatorily convert into the common stock at the end of their term. Through this structure, an investor gives up some potential price upside in exchange for a significantly higher income versus the common stock. Mandatories are structurally the most equity-sensitive type of convertible since they lack a true “bond floor” due to mandatory conversion, and therefore they would typically be held by investors who are neutral to slightly bullish on the prospects for the equity markets.

Holding mandatories could be attractive when an investor likes the long-term fundamentals of a company and wants exposure but has less conviction regarding the stock price potential in the near- to medium-term. Accordingly, an investor in this situation would tend to prefer receiving higher income. In this scenario, buying a mandatory would pay an investor to wait while the equity markets and a company’s fundamentals develop.

### **Total return alternatives: high gamma, “balanced” convertibles**

High gamma convertibles are typically traditional coupon bonds and preferreds that tend to demonstrate favorable upside/downside price sensitivity to an attractive underlying stock. Investors might consider income-generating convertibles, which could compensate them to wait for an upturn in the stock. In a scenario where an investor is bullish on a stock in the long term, but believes that in the short- to medium-term it will be range-bound, an investor can swap into a higher yielding total return convertible bond or preferred. This strategy would tend to enhance their total return while maintaining exposure to any upward movement in the stock.

This segment would also be attractive if an investor wants to have exposure to a company, but wants protection on the downside. In a scenario where the shares do fall, the conversion premium on the convertible would expand, leading to outperformance of the convertible over the stock on the downside. The investor could switch back to the stock once the downturn is over, in order to maximize the potential upward rise with the stock.

### Lower risk yield: short dated out-of-the-money converts

Better quality out-of-the-money bonds with puts or a maturity within one or two years, which represent short-duration bond ideas with essentially a free equity call option, are defensive instruments that can provide attractive yields. Fixed income investors, in particular, can look for convertibles which rank *pari passu* with straight debt, have a shorter maturity and yet trade at wider spreads than the corresponding straight debt.

### Higher risk yield: speculative grade “busted” convertibles

Busted coupon bonds can provide substantial yields and equity-like returns in the right environment. As discussed previously, this segment effectively is viewed as a bond alternative, with little regard ascribed to the equity component. Naturally, proper credit analysis is essential in investing in this spectrum of the market place, with key questions to be asked in identifying the optimal investment being:

- Why is the convertible in its present busted state?
- How long might it take management to turn things around?
- Can the company survive until then in terms of being able to make payments on its fixed income obligations?
- Once conditions improve, will management be able to regain earnings momentum?

### Who is buying convertibles?

The diversity of products offered in the convertible market together with the range of equity sensitivity of convertible instruments makes the convertible market a fertile pasture for investors of all types. Market participants today include:

- **Equity funds:** Risk-averse equity managers who wish to hold a more defensive instrument. These investors focus on the total return segment of the convertible universe.
- **Equity income funds:** Common stock investors who require more income than is provided by a company's common stock. Such investors tend to include pension funds and insurance companies.
- **Fixed income managers seeking equity enhancement:** Fixed income managers looking to add alpha to their performance by sacrificing a certain amount of income to obtain some equity exposure. These investors tend to focus on the yield and/or total return segments of the convertible market.
- **Dedicated outright convertible funds:** Investors dealing exclusively in the management of convertible security portfolios. These investors tend to be interested in the full spectrum of convertible investments.
- **Arbitrageurs and hedge funds:** Quantitative investors looking to profit from valuation discrepancies between the convertible, underlying stock and other securities. Hedge funds are typically market neutral investors who aim to generate returns regardless of whether the markets and securities rise or fall.

Today, each region's investor bases are characterized by the following:

- **US:** About two-thirds of the market is held in long-only funds, while the remaining one-third is held by hedge funds.

- **Europe:** Long-only funds have seen the most inflows in the region as their strong performance relative to hedge funds has driven demand for convertible investors. Currently, about 75% is held by long-only accounts while hedge funds hold 25% (though the hedge fund share has been continually increasing). Note that pre-2008, the ratio was about 60% hedge funds to 40% long-only accounts.
- **Asia:** Similarly, Asia long-only accounts have seen inflows while hedge funds have shied away due to a drop in volatility. This has created some liquidity problems as hedge funds turn their books more often than long-only funds.

**Table 13: Convertible investor base**

Investor type	Reason for using convertibles
Equity fund	<ul style="list-style-type: none"> <li>• Enhanced income</li> <li>• Manage Risk</li> <li>• Retain upside participation</li> </ul>
Equity income funds	<ul style="list-style-type: none"> <li>• Increase the universe of available companies</li> </ul>
Fixed income funds	<ul style="list-style-type: none"> <li>• Achieve exposure to equity markets at a reduced risk to capital.</li> <li>• Manage the interest rate cycle</li> </ul>
Dedicated outright convertible fund	<ul style="list-style-type: none"> <li>• All of the above</li> </ul>
Hedge funds	<ul style="list-style-type: none"> <li>• Exploit the asymmetrical link between convertibles and bond/equities to achieve "risk-free" arbitrage.</li> </ul>

Source: BofA Merrill Lynch Global Research

# Risks and other key considerations

Given the hybrid nature of convertibles, investors are exposed to a broad array of both equity and debt market risks that can include the following:

## Equity risks

- **Underlying common stock performance:** Movements in the stock price and/or volatility levels will affect convertible valuations.
- **Higher common stock dividends:** Increases in common dividends will reduce the value of a convertible by diminishing its relative value compared to the common stock. However, converts often have built-in dividend protection, where the conversion ratio is adjusted to convey the value of the dividend distribution through the parity of the convertible bond.

## Credit risks

- **Declining credit quality and/or widening credit spreads:** The underlying bond value can fluctuate depending on market conditions or changes in company fundamentals and, therefore, its credit quality. We note that about 71% of the global convertibles market (82% of the US market) is comprised of speculative-grade and unrated issues, as discussed further in our “Secondary market overview” section. Though, we have begun to see a notable pickup in IG primary market activity across regions so far in 2019.
- **Higher interest rates:** Rising interest rates will impair the underlying bond valuations. However, we often note that rising rates paired with improving equity is a net positive for converts as gains on the stock outweigh credit losses.
- **Lower than assumed bond investment value (e.g., recovery value):** The “bond floor” serves to limit the downside in the convertible caused by equity declines and/or deteriorating credit trends. However, these valuation assumptions can be subjective and highly uncertain, particularly in the case of distressed credits. Additionally, mandatory convertibles do not offer investors a “bond floor.”
- **Lack of covenants:** Unlike straight bonds, convertibles generally offer investors no protection in the form of financial covenants. This effectively gives the company greater latitude in adding debt, selling assets, etc., which can greatly reduce asset coverage for creditors. While not an important point for convertibles that are “equity alternatives,” this is a material consideration for “busted” convertibles (e.g., bond alternatives).

## Other investment considerations

- **Liquidity:** Some structures and/or issues may be illiquid, resulting in limited ability to buy/sell and/or unfavorable pricing. Investors can look to sources such as TRACE (Trade Reporting & Compliance Engine) for public information on pricing and volume, or they can look at bid/ask spreads.
- **Currency:** Convertibles issued in foreign currencies are exposed to currency risk. Not only may convertibles be issued in a foreign currency, some convertibles are issued in a different currency than that of the underlying. For example, a convertible may be denominated in dollars; however, on conversion an investor will receive shares traded in euros. Convertibles such as this need to be evaluated with special care in regard to their currency.
- **Call provisions:** An issuer’s call feature allows the issues to be called, which can negatively affect investment returns. Convertibles generally carry some form of call protection for a period of time, though terms can vary, as discussed more in our Prospectus fundamentals section.

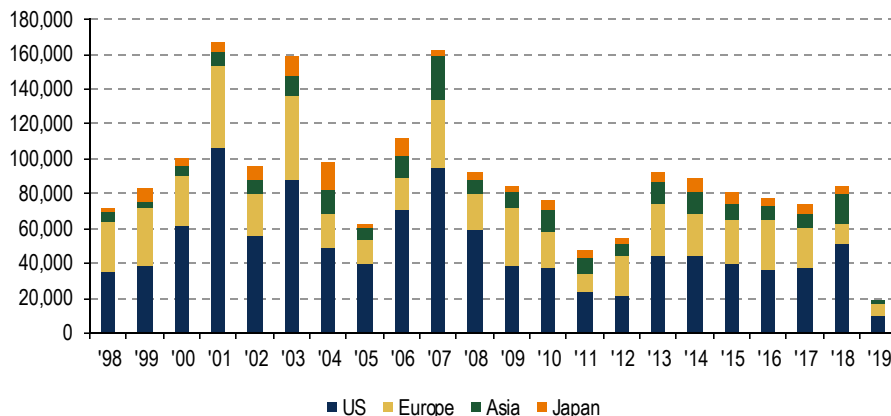
- **Taxation:** Convertibles have a wide range of income tax considerations regarding coupon, principal accretion, and conversion which can vary by structure and issue. In some cases, investors are taxed for a larger portion of income than has been received, resulting in reduced (sometimes negative) cash flow. Refer to further discussion of tax matters, “contingent payments,” and “phantom income” in our structure choice section above.
- **Prospectus:** The prospectus defines the structure of a convertible security, including but not limited to call provisions, takeover protection, issuer information, and the convertibles rank. Diligence is required when reviewing the prospectus since clauses such as the before mentioned will impact valuation. Refer to our Prospectus fundamentals section for more information.

General market risk across the capital markets, as well as individual security features can impact convertible valuations. Naturally, these risks can be tailored to whether the convertible is considered an equity alternative, a debt alternative, or a total return instrument. Understanding the mechanics of convertibles and their structures can help investors better understand the associated investment risks of this asset class. These attributes are discussed throughout this report. *In addition, investors should always read the prospectus before investing.*

# Primary market overview

Convertible issuance is driven by corporate financing needs, interest rate levels, implied volatility, and the broader regulatory environment. These factors together impact primary market activity, which in turn affects the ebb and flow of the global convertible market. From the 1990s through pre-crisis 2008, the convertible market grew steadily, albeit cyclically. Not surprisingly, following the financial crisis issuance declined significantly through 2012. Starting in 2013 however, the condition of the convertible primary market has improved (Chart 6), and despite a contraction in market capitalization post-2008 the convertible market has managed to maintain the adaptability that prevailed from the early days.

**Chart 6: Global issuance by region (\$mn)**



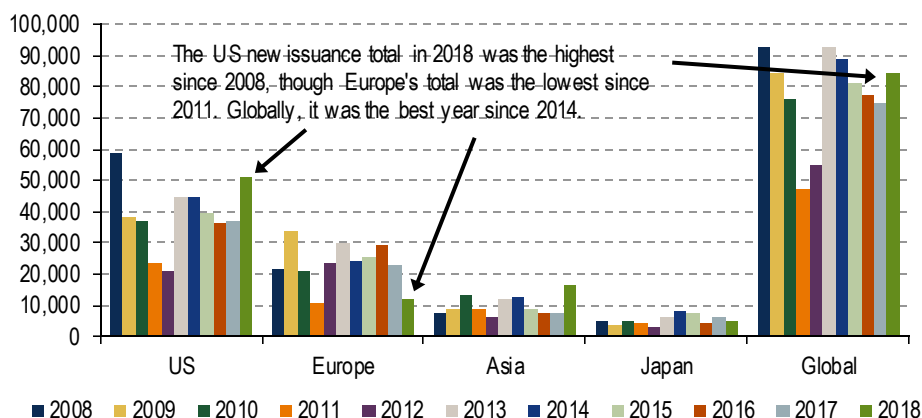
Source: BofA Merrill Lynch Global Research  
\*Data as of March 20, 2019

The composition of issuance has and will vary over time as credit quality, sector concentration, and issuer size evolve with issuer needs within the context of the broader market. Throughout the tech bubble, for example, tech, media, and telecom names came to dominate the convert market as these start-ups sought to raise capital via convertibles to meet their high cash requirements. The convertible market was an ideal forum to raise cash since volatile capital structures and nonexistent track records allowed these companies to transform their high volatility into cheaper financing (the more volatile the equity, the more valuable the embedded option and the lower the coupon).

From the tech bubble heyday to the peak issuance years in 2006-2007 today's global convertible primary market is on the rebound, and 2018 was the best year for global new supply since 2014, and it was the best year for US new supply since 2008 (Chart 7). What's more, progress has been solid so far in 2019. Issuance was virtually nonexistent in the late-2008 to early-2009 period as markets struggled in the midst of the credit crisis. An additional factor during this time period impacting large, high-quality, EPS sensitive issuers in the US was the passing of accounting ruling (FSP APB 14-1) that required a bifurcation into debt and equity for convertibles that can be settled in all or part-cash conversion. This ruling resulted in higher reported interest expense for issuers of previously popular "net share-settled" convertibles, which offered much lower dilution than traditional all-stock settled converts.



**Chart 7: Global new issuance has begun to rebound from its post-crisis lows, especially in the US**

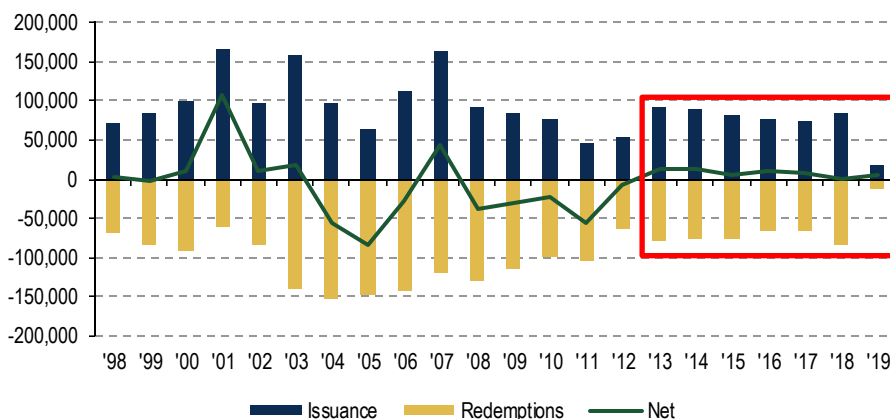


Source: BofA Merrill Lynch Global Research

In the years following the crisis, the convertible primary market had to contend with an ever-present record-low interest rate environment. Although convertibles typically offer coupons lower than straight debt, the historically low rates in the post-GFC era were too attractive for issuers to pass by. Still, the market had shown some resilience. In 2012, we saw the first year-over-year increase in total global issuance since 2007 as year-end supply totaled \$54.7bn (a 16% increase over 2011's total). This pickup in supply was largely attributable to Europe, which out-issued the US for the first time in terms of volume within a single year. Though volumes were solid in 2013, they waned again between 2014 and 2017. However, issuance heated up again in earnest in 2018 when global new supply totaled \$84.6bn, the most since 2014, as we mentioned earlier. This was primarily fueled by the US, which offered \$51.2bn, the most we've seen since the end of the financial crisis. Drivers of 2018's volume include higher interest rates, a higher realized volatility backdrop, US tax reform, and record-setting issuance from first time borrowers in the converts market. So far in 2019, the pace has been strong as well as \$19.1bn has come to market globally.

In terms of net issuance trends (new supply minus redemptions), notably in 2013 issuance outpaced redemptions for first time since before the global financial crisis as a total of \$92.9bn was added to global supply versus \$79.0bn in redemptions (Chart 8). Since then, each year from 2013 through 2017 saw positive global net issuance on an annual basis, though 2018 was essentially flat. So far, 2019 has been positive as global net supply totals +\$5.9bn amid \$19.1bn of new issuance and \$13.2bn of redemptions.

**Chart 8: Global net issuance has been positive or flat each year since 2013 (\$mn)**



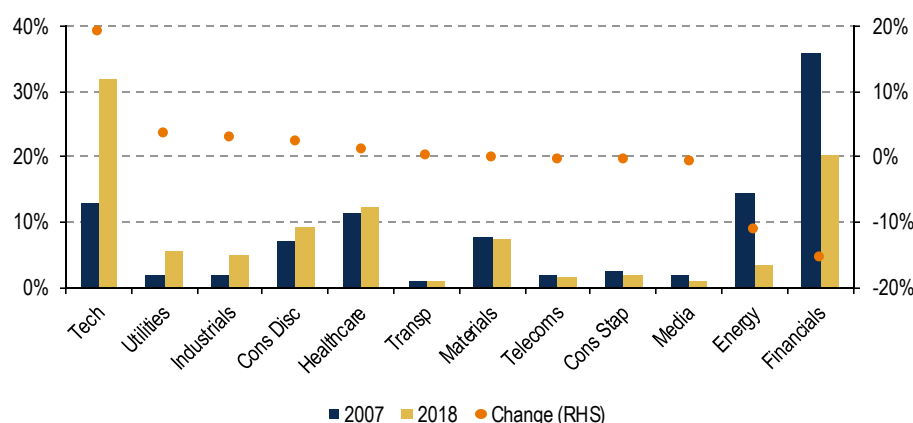
Source: BofA Merrill Lynch Global Research

\*Data as of March 20, 2019

It goes without saying that new issuance is essential to market viability. As such, it is worth mentioning that primary market behavior, in addition to new issue levels, is a key component of the broader convertible market. New issues generally come to the market at a discount to their theoretical “fair” value as issuers attempt to move large quantities of supply straight away. Understandably, issuers make concessions to accept cheaper terms around new issue as a means to ensure their deal launches successfully, evading the reputational and liquidity costs inherent in a failed deal.

Issuance trends are observable within sector concentrations over time, with some industries consistently providing strong sources of new supply. While tech and healthcare have persistently been dominant industries for convert issuance, consumer staples and telecoms have continued to be laggards. Chart 9 provides a comparison of new issuance trends globally by sector from 2007 (the full year before the crisis) to 2018 (our last complete year of data). Perhaps the most striking takeaway is how drastically primary issuance in the financials and energy sectors declined in the years post-crisis, while technology issuance has swelled since then. However, more recently the financials sector (including real estate) has made a comeback after years of depressed supply following the GFC, and today it remains one of the top sectors for convertible issuance along with technology and healthcare. While energy names have not enjoyed quite the same recovery, the primary market did see a bit of a resurgence following the crash in commodity prices at the end of 2015 as issuers under pressure looked to convertibles for the financial flexibility they offer. Convertibles allow companies to reduce total debt on their balance sheets by incentivizing holders to convert their bonds to equity, a tool which could help issuers de-lever.

**Chart 9: Tech issuance has grown the most since 2007, while financials have declined the most**

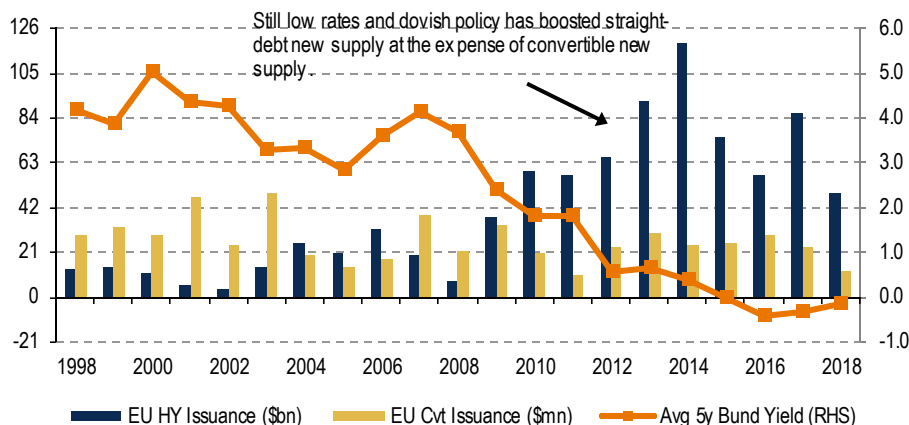


Source: BofA Merrill Lynch Global Research

Over the past two decades, and the last decade in particular, the global convertible market has distinctly changed, given that new issuance levels have kept pace with redemptions to varying degrees across regions. Japan, once the dominant convertible market, has considerably declined in size since the late 1990's. In 1999 for example, there were over 500+ issues in the ICE BofAML Japanese domestic convertibles index (VJDM); today there are only five. The Japanese primary market has suffered at the hands of regulatory changes and a persistently bear market, barring very recent market moves of course. The US, now the dominant market, comprises well over half of the global market as measured by market value. The US market grew through product innovation and diversification in the early 2000's and through the use of private placements under 144a. Asia-ex Japan rebounded from the early days following the 1997 currency crisis, aided by the introduction of defensive structures and the emergence of issuance out of Hong Kong (currently the tenth largest country by market value in our universe) in particular. While 2018 proved to be a strong year for Asian new supply as a number of Hong Kong property developers took advantage of high flying stock markets to raise short-term capital via relatively inexpensive converts, 2019 likely

won't be as robust (these deals were not well-received by the market as we do not expect the issuers will refi in the converts space). However, we are hopeful that the region's issuance will be supported by China. In an effort to modernize and invigorate inefficient state-owned enterprises, the country implemented mixed ownership reforms for certain sectors (utilities, energy, railroads, airlines), which allow private investors to take stakes via convertible bonds. Finally, Europe, which comprises the second largest convertible market region by market value, saw a very strong pace of issuance in 2016, though supply has slowed somewhat since amid continued ECB stimulus. Specifically, the asset purchase program and low rates have kept a lid on borrowing costs in Europe, making straight bond issuance too cheap to ignore (Chart 10). We do not anticipate the European primary market will improve for another few years.

**Chart 10: Dovish ECB policy and low rates have stifled the European convertible primary market in the post-crisis era**



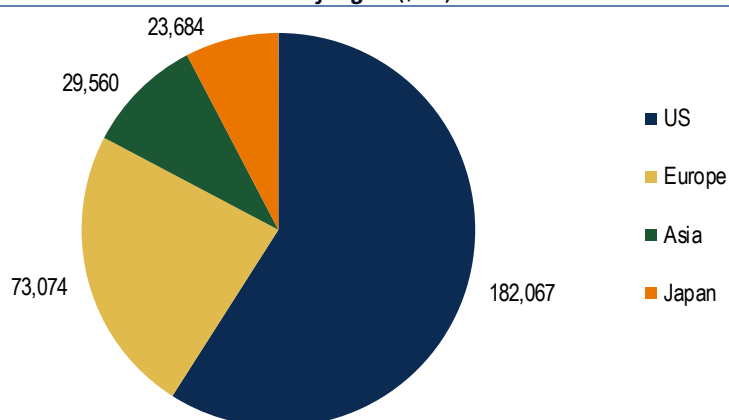
Source: BofA Merrill Lynch Global Research

## Secondary market overview

Today's convertible market has a market value of about \$308bn<sup>1</sup>. Although the largest region is the US, a sizable market exists in Europe, and the Asia and Japan markets are smaller. See the next section entitled "Global market characteristics summarization" for historical characteristic data, including average conversion premium, average delta, and average theoretical discount for each of our global regions. Today, the global landscape of the convert market has the following characteristics:

- Average credit ratings are high yield, though a large portion of the market is not rated by ratings agencies. However, on a global basis the portion of IG names has begun to pick up since the beginning of 2016. In fact, about 25% of global issuance so far in 2019 has been IG-rated.
- There is a high concentration in the technology, healthcare, and financials sectors in both the US and globally. Consumer staples, transportation, and media have the fewest issues outstanding.
- Globally, the market is currently skewed toward yield alternatives (delta less than 0.4), while the US market has a more balanced profile.
- The most common structure today is the traditional bond-like convertible. Specifically, within the US, about 78% of convertibles have traditional bond-like structures. Outside of the US, preferred and mandatory structures are not prevalent.
- In the US and Europe, coupon paying bonds are most common, while in Asia and Japan zeroes are more popular. However, zero coupon converts have become somewhat more popular in Europe and somewhat less popular in Asia.

**Chart 11: Convertible market breakdown by region (\$mn)**



Source: BofA Merrill Lynch Global Research, ICE Data Indices, LLC  
\*Data as of February 28, 2019

Below, we break down both our global and US secondary universes and compare today's market to historical convert markets. Please be cognizant of the following:

- We use the ICE BofAML G300 Global Convertibles Index as a proxy for the global convertible market since its construction is intended to represent the global convert universe. Nonetheless the index may introduce biases due to rule constraints.
- For the purposes of this primer, the US market is represented by the ICE BofAML VXA0 All US Convertibles Index, which contains all convertibles that were issued in the US, have the majority of their risk focused in the US, and have at least \$40mn in par amount outstanding.

<sup>1</sup> Total includes the market values of the ICE BofAML VXA0, VE00, VASI, VJDM, and VJEU indices.

- The European, Asia-ex Japan, and Japan regions are represented by the ICE BofAML broad regional convertible indices: VE00, VASI, and VJDM+VJEU.
- Please note that the convertible indices have rules restricting the size of issues to ensure a base-level of liquidity. For USD- and EUR-issues, the minimum size requirement for entry is \$50mn and €50mn respectively, while for JPY-issues the minimum size requirement is ¥5bn.
- Since the US market makes up over half of the global convertibles market, it is worth highlighting US secondary market characteristics since they are a large contributor to aggregated global trends.

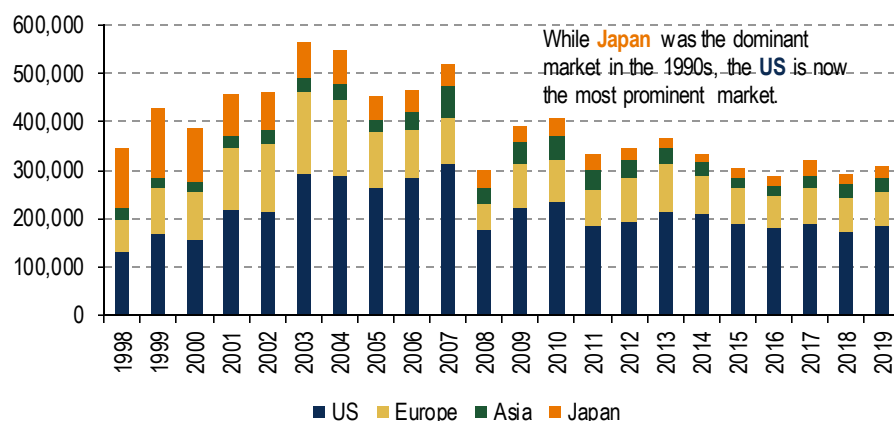
## Countries and regions

The current convertible market contains 700 individual issues and is valued at roughly \$308bn. Of this, \$182bn, or about 59%, comes from the US region, while the next largest region, Europe, is valued at about \$73bn. Asia and Japan are \$30bn and \$24bn respectively (Chart 11).

The global convertibles secondary market has seen considerable change over the past 20 years, the most notable of which is the drastic shift from Japanese market dominance to US. In 1995, Japanese convertibles totaled \$205bn, or 54% of the entire market, while the US, with \$100bn outstanding, made up only 26% of the market. However, as we move through the past two decades, the US has replaced Japan as the largest region in the market (Chart 12). Much of this shift away from Japan was the result of regulatory changes and the incessantly bear market. Today, Japan makes up approximately 8% of the global convertible market value.

The chart below shows the sound growth of the global convertible market through 2003, when the market value stood at approximately \$565bn. In 2008, following the financial crisis, the market value of the convert market fell 41.8% from 2007 levels.

**Chart 12: Convertible secondary market breakdown (\$mn)**



Source: BofA Merrill Lynch Global Research, ICE Data Indices, LLC

\*Data as of February 28, 2019

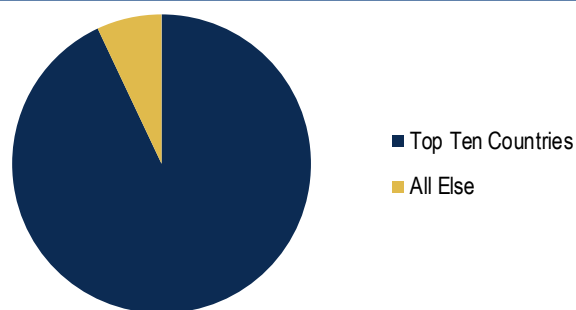
When looking at the convertible market based on individual countries as opposed to broader regions, we find that the market is highly concentrated around several countries (Chart 13). The top 10 countries by market value, as shown in Table 14, make up 93% of the entire convertible universe, or about \$289bn. As we've mentioned, the US is the single largest issuer, followed by Japan, China, and Germany, which have \$24bn, \$20bn, and \$17bn outstanding respectively.

**Table 14: Top ten countries by market value (\$mn)**

Country	Count	Mkt Val	Percent
US	404	182,676	59%
Japan	79	23,678	8%
China	32	19,837	6%
Germany	35	16,968	5%
France	30	16,240	5%
UK	18	8,277	3%
The Netherlands	12	7,709	2%
Italy	10	6,424	2%
Switzerland	9	3,920	1%
Hong Kong	8	3,495	1%
Total	637	289,226	93%

Source: BofA Merrill Lynch Global Research, ICE Data Indices, LLC

\*Data as of March 20, 2019

**Chart 13: Top ten countries by market value versus all other countries**

Source: BofA Merrill Lynch Global Research, ICE Data Indices, LLC

\*Data as of March 20, 2019

### Credit rating

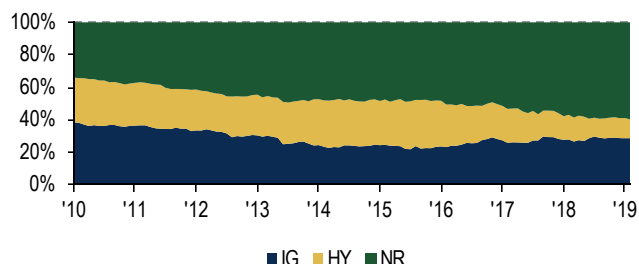
About 60% of all outstanding global convertible issues are not rated by S&P or Moody's. Of the remaining 40%, the breakdown leans IG with a tilt toward HY in the US and a larger skew toward IG in Europe. Table 15 below lists the ratings breakdown across each of the global regions. By market value, Europe has the highest proportion of investment grade names with 42%, while the US has 18% with IG ratings. In terms of speculative grade, the US has the most with 22%, while Europe only has 6%. It's worth pointing out that the vast majority (at or near 100%) of outstanding issues in Asia and Japan are not rated by major credit ratings agencies.

**Table 15: Credit rating breakdown by region**

	IG	HY	NR
Global (G300)	29%	12%	60%
US	18%	22%	59%
Europe	42%	6%	52%
Asia	3%	0%	96%
Japan Domestic	0%	0%	100%
Japan Euro	0%	0%	100%

Source: BofA Merrill Lynch Global Research, ICE Data Indices, LLC

\*Data as of February 28, 2019

**Chart 14: Global (G300) credit rating breakdown historically**

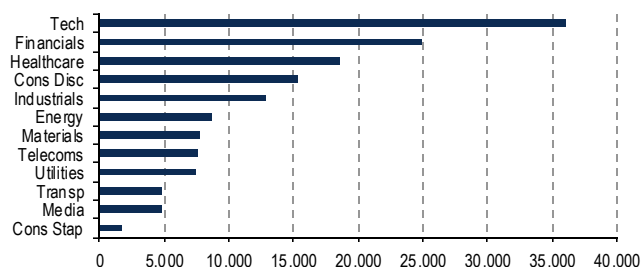
Source: BofA Merrill Lynch Global Research, ICE Data Indices, LLC

\*Data as of February 28, 2019

### Sector

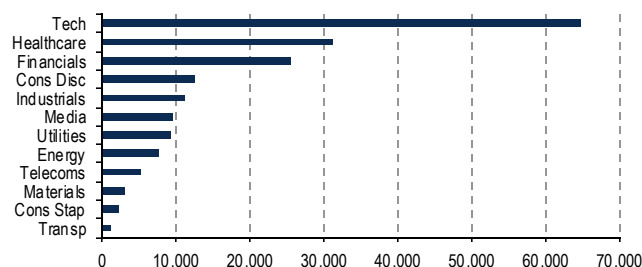
Although sector distribution is relatively wide in our convertibles universe, healthcare, financials, and technology stand out in both the global and US regions. In the ICE BofAML G300 global convertibles universe, technology names make up 24%, financials names make up nearly 17%, and healthcare names make up over 12%, while on the other hand consumer staples (about 1%) and media (just over 3%) are the smallest sectors (Chart 15). In the US, the sector breakdown is similar, as tech (35%), healthcare (17%), and financials (slightly less than 14%) represent the largest shares, while transportation and consumer staples (each about 1%) comprise the smallest proportions (Chart 16). Compared to the sector breakdown of the S&P 500, the converts market is unsurprisingly similar as tech, financials, and healthcare names dominate the broad equity market as well.

Chart 15: Global (G300) sector breakdown (\$mn)



Source: BofA Merrill Lynch Global Research, ICE Data Indices, LLC  
\*Data as of February 28, 2019

Chart 16: US sector breakdown (\$mn)



Source: BofA Merrill Lynch Global Research, ICE Data Indices, LLC  
\*Data as of February 28, 2019

From a historical perspective, we can see that certain sectors stand out in the global market as represented here by the ICE BofAML G300 Global index (Table 16). Consumer discretionary and financial converts were prominent during the early 2000s while consumer staples made up essentially 0% of the market. During the tech-boom, the tech and telecoms sectors together made up nearly one quarter of the market. Financials peaked in 2008, comprising roughly 25% of total market value.

Table 16: Global (G300) sector allocation over time

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Cons Disc	9%	10%	13%	13%	13%	12%	11%	10%	8%	10%	11%	11%	13%	13%	11%	10%	9%	10%	10%	10%
Cons Stap	2%	3%	3%	2%	2%	1%	1%	2%	3%	3%	4%	4%	3%	2%	2%	2%	2%	1%	1%	1%
Energy	5%	5%	5%	4%	5%	6%	7%	11%	6%	8%	7%	8%	7%	8%	6%	6%	8%	5%	5%	6%
Financials	20%	15%	14%	15%	16%	19%	19%	16%	25%	20%	19%	19%	20%	20%	22%	20%	18%	19%	17%	17%
Healthcare	6%	6%	8%	8%	9%	11%	12%	12%	13%	11%	11%	11%	13%	12%	14%	13%	12%	12%	12%	12%
Industrials	9%	9%	10%	11%	12%	11%	10%	6%	5%	6%	6%	7%	7%	9%	8%	8%	9%	8%	8%	9%
Materials	8%	6%	5%	4%	4%	6%	5%	6%	6%	10%	10%	7%	7%	7%	4%	3%	4%	4%	5%	5%
Media	6%	5%	6%	6%	5%	6%	5%	4%	3%	3%	2%	3%	2%	2%	1%	2%	3%	3%	3%	3%
Tech	16%	18%	16%	17%	16%	16%	17%	20%	21%	19%	19%	20%	18%	20%	25%	25%	24%	23%	24%	24%
Telecoms	10%	14%	12%	12%	11%	8%	7%	8%	6%	6%	5%	6%	7%	3%	2%	4%	4%	5%	5%	5%
Transp	2%	2%	2%	2%	2%	2%	3%	2%	3%	3%	3%	2%	2%	2%	3%	3%	4%	3%	3%	3%
Utilities	7%	6%	7%	6%	6%	4%	3%	3%	2%	1%	1%	2%	1%	1%	2%	4%	3%	4%	5%	5%

Source: BofA Merrill Lynch Global Research, ICE Data Indices, LLC  
\*Data as of February 28, 2019

In the US, we see similar sector trends as technology and financials stand out over time. In the mid-2000s, distribution across sectors was relatively even—tech had the largest share with about 20-25%, but it was followed closely by financials with about 10-15%. As seen in Table 17, during the tech boom around 2000, the tech allocation ballooned to over 25% of the US market while other sectors such as consumer staples and transportation shrank to nearly 1%. Then when tech sector volume cooled a bit during the mid- to late-2000s, financials took over as the sector with the largest market share. Today, the tech sector is once again dominant, representing 35% of the US market value, while healthcare and financials trail close behind with 17% and 14% shares.

Table 17: US sector allocation over time

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Cons Disc	5%	10%	14%	14%	14%	12%	12%	9%	6%	9%	11%	10%	11%	9%	9%	7%	3%	6%	7%	7%
Cons Stap	1%	1%	2%	1%	1%	0%	1%	2%	3%	3%	3%	3%	2%	2%	2%	3%	2%	1%	2%	1%
Energy	10%	6%	7%	6%	7%	8%	7%	10%	9%	9%	9%	8%	8%	8%	6%	5%	8%	5%	6%	4%
Financials	8%	10%	13%	14%	15%	20%	21%	20%	24%	20%	20%	22%	19%	19%	18%	16%	15%	18%	15%	14%
Healthcare	15%	14%	16%	15%	16%	18%	19%	19%	23%	19%	18%	16%	17%	18%	19%	20%	16%	17%	17%	17%
Industrials	4%	6%	7%	7%	7%	7%	6%	5%	4%	5%	5%	5%	5%	5%	4%	5%	5%	5%	5%	6%
Materials	3%	3%	3%	3%	5%	4%	2%	5%	4%	6%	5%	5%	5%	4%	3%	1%	2%	2%	2%	2%
Media	7%	8%	6%	6%	6%	6%	6%	4%	3%	2%	2%	3%	3%	2%	2%	2%	4%	5%	5%	5%
Tech	27%	26%	21%	22%	18%	16%	17%	19%	18%	20%	20%	22%	23%	27%	30%	32%	34%	35%	35%	35%
Telecoms	13%	8%	6%	5%	4%	4%	4%	3%	3%	3%	2%	2%	3%	2%	2%	4%	4%	2%	3%	3%
Transp	1%	1%	1%	1%	2%	2%	2%	2%	1%	2%	2%	1%	2%	2%	2%	1%	0%	1%	1%	1%
Utilities	5%	5%	4%	5%	5%	3%	2%	2%	2%	1%	2%	3%	3%	2%	4%	3%	5%	4%	4%	5%

Source: BofA Merrill Lynch Global Research, ICE Data Indices, LLC  
\*Data as of February 28, 2019

## Equity market cap

When looking at company size as defined by equity market cap, most of our global converts, as represented by the ICE BofAML G300 index, fall within the \$5+ billion range (64%). The second largest market cap bucket is the \$1bn-5bn bucket (29%). However, this extreme divergence is mainly attributable to the fact that larger companies generally offer larger issues. If we were to ignore market value and simply determine our largest buckets by absolute number of issues, large-caps still lead, though the gap is much smaller—130 names versus 124 for mid-caps and 46 for small-caps (Table 18).

The US breakdown by equity market cap looks almost identical to the global breakdown, though considering the US comprises about 50% of the global market, this comes as no surprise. Approximately 29% of all US issuers fall into our \$1-5bn bucket, and about 63% are in the \$5bn+ bucket. By issue count, the US mid-cap bucket is the largest with 168 issues.

**Table 18: Equity market cap breakdown**

Bucket	Size	Global			US			Europe			Asia			Japan		
		Count	Mkt Val	Pct	Count	Mkt Val	Pct	Count	Mkt Val	Pct	Count	Mkt Val	Pct	Count	Mkt Val	Pct
Small	\$0-1bn	46	9,886	7%	106	15,392	8%	24	3,222	4%	8	1,289	4%	11	969	4%
Mid	\$1-5bn	124	43,503	29%	168	52,586	29%	52	15,783	22%	24	8,608	29%	41	10,910	46%
Large	\$5bn+	130	96,561	64%	130	114,088	63%	75	54,069	74%	34	19,662	67%	27	11,805	50%
Total		300	149,950	100%	404	182,067	100%	151	73,074	100%	66	29,560	100%	79	23,684	100%

Source: BofA Merrill Lynch Global Research, ICE Data Indices, LLC

\*Data as of February 28, 2019

## Investment objective

Looking at investment objective profiles, most of our regions, including the Global G300, Europe, Asia, and Japan have a moderate skew toward yield alternatives (low equity sensitivity with deltas less than 0.40). Within the G300, yield alts currently make up 53% of the market, while return alts and equity alts make up 33% and 14% respectively. In the US the buckets are more balanced as yield and return alts make up 33% and 40% of the market respectively, while equity alts make up 27% (Table 19).

**Table 19: Investment objective breakdown**

Bucket	Delta	Global			US			Europe			Asia			Japan		
		Count	Mkt Val	Pct	Count	Mkt Val	Pct	Count	Mkt Val	Pct	Count	Mkt Val	Pct	Count	Mkt Val	Pct
Yld Alt	0-40%	174	80,085	53%	179	60,540	33%	112	50,645	69%	42	19,755	67%	54	15,435	65%
Rtn Alt	40%-80%	91	48,824	33%	160	72,780	40%	31	15,300	21%	22	9,412	32%	19	7,065	30%
Eqty Alt	80%-100%	35	21,041	14%	65	48,749	27%	8	7,130	10%	2	393	1%	6	1,184	5%
Total		300	149,950	100%	404	182,067	100%	151	73,074	100%	66	29,560	100%	79	23,684	100%

Source: BofA Merrill Lynch Global Research, ICE Data Indices, LLC

\*Data as of February 28, 2019

## Structure

As we review above in the “Convertible structures” section, there are a variety of structures issuers choose from when issuing converts. Here, we combine all of the structures into five basic categories: traditional coupon bonds, zero coupon bonds, preferreds, mandatories, and other. Traditional bond-like converts dominate the overall market as they make up about 67% of the ICE BofAML G300 Global Convertibles index (Table 20). Following bond-like converts are zeroes, which total about 24%, and preferreds, which total 7%. Last are mandatories, which currently make up 2% of G300. However, the table below does indicate that the preferred and mandatory structures are more prevalent in the US market with 7% and 11% weights respectively. While mandatories do exist in Europe, investors often do not have a mandate to own them.

In the US market we see a fairly similar distribution of structures, though as we mentioned earlier, mandatories play a much larger role. Bond structures dominate, with about 78% of the market, and they are followed by mandatories which comprise 11%. Preferreds and zeroes are smaller at 7% and 4% respectively.



Historically, we've seen a large shift towards straight bond-like converts in the US. As mentioned earlier, today's US converts market contains about 78% structured like coupon bonds. However, until 2003, less than half the convert market had bond-like structures—issuers used preferreds almost as much as bonds. Additionally, we note that from 2015 to 2016, mandatories had made a strong resurgence and were near all-time highs relative to the entire US market based on market value (Chart 17). Outside the US, we've seen a marked pickup of zero-coupon converts, most notably in Europe where in 2016 only 20% of the market was zeros versus today's 35%. Zero or even negative yielding converts have become popular in Europe amid record central bank easing.

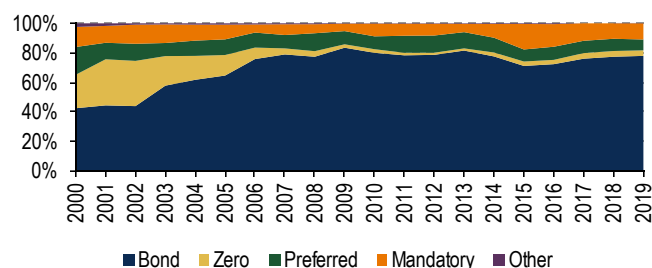
**Table 20: Structure breakdown**

	Global	US	Europe	Asia	Japan
Bond	67%	78%	61%	54%	0%
Zero	24%	4%	35%	46%	100%
Preferred	7%	7%	0%	0%	0%
Mandatory	2%	11%	4%	0%	0%
Other	0%	0%	0%	0%	0%

Source: BofA Merrill Lynch Global Research, ICE Data Indices, LLC

\*Data as of March 20, 2019

**Chart 17: US convert structures over time**



Source: BofA Merrill Lynch Global Research, ICE Data Indices, LLC

\*Data as of March 20, 2019

The convertible market is dynamic, and as such, the structure composition we see in the market today is not necessarily the composition we will see down the road. Anyone familiar with the convert market knows that one of its strengths is its ability to evolve.

## Global market characteristics summarization

The tables below summarize historical characteristic data for each of the global markets as represented by their respective ICE BofAML indices: Global (VG00), US (VXAO), Europe (VE00), Asia ex-Japan (VASI), Japan Domestic (VJDM), and Japan Euro (VJEU).

**Table 21: Global market characteristic snapshot (VG00)**

	Current	YE 2018	YE 2015	YE 2012	YE 2009	YE 2006
Mkt Val (\$bn)	149.9	139.7	134.3	204.6	190.5	220.4
Issues	300	300	300	300	300	300
Curr Yield	1.7%	1.8%	2.0%	2.6%	2.9%	2.1%
Conv Prem	39.0%	47.4%	33.6%	39.6%	53.7%	19.3%
Inv Val Prem	18.5%	15.2%	25.8%	18.4%	16.2%	30.4%
Delta	40.1%	34.6%	47.1%	39.5%	32.8%	57.8%
Imp Vol	34.7%	35.3%	34.6%	32.8%	33.6%	30.1%
Duration	2.6	2.7	2.1	1.7		

Source: BofA Merrill Lynch Global Research, ICE Data Indices, LLC

\*Data as of February 28, 2019

**Table 22: US market characteristic snapshot (VXAO)**

	Current	YE 2018	YE 2015	YE 2012	YE 2009	YE 2006
Mkt Val (\$bn)	182.1	170.7	188.0	194.1	220.9	282.0
Issues	404	414	464	468	611	704
Curr Yield	2.5%	2.8%	3.3%	3.3%	3.7%	3.0%
Conv Prem	30.9%	38.9%	44.4%	58.1%	68.3%	30.3%
Inv Val Prem	35.3%	28.5%	71.0%	50.1%	44.7%	49.0%
Delta	54.6%	48.6%	56.3%	50.3%	45.5%	57.1%
Imp Vol	38.7%	42.3%	40.8%	38.1%	39.7%	38.0%
Duration	2.3	2.5	2.1	2.1	1.8	1.5

Source: BofA Merrill Lynch Global Research, ICE Data Indices, LLC

\*Data as of February 28, 2019

**Table 23: Europe market characteristic snapshot (VE00)**

	Current	YE 2018	YE 2015	YE 2012	YE 2009	YE 2006
Mkt Val (\$bn)	73.1	71.1	75.7	87.5	91.0	102.8
Issues	151	155	177	161	160	150
Curr Yield	0.9%	0.9%	1.5%	3.2%	3.0%	1.8%
Conv Prem	48.4%	57.9%	34.6%	50.6%	51.4%	18.0%
Inv Val Prem	9.4%	7.5%	15.4%	14.5%	15.8%	33.2%
Delta	28.7%	23.6%	39.1%	27.9%	30.8%	60.3%
Imp Vol	28.9%	29.7%	36.1%	37.0%	34.1%	31.8%
Duration	2.1	2.4	1.9	1.7		

Source: BofA Merrill Lynch Global Research, ICE Data Indices, LLC

\*Data as of February 28, 2019

**Table 24: Asia-ex-Japan market characteristic snapshot (VASI)**

	Current	YE 2018	YE 2015	YE 2012	YE 2009	YE 2006
Mkt Val (\$bn)	29.6	28.2	18.9	38.4	44.6	33.6
Issues	66	69	71	127	155	128
Curr Yield	1.4%	1.3%	1.0%	2.0%	1.6%	0.5%
Conv Prem	42.1%	55.5%	54.1%	49.8%	51.9%	13.3%
Inv Val Prem	13.4%	7.5%	6.2%	5.1%	7.6%	27.4%
Delta	34.1%	23.9%	22.4%	20.7%	26.4%	61.3%
Imp Vol	40.6%	37.8%	37.4%	29.8%	26.9%	27.0%
Duration	1.5	1.6	1.3	1.5		

Source: BofA Merrill Lynch Global Research, ICE Data Indices, LLC

\*Data as of February 28, 2019

**Table 25: Japan Domestic market characteristic snapshot (VJDM)**

	Current	YE 2018	YE 2015	YE 2012	YE 2009	YE 2006
Mkt Val (\$bn)	2.1	2.1	1.6	9.5	11.1	17.0
Issues	5	5	8	13	33	76
Curr Yield	0.0%	0.0%	0.0%	0.2%	0.3%	0.5%
Conv Prem	15.9%	16.3%	39.9%	44.0%	71.0%	21.9%
Inv Val Prem	20.1%	18.7%	15.4%	11.6%	9.0%	29.7%
Delta	41.8%	42.5%	40.9%	42.2%	24.3%	57.8%
Imp Vol	48.6%	37.1%	26.8%	29.8%	35.6%	26.8%
Duration	0.9	1.0	3.6	0.4		

Source: BofA Merrill Lynch Global Research, ICE Data Indices, LLC

\*Data as of February 28, 2019

**Table 26: Japan Euro market characteristic snapshot (VJEU)**

	Current	YE 2018	YE 2015	YE 2012	YE 2009	YE 2006
Mkt Val (\$bn)	21.6	20.5	19.6	17.4	22.4	31.7
Issues	74	72	84	40	78	111
Curr Yield	0.0%	0.0%	0.0%	0.1%	0.1%	0.1%
Conv Prem	32.5%	33.4%	24.1%	44.0%	105.6%	24.7%
Inv Val Prem	10.8%	10.8%	18.1%	9.6%	2.8%	22.9%
Delta	32.6%	31.9%	45.9%	31.9%	14.0%	49.7%
Imp Vol	32.7%	31.4%	29.7%	28.7%	34.6%	29.6%
Duration	1.7	1.6	2.1	1.2		

Source: BofA Merrill Lynch Global Research, ICE Data Indices, LLC

\*Data as of February 28, 2019

# Appendix

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## Appendix 1: Convertibles glossary

**Breakeven:** Breakeven is synonymous with payback (see below).

**Calls and call protection:** Most bond issuers retain the right to redeem their bonds before the maturity date. This is known as a call. However, most bonds have call protection for a period of time. This call protection enhances the convertible's attractiveness because it ensures that the income advantage the convertible offers over the common stock may be enjoyed for a definite period of time.

Issuers usually redeem convertibles in order to force conversion into their underlying stock. For this to occur, parity must be well above the call price. If the underlying stock advances rapidly, and the issue is immediately callable, a convertible may be called before its income advantage has kicked in. Issuers also call convertibles when they have an opportunity to refinance at a lower interest cost.

Call protection usually takes one of two forms: (1) unconditional call protection where the issue cannot be called prior to a certain date or (2) conditional call protection where an issue cannot be called before a certain date unless certain conditions have been met, usually the underlying stock must trade at a premium for a specified period. Generally this is 130% (or some multiple) of the conversion price. The period of unconditional call protection is also known as the "Hard No Call" period.

**Conversion premium:** The excess of the convertible's price above parity, usually expressed as a percentage.

$$\text{Conversion Premium} = \frac{\text{Convertible Price} - \text{Parity}}{\text{Parity}}$$

where parity is calculated as

$$\text{Parity} = \text{Conversion Ratio} \times \text{Current Stock Price}$$

**Conversion price:** Set at issue, the conversion price may be calculated as follows:

$$\text{Conversion Price} = \frac{\text{Par Value}}{\text{Conversion Ratio}}$$

**Conversion ratio:** Also set at issue, the number of shares into which each bond may be converted.

**Convertible price:** Recent price of the convertible security (usually the offer price for convertibles that traded on the day of the data capture). For illiquid issues or issues with large bid / offer spreads, a mid-price is used.

**Coupon:** Nominal income rate for convertible, expressed as a percent of par. We use the term "coupon" generically to refer to both bond coupons and preferred dividends.

**Current yield:** The annual convertible bond coupon divided by the current price.

**Investment value:** Also known as the bond floor, the level at which a straight bond with the same maturity and credit risk would trade. Investment value effectively provides a "floor" for the price of the convertible if it loses all its equity content and trades as a fixed income instrument.

**Investment value premium:** The premium of the convertible price above investment value, expressed as a percentage.

**Issue:** Convertible bonds are known by the name of the issuer, the coupon and the maturity date, e.g., Ford 4.25% 2/15/2036. Issuers may have a number of different issues outstanding.

**Issuer:** The company name under which the security trades. As some bonds can be exchanged into shares of different entities, the issuer name is not always the same as the underlying security name.

**Market cap:** We use the term “market cap” to refer to the current total equity market capitalization for the underlying stock. We usually express the figure in millions of dollars.

**Parity:** Also known as conversion value

Parity = Conversion Ratio x Current Stock Price

**Payback:** The number of years it takes for the convertible's income advantage to offset the premium paid. In other words, payback is the premium recovery period. Although payback calculations give no credit to the time value of money, payback is still commonly used as a valuation benchmark. There are two methods of calculation:

$$(1) \text{ Traditional Payback} = \frac{\frac{\% \text{ Premium}}{1 + \% \text{ Premium}}}{\text{Cvt Current Yield} - \frac{\text{Stock Div Yield}}{1 + \% \text{ Premium}}}$$

where % premium is the conversion premium expressed in decimal form.

$$(2) \text{ Dollar for Dollar Payback} = \frac{\frac{\% \text{ Premium}}{1 + \% \text{ Premium}}}{\text{Cvt Current Yield} - \text{Stock Div Yield}}$$

We use the dollar for dollar method in all of our research reports.

**Percent cheap (rich):** Percent cheap is the observed price's discount to theoretical value. Theoretical value is a result from our arbitrage model, which assesses the convertible as a sum of its parts: the embedded option(s) plus the income portion. Among the assumptions used is realized underlying stock volatility, on which we impose fairly conservative issuer-specific caps, and a credit spread, which we estimate based on implied or actual credit rating from a spread matrix built on straight-bond index option-adjusted spread (OAS) values.

**Screw clause:** A prospectus provision in which a holder who voluntarily converts into common shares before the first call date forfeits income accrued since the last payment.

**Share price:** Bid price of the underlying security into which the convertible is exchangeable.

**Stock dividend yield:** The annual yield on the common stock, i.e. the annual gross dividend / stock price.

**Yield to put and call:** The gross redemption yields that are calculated to the date of the earliest put or call.

**Yield advantage:** Yield advantage is the simple difference between convertible current yield and stock dividend yield.

**Yield to maturity:** YTM on any security is computed by determining the interest rate that will make the present value of the cash flow from the security equal to its price. Mathematically, the yield on any security  $y$  is the interest rate that will make the following relationship hold:

$$P = C_1 / (1+y)^1 + C_2 / (1+y)^2 + C_3 / (1+y)^3 + \dots + C_N / (1+y)^N$$

where

- $P$  = price
- $C_t$  = cash flow in period  $t$
- $N$  = Number of periods

Solving for the yield ( $y$ ) is an iterative procedure. The objective is to find the interest rate that will make the present value of the cash flows equal to the price.

## Appendix 2: Convertible sensitivity measures

**Delta:** A measure of equity sensitivity showing the relationship between a *percent* change in stock price and corresponding expected *percent* change in convertible price; it is also known as price elasticity:

$$\begin{aligned}
 \text{Delta} &= \frac{\% \text{ Change in Convert Price}}{\% \text{ Change in Parity}} \\
 &= \frac{C_2 - C_1}{C_1} * \frac{P_1}{P_2 - P_1} \\
 &= \text{Parity Delta} * \frac{P_1}{C_1} \\
 &= \text{Parity Delta} * \frac{P_1}{P_1 * (1 + \text{Conv Prem})} \\
 &= \text{Parity Delta} * \frac{1}{1 + \text{Conv Prem}} \\
 &= \frac{\text{Parity Delta}}{1 + \text{Conv Prem}}
 \end{aligned}$$

where

- $C_1$  and  $C_2$  are beginning and ending convertible prices
- $P_1$  and  $P_2$  are beginning and ending underlying parity values
- $C = P * (1 + \text{Conv Prem})$

So mathematically, delta can be expressed as the parity delta adjusted for the amount of conversion premium paid, when purchasing a convertible:

$$\text{Delta} = \text{Parity Delta} / (1 + \text{Conversion Premium (in \%)})$$

The relationship between conversion premium and delta is therefore inverse, meaning high conversion premiums equate to low deltas.

**Gamma:** This measures the rate of change of delta with respect to the underlying asset or parity. If gamma is small, delta changes very slowly, and adjustments to keep a convertible position delta neutral need only be made at relatively infrequent intervals. However if gamma is large in absolute terms, delta is highly sensitive to movements in parity. For the mathematically inclined, gamma is a measure of convexity and is the second derivative with respect to the underlying asset.

**Interest rate vega:** The change in price of a convertible with respect to a 1% change in the volatility of interest rates.

**Parity delta:** By its very nature the price of a convertible is sensitive to movements in the underlying equity. Parity delta is a measure of equity sensitivity showing the relationship between a *points* change in conversion parity and corresponding expected *point* change in convertible price. It is the slope of the curve that relates the convertible security price to its parity. More formally parity delta is the first derivative with respect to the underlying security:

$$\text{Parity Delta} = \frac{d\text{Convert Price}}{d\text{Parity}} = \frac{C_2 - C_1}{P_2 - P_1}$$

where

- $C_1$  and  $C_2$  are beginning and ending convertible prices
- $P_1$  and  $P_2$  are beginning and ending underlying parity values.

Alternatively, parity delta can be expressed as:

Parity Delta = points change in convertible price / 1 point change in parity

**Rho:** Also known as bond delta, this is the correlation of movements between the convertible price and interest rates.

**Stock vega:** The change in price of a convertible with respect to a 1% change in the volatility of the underlying stock.

### PRIDES-type mandatory preferreds glossary

**Conversion premium:** The percentage difference between the PRIDES price and conversion value.

$$\text{Conversion Premium} = \frac{\text{PRIDES Price}}{(\text{Stock Price} \times \text{Min Conv Ratio})} - 1$$

### Conversion value:

$$\text{Conversion Value} = \text{Stock Price} \times \text{Min Conv Ratio}$$

It is important to note that this value calculation uses the lowest conversion ratio (usually in the range 0.80-0.85). The actual conversion ratio could be as high as 1 depending on the common stock price at maturity.

**Conversion price:** PRIDES are convertible into common stock at a premium price. The conversion price can be calculated as follows:

$$\text{Conversion Price} = \frac{\text{PRIDES Price}}{\text{Minimum Conversion Ratio}}$$

**Early redemption:** After three years the company can call the PRIDES at pre-specified premiums to the issue price, plus accrued dividends (the call premium starts at one quarter's dividend, and amortizes to zero over the fourth year). The PRIDES will convert into common shares equal in value to the call price, or the optional conversion ratio of shares, whichever is greater.

**Mandatory conversion ratio:** At maturity the PRIDES mandatorily converts into common stock. The number of shares received per PRIDES is determined by the stock price on the conversion date. There are three possibilities for the value of the PRIDES at maturity:

1. The common closes below the initial price. The PRIDES converts into one share of common.
2. The common closes between the initial price and the conversion price. The PRIDES converts into common according to a sliding scale designed to give the PRIDES holder common shares exactly equal in value to the initial issue price. The exact ratio is laid out in the prospectus, but will be between 1 and the minimum ratio.
3. The common price exceeds the conversion price at maturity. The PRIDES converts into the optional conversion number of common shares.

**Optional conversion ratio:** The PRIDES holder has the right to convert into common stock at any time prior to the mandatory conversion date. A holder who converts early will receive the optional conversion ratio number of shares for each PRIDES share.

$$\text{Optional Conversion Ratio} = \frac{1}{(1 + \text{Initial Conv Prem})}$$

## Appendix 3: Index list

The below table contains a list of the ICE BofAML global convertible indices. The seven indices in the upper left are the main top-level indices used to represent each region: CONV (Global), VG00 (Global G300), VXA0 (US), VE00 (Europe), VASI (Asia-ex Japan), VJDM (Japan Dom), and VJEU (Japan Euro).

**Table 27: ICE BofAML convertible bond indices**

Ticker	Region	Top Level Index Name	Ticker	Region	Index Name	Ticker	Region	Index Name
CONV	Global	Global Convertibles	V0Z0	US	US Zero Coupon Converts	VE15	Europe	UK Converts ex Mand
VG00	Global	Global 300 Converts	VAXP	US	US Converts ex Pref	VE2Z	Europe	Large European Converts ex Mand
VXA0	US	US Converts	VBYL	US	Yield Alt US Converts ex Mand/Pref	VECT	Europe	Continental European Converts ex Mand
VE00	Europe	European Converts ex Mand	VCA0	US	US Income Converts ex Mand	VEEU	Europe	EUR European Converts ex Mand
VASI	Asia	Asia Converts ex Mand	VCA1	US	IG US Income Converts ex Mand	VEMD	Europe	European Converts
VJDM	Japan	Domestic Japan Converts	VCA2	US	HY US Income Converts ex Mand	VEMT	Europe	3-7 Year European Converts ex Mand
VJEU	Japan	Euroclearable Japan Converts ex Mand/Pref	VCOC	US	US Contingent Converts	VENW	Europe	New Issue European Converts ex Mand
			VC0Z	US	US Zero Coupon Contingent Converts	VEST	Europe	0-3 Year European Converts ex Mand
			VCS0	US	US Income Converts ex Mand/Pref	VEUS	Europe	USD European Converts ex Mand
			VCS1	US	IG US Income Converts ex Mand/Pref	VEUU	Europe	Eurozone Converts ex Mand
			VCS2	US	HY US Income Converts ex Mand/Pref	VEUG	Europe	European Exchange Converts ex Mand
			VGRO	US	US Growth Converts	VUKD	Europe	UK Converts ex Mand
			VNEW	US	New Issue US Converts	VER0	Europe	IG European Converts ex Mand/Pref
			VNON	US	US Non-Contingent Converts	VER5	Europe	HY European Converts ex Mand/Pref
			VSON	US	US Converts ex 144A/Mand/Pref	VEEA	Europe	Equity Alt European Converts ex Mand
			VS1N	US	IG US Converts ex 144A/Mand/Pref	VETR	Europe	Total Return European Converts ex Mand
			VS2N	US	HY US Converts ex 144A/Mand/Pref	VEY1	Europe	Yield Alt European Converts ex Mand
			VS4C	US	IG Large US Converts ex Mand/Pref 4% Constr	VELE	Europe	Large Cap European Converts ex Mand
			VS5C	US	HY US Converts ex Mand/Pref 5% Constr	VEME	Europe	Mid Cap European Converts ex Mand
			VTYD	US	Total Return & Yield Alt US Converts	VESE	Europe	Small Cap European Converts ex Mand
			VTYM	US	Total Return & Yield Alt US Converts ex Mand	VES1	Europe	European Energy Converts ex Mand
			VVAL	US	US Value Converts	VES2	Europe	European Materials Converts ex Mand
			VX0N	US	US Converts ex 144A	VES3	Europe	European Industrial Converts ex Mand
			VX1H	US	Delta Hedged IG US Converts	VES4	Europe	European Consumer Discretionary Converts ex Mand
			VX1N	US	IG US Converts ex 144A	VES5	Europe	European Consumer Staples Converts ex Mand
			VX2H	US	Delta Hedged HY US Converts	VES6	Europe	European Healthcare Converts ex Mand
			VX2N	US	HY US Converts ex 144A	VES7	Europe	European Financial Converts ex Mand
			VX5C	US	IG US Converts 5% Constrained	VES8	Europe	European Technology Converts ex Mand
			VXAH	US	Delta Hedged US Converts	VES9	Europe	European Telecom Converts ex Mand
			VXBH	US	Delta Hedged US Income Converts Ex Mand/Pfd	VESA	Europe	European Utility Converts ex Mand
			VXC0	US	US Income Converts	VESB	Europe	European Media Converts ex Mand
			VXC1	US	IG US Income Converts	VESC	Europe	European Transport Converts ex Mand
			VXC2	US	HY US Income Converts	VESD	Europe	European TMT Converts ex Mand
			VXMH	US	Delta Hedged US Mandatory Converts			
			VXP0	US	US Convert Preferred	VEMK	Asia	EM Converts ex Mand
			VXP1	US	IG US Convert Preferred	VSAF	Asia	South Africa Converts ex Mand
			VXP2	US	HY US Convert Preferred	VAMT	Asia	3-7 Year Asia Converts ex Mand
			VXPH	US	Delta Hedged US Income Convert Pfd ex Mand	VAST	Asia	0-3 Year Asia Converts ex Mand
			VXZH	US	Delta Hedged US Zero Converts ex Mand/Pfd	VAHY	Asia	HY Asia Converts ex Mand/Pref
			H0LQ	US	Hedged Large US Converts ex Mand	VAIG	Asia	IG Asia Converts ex Mand/Pref
			HXLQ	US	Hedged Large US Converts	VAAE	Asia	Equity Alt Asia Converts ex Mand
			VXA1	US	IG US Converts	VATR	Asia	Total Return Asia Converts ex Mand
			VXA2	US	HY US Converts	VAY1	Asia	Yield Alt Asia Converts ex Mand
			VEQU	US	Equity Alt US Converts	VALE	Asia	Large Cap Asia Converts ex Mand
			VTOT	US	Total Return US Converts	VAME	Asia	Mid Cap Asia Converts ex Mand
			VYLD	US	Yield Alt US Converts	VASE	Asia	Small Cap Asia Converts ex Mand
			VLRG	US	Large Cap US Converts	VA1S	Asia	Asia Energy Converts ex Mand
			VMID	US	Mid Cap US Converts	VA2S	Asia	Asia Materials Converts ex Mand
			VSML	US	Small Cap US Converts	VA3S	Asia	Asia Industrial Converts Ex Mand
			V10N	US	US Energy Convertibles	VA4S	Asia	Asia Consumer Disc Converts ex Mand
			V15N	US	US Materials Convertibles	VA5S	Asia	Asia Consumer Staples Converts ex Mand
			V20N	US	US Industrial Convertibles	VA6S	Asia	Asia Healthcare Converts ex Mand
			V25N	US	US Consumer Discretionary Converts	VA7S	Asia	Asia Financial Converts ex Mand
			V30N	US	US Consumer Staples Converts	VA8S	Asia	Asia Tech Converts ex Mand
			V35N	US	US Healthcare Converts	VA9S	Asia	Asia Telecom Converts ex Mand
			V40N	US	US Financial Converts	VAA5	Asia	Asia Utility Converts ex Mand
			V45N	US	US Technology Converts	VAB5	Asia	Asia Media Converts ex Mand
			V50N	US	US Telecom Converts	VASC	Asia	Asia Transport Converts ex Mand
			V55N	US	US Utility Converts	VASD	Asia	Asia TMT Converts ex Mand
			V60N	US	US Media Converts			
			V65N	US	US Transportation Converts			
V0A0	US	US Convertibles ex Mand						
V0A1	US	IG US Converts ex Mand						
V0A2	US	HY US Converts ex Mand						
V0B0	US	AAA-B US Converts ex Mand						
V0BB	US	AAA-BB US Converts ex Mand						
V0BN	US	AAA-B & NR US Converts ex Mand						
V0M2	US	US Mandatory Converts						
V0N0	US	US Converts ex 144A/Mand						
V0N1	US	IG US Converts ex 144A/Mand						
V0N2	US	HY US Converts ex 144A/Mand						
V0P0	US	US Convert Preferred ex Mand						
V0P1	US	IG US Convert Pref ex Mand						
V0P2	US	HY US Convert Pref ex Mand						
V0S0	US	US Converts ex Mand/Pref						
V0S1	US	IG US Converts ex Mand/Pref						
V0S2	US	HY US Converts ex Mand/Pref						

Source: BofA Merrill Lynch Global Research, ICE Data Indices, LLC



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