

Convert To The Cause

With apologies to the Beatles...

When I find myself in times of losses, Mother Greenspan comes to me,
Speaking words of wisdom, don't you flee...
There'll be rallies in the morrow, just you wait and you will see,
Buy some bond funds for the downside, don't you flee...
And when the broken-charted tech stocks
On the NASDAQ do agree, there will be some upside, don't you flee...
For though they may be smashed down, there is a chance they will see
A rally to a strike price, don't you flee...

Don't you flee, don't you flee, don't you flee, oh! don't you flee!
There'll be rallies in the morrow, don't you flee

Investors have understood the topic of convertible bonds from the standpoint of another pop chestnut, "you're just too good to be true," even though this is a sentiment more likely to raise our mental defenses than anything else. While other forms of convertible securities, most notably convertible preferred stocks, exist, let's focus on convertible bonds. A convertible bond is one containing a provision that permits conversion to the issuer's common stock at some fixed exchange ratio. Savvy investors – and aren't we all? – recognize in convertible bonds an instrument with the downside protection of a bond, the price and volatility-dependent characteristics of a long-term call option on the underlying stock, and the more linear price behavior of a stock once the conversion price is exceeded.

Traders in the (hopefully) emerging world of single stock futures will have to know a little bit more about corporate finance than has been required of stock index futures traders. While this will require traders to do more homework, the rewards will be there for those who do. Quite simply, trading opportunities will abound between stocks, bonds, stock futures, stock options, and the present subject, convertible bonds. So, let's establish a common vocabulary, take an overview of the market, and study these hybrid instruments' behavior.

A Convertible Lexicon

Conversion ratio: The number of shares of common stock into which each bond can be converted. This is included in the bond's covenant at time of issue. Par value of security divided by conversion price.

First call date: The first date at which the issuer can redeem all or part of an issue at the call price. Also established in the bond's covenant at time of issue.

Call price: The price at which the issuer can redeem the bond. To compensate the investor for lost coupon income, the call price frequently exceeds the face value of the bond.

Call premium: The difference between the call price and face value.

Market conversion price: The market price of the convertible bond divided by the conversion ratio.

Conversion parity: The price at which the convertible bond must sell for it to equal the value of the common stock to be received upon conversion.

Conversion premium per share: Market conversion price less the price of the underlying common stock. Functionally equivalent to a call option premium. At conversion parity, the ratio of the convertible's market price is to the common stock's market price equals the conversion ratio.

Conversion premium ratio: Conversion premium per share divided by the price of the underlying common stock.

Current yield for convertible: Coupon yield on the bond times face value, divided by market price of convertible.

Yield sacrifice: Yield for an equivalent corporate bond minus current yield on convertible. The greater the yield sacrifice, the more the underlying common stock will have to appreciate to make the convertible attractive.

Total income differential: Coupon income on the bond minus (stock dividend yield times conversion ratio).

Breakeven time: Conversion premium per share divided by income differential per share. Shorter breakeven times are better for convertible investors.

Downside risk: The value of a bond with the convertible's yield to maturity. This number can be subject to both positive and adverse movements produced by normal corporate credit and event risks.

Convertible arbitrage: The convertible bond should be priced for less than the conversion ratio times the common stock price. If not, an arbitrage to buy the bond and sell the conversion number of shares exists.

Percent premium: The ratio of the convertible bond price to parity, minus one.

Characteristics Of Convertibles

Convertible bonds generally are subordinated to a corporation's senior debt, but as bonds, are senior to common stock in the corporation's capital structure. Why is this important for traders? Securities law can be summarized as worrying about what happens when the sheriff comes. In instances of bankruptcy or corporate distress, the more senior the instrument, the more value it will retain. If stock traders panic and send the common plunging, this may create an opportunity to buy the undervalued stock and sell the convertible, as we shall see.

Convertible bonds generally pay a much lower coupon yield than do normal corporate bonds. In fact, many are issued on a zero-coupon basis. In addition, many convertible bonds are issued at a 25-30% discount to comparable corporate shares. Both the lower coupon and the lower price reflect the call option embedded in the instruments.

This call option quality makes convertibles poster children for bull markets. Investors see the call option as desirable during a period of surging stock prices, such as our dearly departed tech boom. Many cash-poor firms love to issue convertibles in bull markets as well: They hope to replace the coupon obligation of the bond with the non-obligation of the common stock dividend. Here again, this is Corporate Finance 101: Cutting the dividend in times of stress isn't anything to be proud of, but that's the risk shareholders have assumed. Default on a bond payment, and you'll be seeking bankruptcy protection.

Of course, convertible bonds present risks to the issuer as well. Just like an initial public offering (IPO), the trick is not leaving too much money on the table while still being able to market the issue. If the issuer is cash-strapped, he might be tempted into selling the bonds now at a far lower price than he could have received later, and he might be stuck making bond payments should the issue not rise to the conversion level. This has happened to some recent high tech stars, such as Amazon.com, who no doubt are unhappy at the prospects of paying bondholders interest when they don't pay shareholders dividends. The issuer, in effect, is short a put option for coupon payments below the conversion price and short a call option on the stock above the conversion price. We know two things for certain about being short options: The premium received is irresistible, and bad things have a way of happening.

Investors have the advantages of owning a security senior to equity whose downside is limited to the value of the bond should conversion become only a distant hope. The investor is long a call option up to the conversion point, and then he owns the stock, replete with its embedded short put option: Conversion gives the bondholder the downside participation that comes with any long stock position. Investors typically garner a higher yield on the convertible than they would from the stock dividend, and a convertible bond is a far more defensive investment than outright equity ownership.

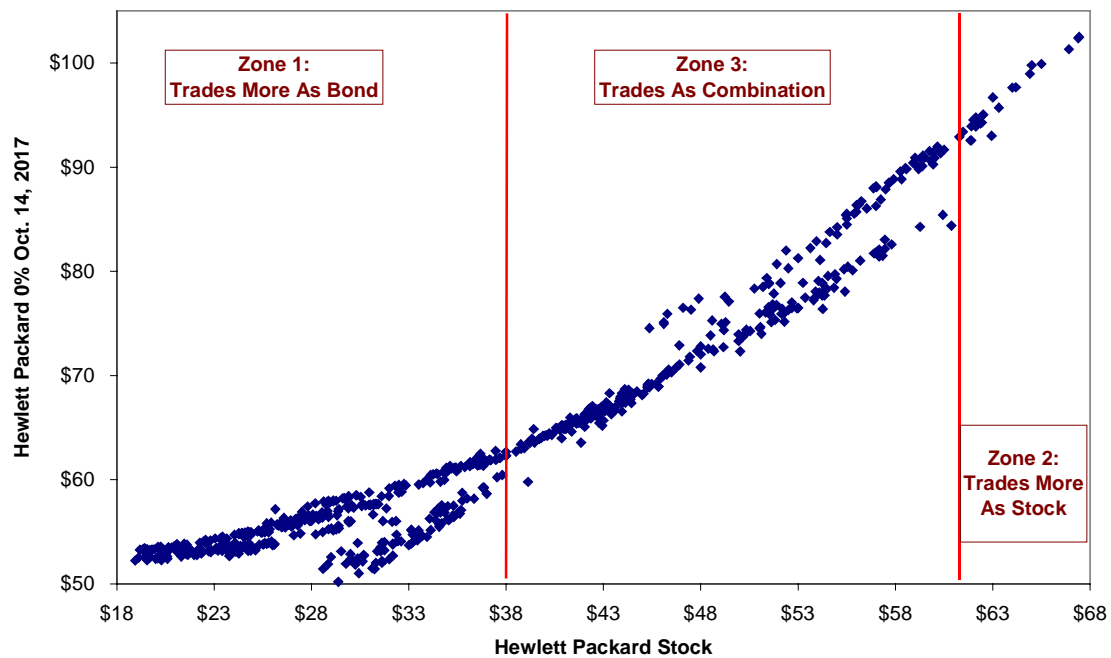
What does the investor give up? Convertibles yield less than standard corporate bonds. The investor is short a call on the bond at the conversion level, and this typically will involve a loss of current income as a bond is converted into a stock. And, bear markets accompanied by higher interest rates, such as happened in 1973-1974 and again in 1980-1981 can be absolutely brutal to convertible owners: The prospect of conversion dwindles, and the bond component is worth less to boot. This is identical to the "extension risk" faced by owners of principal-only mortgage strips in a rising interest rate environment.

Convertible Valuation And Pricing

A convertible bond has a straight value of its cash flow discounted at a comparable corporate bond yield. It also has a conversion value of the conversion ratio times the current stock prices. The bond trades at the greater of these two values; the difference is the value of the conversion option.

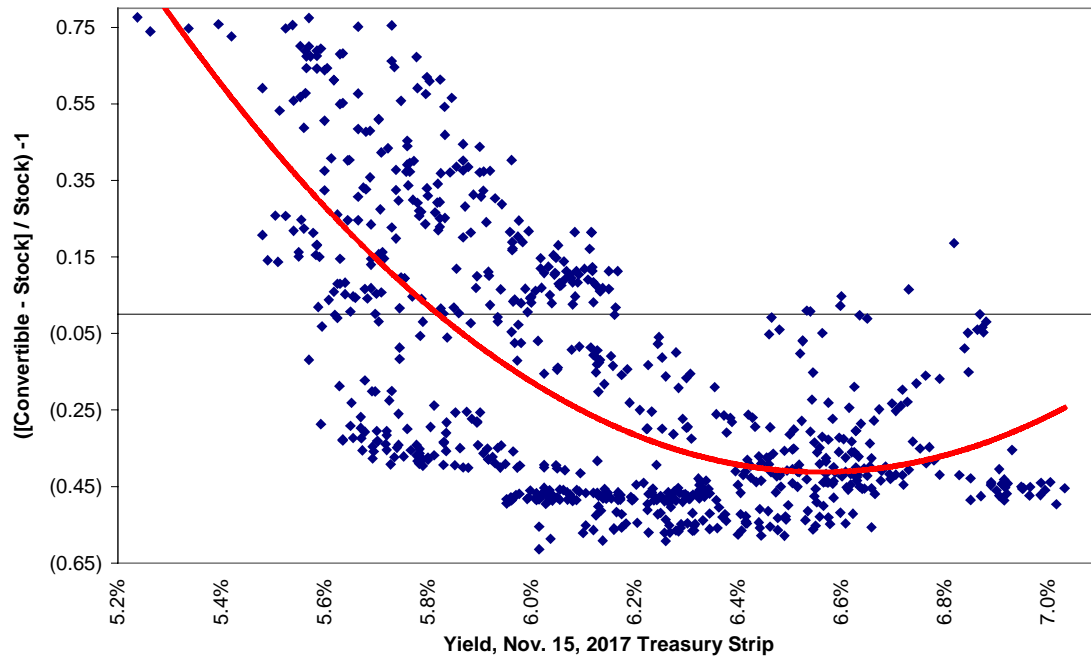
We can divide the convertible environment into three general regions, which we will illustrate with the price behavior of a Hewlett Packard zero-coupon convertible into 15.09 shares, \$66.27 per share, until October 14, 2017.

Convertible Price Zones Against Common Stock: A Case Study



The first zone, which typically occurs either near the time of issue or after the stock price has collapsed, is a high premium region where the bond will behave like an out-of-the-money call option. Its price will move both in accordance with interest rate fluctuations and be influenced by volatility. Like any long call option, the higher the volatility, the better, and for this reason, convertible bonds frequently stay buoyant during sharp stock market downturns wherein volatility jumps. The value of the convertible is supported during interest rate increases as well; this is due to the value of the embedded call option. The price premium of the convertible expands as interest rates fall, as we should expect, and this allows the convertible bond to enjoy gains not shared by the underlying common stock.

Role Of Interest Rates



The second general region is the opposite of the first. Here the stock price has moved well over the conversion price, but the bond may not yet be callable. The convertible now will act like a deep-in-the-money call option.

The third and final region, which lies in the middle, is the most interesting. Here the convertible will act both like a stock and a bond, and will be influenced by volatility as well. Traders typically decompose the convertible bond into its straight bond plus embedded call option or warrant components; here we should note that several sophisticated pricing models have been developed, but we will not discuss them at this time. The warrant can be valued using standard options pricing models at corresponding straight warrant or long-term option (LEAP) volatilities. If the [bond + warrant] total exceeds the present stock price, the convertible is said to be cheaper than fair value, and should be purchased against the stock. Before you run off and do this, however, please bear in mind that long-term options pricing is an inexact science on its good days due to the simplifying assumptions required. Initial analyses often show large number of bonds to be priced improperly, which may cause you to think your fellow traders are a slow bunch compared to your software add-ins. Bad move! Remember, each and every bond is unique, and until you do your homework on the underlying firm, don't fall into the trap of thinking you've found free money.

As a rule, the value of a convertible should increase with the underlying stock price. Higher volatility should increase the value of the convertible, unless the bond is callable. Higher dividends are a negative as they reduce the bond's yield advantage. Higher interest rates are a negative, but these can be offset quickly if the stock price is surging. Higher interest rates also increase the value of the holder's conversion option and put option, if applicable. For out-of-the-money convertibles, higher rates reduce the value of the issuer's call option on the bond. For in-the-money convertibles, however, higher rates increase the value of the issuer's call option on the bond.

Convertible Hedging And Decision Points

A convertible bond has a "parity delta," defined as the change in bond value divided by the change in parity. Like the delta on a call option, this delta ranges from 0 to 1. The conversion ratio times the parity delta is the number of shares to be sold as a hedge against the convertible bond. Due to the embedded call

in the convertible bond, a long convertible / short stock hedge is gamma positive, which means this trade will have a limited downside equivalent to the residual corporate bond price.

The relationship between the stock's dividend and the convertible bond's coupon creates an interesting decision point referred to as the critical stock price. This hasn't been much of a concern in this era of low stock dividends (see "Everything You Know Is Wrong," *Futures*, August 1999). If the expected dividends from the common stock exceed the combined [bond coupon + downside protection], the convertible holder should convert voluntarily. This critical stock price decreases as a function of the convertible's age.

When do convertibles trade more like stocks and when do they trade more like bonds? A short-lived convertible with a stock price underneath the conversion level and a low volatility will trade more as the bond plus a low-value out-of-the-money call option. The appropriate hedge instrument here is a similar corporate bond or, since the price is interest rate dependent, options on Treasury note futures. Longer-dated convertibles with high volatilities will trade at high premia and exhibit more equity-like behavior. The appropriate hedge instrument here is the stock, the stock options, or even index options on narrow sectors such as the Philadelphia semiconductor index.

Convertible Indexation And Hedging With Futures

Like many corporate and municipal bonds, convertibles are illiquid compared to the Treasury securities and equities that form the basis of our beloved futures contracts. Still, a number of mutual funds and hedge funds specialize in both U.S. and global convertibles, and Goldman Sachs has been thoughtful enough to create indices such as the Goldman Sachs/Bloomberg U.S. Convertible 100 index designed to track the instruments' behavior.

The role that exchange-traded futures can play in convertible bond trading – including creating "do-it-yourself" convertibles – will be examined next month.