Convertible bonds (CBs) are still a little-known part of the market for many investors. We think that is a shame, as we would argue that CBs can form a surprisingly versatile element in many portfolios. This article aims to provide an introduction to CBs for the uninitiated, while helping more knowledgeable investors to deepen their understanding.

CBs are hybrid securities which entitle the investor to convert a bond into a certain number of associated shares. In this they combine some of the characteristics of fixed income instruments and some of equities. In particular, their ability to participate in equity upside while providing bond-like protection on the downside makes them attractive compared to other asset classes. Many studies\(^1\) have confirmed these characteristics for different markets and time periods. The history of CBs goes back to 1843, when the city of New York and Erie Railroad issued the first such bond to finance railway lines in the United States, but it is only in recent years that CBs have started to become a popular asset class.

**Market**

The market for CBs is still quite small compared to those for other asset classes, such as equities or bonds. Nevertheless, it is well diversified geographically and is an established source of funding for both medium-sized and large companies. The market was valued at $325 billion by the end of July 2016, having shrunk since its peak in 2007 as maturing bonds have outpaced new issues (Figure 1). The US is still the leading issuing region, followed by Europe and Asia. Moreover, the US has increased its market share from 22\% in 1995 to 51\% in 2015, while Japan has seen its share fall from 51\% to just 6\% over the same period\(^2\).

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\(^2\) Thomson Reuters, 2016.
Figure 1: The market is back where it was 17 years’ ago

![Graph showing convertible bond issuance from 1999 to 2016.](image)


**Issuance**

Around half of the total annual volume of CBs is normally issued in the US. Figure 2 shows that volumes have fluctuated quite sharply over the last decade, ranging between $50 billion and $200 billion a year. But, having declined since 2007 to a low in 2012, the market has picked up in the last three years, with last year’s volume of $82 billion only slightly below average.

Figure 2: Annual Convertible Issuance 2005–2016

![Graph showing annual convertible issuance from 2005 to 2016 by region.](image)

Source: UBS and Thomson Reuters, August 2016.

**Valuation**

Figure 3 depicts the typical asymmetrical payoff profile of CBs. The downside risk is limited by the bond floor, the price below which the convertible should not fall in normal circumstances. Above that, however, the fair value of the CB (represented by the blue line) goes up with the price of the share into which it can be converted. As it rises, it includes an ever-decreasing (option) premium over the CB’s parity or intrinsic value, the amount which the investor receives on conversion. The higher the share price rises, the more the CB resembles the underlying share; the more it falls, the more it looks like a bond.

Figure 3: Pay-off profile

![Graph showing convertible bond payoff profile.](image)

Source: Thomson Reuters, August 2016.
Depending on the value of the underlying equity, CBs fall into three categories, as outlined below.

**Bond-like (out-of-the-money)**
This is when the price of the CB is near to the bond floor or “lower bound”. At this level, the option attached to the CB is out of the money, its premium over parity is high and it has little value. The “delta”, a measure of the sensitivity of the CB to the underlying share price, is generally quite low at between 10% and 40%.

**Hybrid (at-the-money)**
When the share price is close to the conversion price, the payoff looks more attractive. The delta is generally higher at between 40% to 80% and the “gamma”, which is an indication of the ratio of upside potential to downside protection or “convexity”, is very high. Since high convexity is favourable from an investor’s point of view, CBs that fall into this category are said to be in a “sweet spot”.

**Equity-like (in-the-money)**
An equity-like CB has a delta above 80% and low convexity. The CB behaves like the underlying stock and has lost most or all of its typical convertible characteristics.

**Theoretical Cheapness**
Convertible bonds are not an efficient market and tend to be mispriced quite often. As active manager looking for value, we can often find discounts to its fair value. Most of the time, convertible bonds are valued at about 1% less than the sum of its components. This is because the fixed income instrument and the embedded option cannot be traded separately, which makes CBs less attractive than comparable securities. Figure 4 compares the prices of convertible bonds in different regions with their fair value over the last 5 years. This illustrates the theoretical cheapness of CBs.

**Figure 4: Theoretical Cheapness July 2011 – July 2016**

Source: Nomura, August 2016.

**Portfolio benefits**

**Risk and return**
The most obvious value that CBs can add to a portfolio is the simplest: performance. Schroder ISF Global Convertible Bond portfolio has outperformed the MSCI Equity Index over the period April 2008 to July 2016 by just over 9% (Figure 5). This outperformance was realized with lower volatility than the index, resulting in a higher Sharpe ratio and therefore more attractive risk adjusted returns than the equity benchmark. Additionally, the maximum drawdown for Convertible bonds is at around 26% and has been only a little over half that for equities (51%).
But CBs are also attractive in terms of the way returns are distributed. One study has shown that returns tend to fall in a pattern that is less symmetrical around their mean value than bonds or equities, demonstrating more “skewness”\(^3\). Moreover, they tend to have an asymmetric tail (and one that extends more towards positive values). Although this so-called “kurtosis” is similar to that for equities, it is higher than for straightforward bonds and, in combination with positive skewness, makes for a higher probability of bigger returns.

**Correlation**

The correlation between CBs and equities is in general quite high at around 75% to 90%. This is not surprising since the embedded option in a convertible is driven by the performance of the underlying stock. However, a study by Allianz Global Investors in 2014 found periods of low and even negative correlations between CBs and bonds\(^4\). This means that adding CBs to a portfolio should provide additional diversification potential and improve the risk-return profile of both a bond and an equity portfolio.

**Rising interest rates**

Interest rates are one of the main risk factors for traditional bond portfolios. After decades of falling rates, they have now started to rise in the US. In normal circumstances, this would result in capital losses for fixed income assets such as government bonds and investment grade corporates. CBs’ ability to convert into equities offers good protection in this environment. A CB investor can exploit these equity-like characteristics and thereby tactically decrease its portfolio’s sensitivity to rising interest rates. Since 1999, CBs have typically delivered positive returns at times of rising interest rates when governments and corporate bonds have typically lost value. This is true for all five time periods examined (Figure 6).

**Figure 6: Returns differ widely when rates rise**

Source: Schroders, March 2016.

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\(^3\) See Ranaldo and Eckmann above.

Schroders Convertible Bonds – Owning an option on the upside

Up- and down-side participation

The asymmetry of returns from CBs is one of their most attractive features for investors. This is demonstrated in Figure 7, which compares the behaviour of CBs to the equity market over rolling investment periods of one to five years. It shows that CBs routinely capture almost 80% of the equity market upside. The downside, however, is different, with the typical fall over one year only around half the amount recorded by equities in general. Over two, three and four years, CBs even record gains, making them suitable for investors seeking absolute returns. These desirable characteristics are due to the market timing built-in to CBs. High convexity means that their equity exposure decreases automatically as the price of the underlying equity falls and increases again in rising markets.

Figure 7: Convertibles offer attractions in markets good and bad

![Figure 7](image-url)

Source: Schroders, August 2016.

Even in the worst months for the equity market, such as during the financial crisis of 2008 when monthly losses were in double digits, convertibles offered average downside protection of around 50% compared to equities (Figure 8).

Figure 8: And they limit losses even in the worst markets

![Figure 8](image-url)

Source: Bloomberg, August 2016.

Investment strategies

Many strategies can be deployed when investing in CBs, often involving allocating in different proportions to the three categories referred to above (bond-like, hybrid and equity-like). Two of the more common approaches are explained below.

Outright strategy

Outright investors are traditionally long-only investors such as mutual funds and pension funds. They buy CBs because of what they see as the attractions of the underlying equity or the undervaluation of the CB, or both. Short positions can be used to hedge the currency risk. The outright strategy has become more and more popular since the financial crisis in 2008.

Convertible bond arbitrage

Convertible arbitrage is a long-short strategy often used by hedge funds. It is based on the assumption that markets can be inefficient and that CBs can therefore be temporarily mispriced. The investor attempts to profit from this situation by simultaneously buying CBs (long) and selling the underlying stocks (short). If markets fall, the investor profits from the short position, which generally outperforms any losses on the long side. On the other hand, if markets go up, the CB can be converted into equity, which may also be a profitable strategy. However, this long-short approach also carries risks. Lock-up periods and other adverse contract terms need to been taken into account by the investor. Furthermore, certain market conditions may make the strategy unprofitable. It is therefore vitally important that the investor understands the characteristics of CBs and how they perform in different markets.

Technical factors

Besides the general advantages we have outlined, there may be specific benefits CBs offer to particular sorts of issuers or investors.

For instance, for companies needing capital to grow, it can be preferable to issue CBs instead of straight debt, since CBs typically pay lower rates of interest. CBs also have an advantage over equities in that interest payments on debt are tax deductible in many jurisdictions. This is not the case for share dividends. Moreover, each CB is tailor-made, which means that the issuer can define the parameters of the convertible very specifically to achieve their objectives.

Since CBs are generally classified as fixed income instruments, they can be attractive for investors who face limitations on what they can invest in. For example, bond fund managers not normally allowed to invest in equities can use CBs to give them the opportunity to participate in rising equity markets without breaking their investment restrictions. And even though CBs combine the characteristics of both a bond and an equity option, they are hard to replicate using derivatives or other securities.

Solvency II

A class of investor for which CBs may be particularly attractive is European insurance companies. They must now adhere to the Solvency II Directive, a set of EU regulations which aim to harmonise the European legislative framework for insurers. Based on the structure for banking regulation developed by the Basel Committee on Banking Supervision, it came into force on 1 January 2016.

Within the Solvency II framework, the solvency capital requirement (SCR) represents the risk-based level of regulatory capital required by an insurance group to limit the probability of default to 0.5% over any one-year time period. The SCR reflects the aggregate impact of the following six kinds of risk:

- Interest rate
- Equity
- Property
- Credit spread
- Currency
- Concentration.

Solvency II has far-reaching consequences for insurance companies, especially in terms of asset allocation. It means that it is ever more important to have portfolios which are efficient from a regulation or SCR standpoint. CBs can offer huge advantages compared to equities in this context. The results of the fifth Quantitative Impact Study run by the European Insurance and Occupational Pensions Authority show that CBs bear low capital costs due to their convexity. In general, the SCR for CBs is only around 20%, or around half the level required for equities.

The main reasons are:

- The duration of CBs is in general lower than that for straight bonds. This results in lower credit and interest rate risk
- About 50% of CBs are not covered by rating agencies. Because unrated CBs are generally higher quality – some are even investment grade – they are treated more leniently under Solvency II than high-yield bonds, which are an alternative option for insurance portfolios. This results in a lower SCR
- Most of the CBs are issued by OECD countries, which have a lower SCR than non-OECD countries.

Thus, for insurers, it can make sense to replace equity holdings with convertible bonds in order to reduce regulatory capital charges.
Summary
CBs are hybrid securities which can combine the best characteristics of both bonds and equities. They offer protection in falling markets and participation in rising markets. This gives them an above-average risk-return profile, making them attractive to investors for a wide range of purposes, from performance and diversification to much reduced capital costs.

References