portfolio construction CONFERENCE
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INVESTING ACROSS THE CAPITAL STRUCTURE

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Schroders

Investors broadly understand the role of equities and traditional vanilla bonds in a portfolio - probably no more so than after the last 12 months. However investors rarely understand the role that can be played by introducing "non-core" assets into a portfolio. By not using the full investment opportunity set, they are ignoring a range of opportunities across the capital structure that have a legitimate role to play in a well constructed portfolio. This research paper explores these opportunities starting with a review of the capital structure. It looks at each of the parts and identifies some of the key investment characteristics, before asking "why" invest and discussing some of the portfolio construction considerations. Lastly, it explores the implementation of these ideas using a comparison between traditional and unconstrained balanced funds as an example.

The capital structure can be thought of as the different categories of funding a company issues to finance its balance sheet – that is, everything from the most junior (equity capital) to the most senior (government guaranteed debt). Although not all companies issue across all points of the capital structure, it is common for them to issue several types to ensure sufficient funding flexibility, and a market exists in each category. As a starting point, Figure 1 defines each segment in terms of its seniority and its recourse to the underlying asset.

Figure 1: Capital structure and recourse to underlying assets

Capital Structure	Recourse
Government Guaranteed	100% on application to the Govt
Bank Loans / Secured Debt	First right of recourse over assets
Unsecured Debt – senior	Most corporate bonds are in this category. Depends on degree of subordination.
Unsecured Debt – subordinated	Back in the queue.
Capital Securities – hybrids incl Tier 1 & Tier 2	Banks and insurers for regulatory purposes plus non-financial corporate issuers
Capital securities – sub mezzanine	Just above equities. Limited recourse. May not get a seat at the work-out table.
Convertibles	Similar to equity.
Equity	Last in line.

Source: Schroders

Unsecured debt and equity are the traditional asset types used by investors and are heavily researched segments of the market. Other categories are less researched and understood and hence suffer from potentially greater relative mis-pricing. As a result, they can represent a significant opportunity to add value in a portfolio.

- **Government Guaranteed** is issued in the name of the issuing company (a bank) with the government guaranteeing the monies should the issuer default. This debt is a more recent phenomenon and was issued in response to concerns around financial system instability resulting from the 2007/2008 credit crisis. The key point is that it is the most senior of all instruments. Interestingly, it was issued as senior to the existing senior debt therefore structurally subordinating all below it. A key valuation point is that these instruments were issued at a substantial risk premium to government bonds, in effect creating an arbitrage that allowed investors to take government default risk while earning a return higher than the equivalent prevailing government rate.

- **Bank Loans / Secured Debt** funding was traditionally the domain of banks but in more recent times, participants in the market have broadened to include non-bank lenders. In the absence of government guaranteed loans, these rank as the most senior in the capital structure. The key is that in the event of default, investors gain first rights over the asset(s) and have greater control in the workout process so as to maximise repayment. That said, a recovery of less than the full face value still typically occurs as has been the case recently in some defaulted loans. This segment of the market may be difficult to directly access and often exposures are to syndicated loans are taken in the form of structured products such as Collateralised Loan Obligations (CLOs). There can be a lack of visibility particularly as, until this cycle, the value of the individual loans had not been fully marked to market. As such, it can be difficult to determine the true level of historic volatility or return expectations. Furthermore, much of the Leveraged Buyout (LBO) activity in 2005 and 2006 was financed in the loan market, raising questions about the actual credit quality of some of the borrowers.

- **Unsecured Debt** is the next level down. As the name suggests, it is not secured against specific assets of the company and therefore has no right of recourse over specific assets. In the event of default, bond holders are entitled to the liquidation proceeds left over after the more senior lenders have been paid back. Senior Unsecured Debt is essentially the corporate bond market. This is often the place where traditional credit investors focus and is the most heavily researched segment of the credit market. Unsecured debt is also further segmented by investors based on credit rating and categorised into investment grade and high yield. Subordinated Unsecured debt is similar – as the name suggests it is next in line after senior bonds in the event of default.

- **Capital Securities** are the next step down the capital structure, and the point at which we divert from the structure of a traditional bullet bond. This category includes hybrid securities (those with predominantly bonds like characteristics) as well as regulatory capital (tier 1 and tier 2) issued by banks and insurance companies. These securities have characteristics of both debt and, in some cases, equity. They are debt-like as they pay a coupon that is set above a risk free rate such as bank bills or, say, the five-year swap. In addition, they may have limited equity-like features due to variable maturity dates or may actually convert to equity. The have a very high

bond component with limited or no direct exposure to the equity price. These aspects mean there is an additional structural risk embedded in the security that investors need to understand.

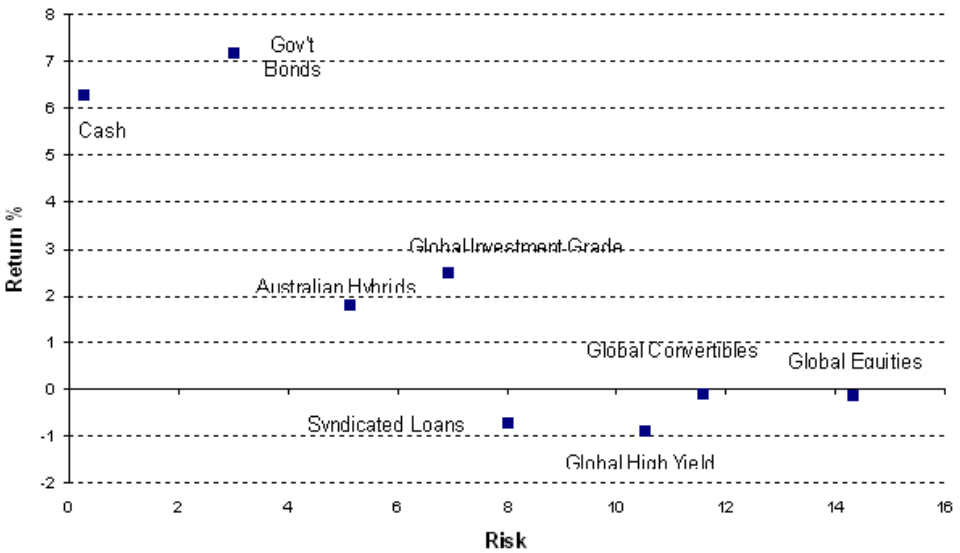
- **Convertible bonds** are a level above equity and have structural features that give an economic effect more like that of equity than bonds. These are convertible into equity, giving them exposure to movement in the underlying equity price. They have a low bond component with a potentially high equity delta. Although the word bond appears in the name, they have a significant equity component and in reality behave more like equity than debt.

- **Equity** is the lowest point in the capital structure and needs no explanation. For the purposes of this research paper, reference will be made to equity to compare to the characteristics of the other segments of the capital structure.

INVESTMENT CHARACTERISTICS

A starting point is to look at the return history of each in relation to the risk (defined here as the standard deviation of monthly returns, or volatility) as shown in Figure 2. The period chosen is the five years to 31 December 2008 to specifically capture the sell off in risk assets and the jump in volatility resulting from the credit crisis. As expected, equities exhibited the highest volatility while cash exhibited the least. Global Investment Grade (unsecured debt or corporate bonds) fell somewhere in between. Interestingly, as you moved up the capital structure, the higher points in the capital structure did not necessarily display less volatility or better return. One obvious example was capital securities (based on Australian hybrids) which had a lower volatility than global investment grade which is higher up the capital structure. Also, loans that are at the top of the capital structure had a lower return outcome than the other points of the capital structure.

Figure 2: Risk and return – five years to 31 December 2008



Source: Datastream, Schroders, S&P. Proxies are hedged back to in AUD. Global Investment Grade Credit = B Global Inv Grade; Global Convertible = ML Global Conn; Australian Government Bonds = UBS Govt Bond Index;

Global High Yield – BG High Yield; Hybrids = Schroder Hybrid Securities Fund; Global Equities = MSCI World ex Aus. Syndicated Loans = S&P/LSTA. Risk is calculated as the standard deviation of monthly returns. Return is annualised performance over the five-year period.

Figure 2 highlights two important points. Firstly, simply being higher up the capital structure does not necessarily mean less risk (based on a measure of historic monthly standard deviation of returns) or greater returns. Investors need to have a full understanding of the underlying difference between assets. Specific characteristics including credit quality leverage, term, duration, equity delta impact how these assets perform.

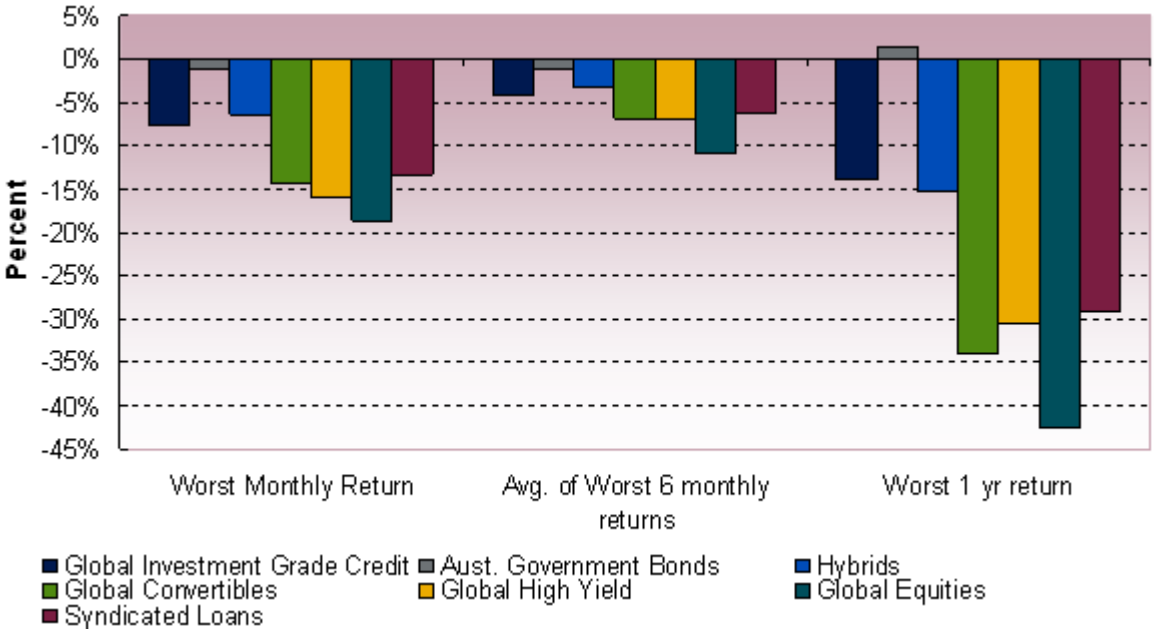
For example, loans are issued by sub investment grade issuers which by have higher levels of leverage than their investment grade counterparts. Also, as they are typically issued in a floating interest rate format, they have a low interest rate duration. Despite being senior, they suffered due to the higher default probability of subinvestment grade issuers. Also, having low duration, loans have not had the benefit of the duration benefit that a fixed rate bond would provide when risk assets sell off. In the case of Australian hybrids, many issuers are investment grade and as such have a default probability much lower than loans despite the subordination aspect. The investment grade issuer credit quality assisted returns in an environment of risk aversion. Convertible bonds have a conversion mechanism in terms and conditions that as that given the security exposure to movement in equity prices, and as such, returns are driven predominately by equity prices and equity valuations rather than considerations on the credit quality.

Secondly, even a simplistic analysis suggests that moving beyond a portfolio of traditional debt (in this case, global investment grade) and equities can deliver a portfolio with similar returns and lower volatility. For example, expanding the opportunity set to add global convertibles in the place of part of the equity weightings would have delivered the same return for lower volatility. Adding Australian hybrids in the place of some of the global investment grade would have slightly lowered returns but served to reduce volatility. The overall result is a portfolio with a similar return outcome but lower volatility and greater diversification.

Downside risk, standard deviation, skew and kurtosis

The case for including other points in the capital structure is strengthened by assessing the downside risk as well as standard deviation, skew and kurtosis of each. In terms of downside risk, an understanding of the extent of negative returns in periods of stress is key. Given exposures are to credit assets where risk is asymmetric with unlimited downside and limited upside, this is an important consideration. In assessing downside risk, Figure 3 below examines the worst monthly return, the average of the worst six monthly returns (to smooth outliers) and the worst one-year return over the five years to 31 December 2008. As expected equity and equity-like securities (that is, convertible bonds) delivered higher downside metrics. The credit assets further up the capital structure displayed lower downside risk metrics. Interestingly loans, despite the being at or close to the top of the capital structure, had poor downside performance compared to other credit assets. This further supports the point above that the higher default probability of subinvestment grade issuers has impacted returns despite the senior position.

Figure 3: Downside performance comparison – 5 years to 31 December 2008



Source: Datastream, Schroders, S&P. Global Investment Grade Credit = B Global Inv Grade (USD); Global Convertible = ML Global Conn (USD); Australian Government Bonds = UBS Govt Bond Index (AUD); Global High Yield – BG High Yield (USD); Hybrids = Schroder Hybrid Securities Fund (USD); Global Equities = MSCI World ex Aus (USD). Syndicated Loans = S&P/LSTA USD)

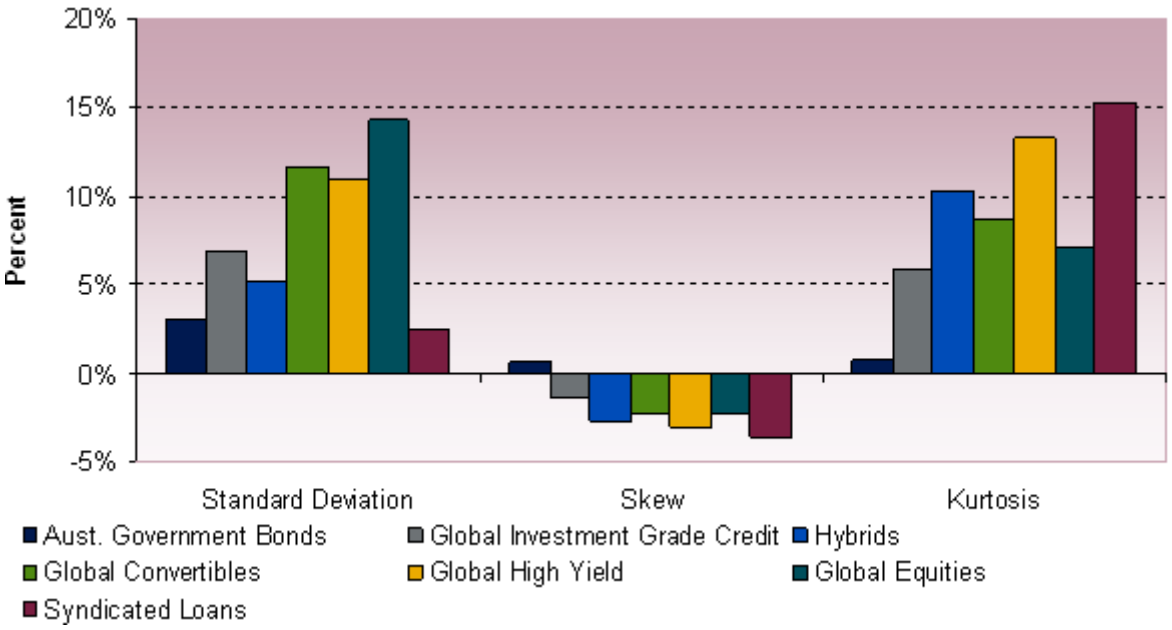
Figure 4 below extends this analysis to standard deviation, skew[1] and kurtosis[2]. Syndicated loans that are very high up the capital structure had a low standard deviation however the negative skew and the highest kurtosis meant there is a large amount of tail risk in this part of the capital structure. By way of comparison, Australian Hybrids are lower in the capital structure and have structural risks, however appear to have less downside risk.

Again, this can be explained in terms of the characteristics of the underlying assets. Loans, being sub-investment grade, should display a higher frequency of default and, depending on recovery rates, the cumulative downside can be significant. Investment grade credit is lower down the capital structure but, given a very low default rate, may be less likely to suffer the cumulative downside.

By taking the time and effort to research these less popular segments, investors can take advantage of these opportunities in building portfolios. Each segment has its own characteristics and risks that need to be understood. Higher up the structure does not necessary equate to less risk or higher return.

[1] Skew is defined a measure of the asymmetry a probability distribution.
[2] Kurtosis is a measure if the "peakedness" of the probability distribution. Higher kurtosis means more of the variance is due to infrequent extreme deviation as opposed to frequent modestly-sized deviations.

Figure 4: Standard deviation, skew and kurtosis – 5 years to 31 December 2008



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PORTFOLIO CONSTRUCTION CONSIDERATIONS

Investing across the capital structure can provide portfolio diversification benefits achieved by combining asset with differing correlations. Although correlations change over time and, at times of market extremes, can converge across asset classes, it is useful to consider the correlation of traditional credit to other parts of the capital structure.

For example, expanding beyond global investment grade credit (Lehman Global Agg Credit) into other segments of the capital structure such as loans and hybrids adds into the portfolio assets with different correlations thereby providing portfolio diversification. These different correlations are highlighted in Figure 5 below. In calculating the cross asset correlations, the returns series is again the five years to 31 December 2008. The differing characteristics, whether from duration, spread, volatility, correlation, and so on, mean they deserve consideration in building a well constructed portfolio.

Figure 5: Correlation matrix – 5 years to 31 December 2008

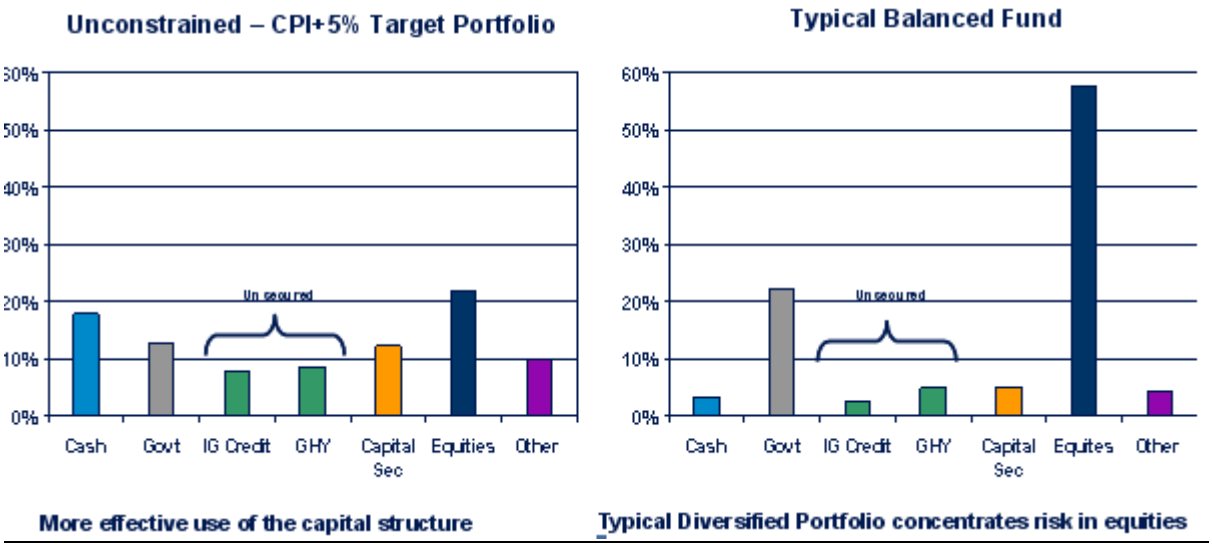
	UBS Credit Index ($A)	ML Global 300 Convertible ($A Hedged)	Lehman Global Agg-Credit (A$ Hedged)	MSCI World ex Australia Accum Index (A$ Hedged)	Lehman Global HY Corporate 2% Cap (A$ Hedged)	Hybrid Securities ($A)	S&P/LSTA (Loans)
UBS Credit Index ($A)	1.00	-0.14	0.08	-0.24	-0.23	-0.32	-0.37
ML Global 300 Convertible ($A Hedged)	-0.14	1.00	0.76	0.81	0.82	0.60	0.66
Lehman Global Agg-Credit (A$ Hedged)	0.08	0.76	1.00	0.38	0.62	0.26	0.36
MSCI World ex Australia Accum Index (A$ Hedged)	-0.24	0.81	0.38	1.00	0.81	0.78	0.80
Lehman Global HY Corporate 2% Cap (A$ Hedged)	-0.23	0.82	0.62	0.81	1.00	0.81	0.85
Hybrid Securities ($A)	-0.32	0.60	0.26	0.78	0.81	1.00	0.90
S&P/LSTA (Loans)	-0.37	0.66	0.36	0.80	0.85	0.90	1.00

Source: Schroders, Datastream, S&P. Global Investment Grade Credit = B Global Inv Grade (USD); Global Convertible = ML Global Conn (USD); Australian Government Bonds = UBS Govt Bond Index (AUD); Global High Yield – BG High Yield (USD); Hybrids = Schroder Hybrid Securities Fund (USD); Global Equities = MSCI World ex Aus (USD). Syndicated Loans = S&P/LSTA USD)

Obviously, correlation is not the only consideration in choosing assets to include in a portfolio. Valuation and pricing of those assets across the capital structure are paramount. Moving tactically across the capital structure is important as different parts perform differently at different phases of the cycle. Given this, investors not only need to understand the valuations and characteristics of the assets but have the skills and capabilities to tactically allocate risk through different stages of the economic cycle.

The extension of this implementation question is "in practice, how different would the portfolio be if a broader investment opportunity set is used and the portfolio invested across the capital structure?". One way to consider this is to compare investing a balanced fund in a constrained and an unconstrained environment. In an example traditional balanced fund which is predominately equities, the use of credit is relatively small and the exposure to different parts of the structure is also small. This can be seen in Figure 6 below on the right hand side with 80% in equities and government bonds (mostly equites) with small exposure to the broader opportunity set.

Figure 6: Unconstrained portfolio vs typical balanced fund



Source: Schroders

Conversely, in an unconstrained portfolio (above left) with, in this case, a return target of CPI + 5%, there is a use of the full opportunity set and a more effective use of the capital structure. This is particularly relevant in phases of the cycle where credit risk premium has rebuilt but valuation risks around equities remain. The unconstrained portfolio has been able to take greater advantage of the available credit risk premium and down weight the equity risk and associated volatility. This then allows allocations across the capital structure that take advantage of the opportunities as they present. The result is a lower equity exposure and therefore less equity volatility and a portfolio that delivers less volatility around the targeted outcomes.

CONCLUSION

Investors broadly understand the role of equities and traditional vanilla bonds in a portfolio. However, investors rarely understand the role that can be played by introducing non-core assets into a portfolio. By not using the full investment opportunity set, investors are ignoring a range of opportunities across the capital structure that have a legitimate role to play in a well constructed portfolio. Each level of the capital structure has its own characteristics. Structural difference as well as different credit quality, yields, correlations, volatilities, duration and spread duration means each delivers different risk and return outcomes over time and at different times of the economic cycle. If investors take the time to better understand assets across the capital structure, they can take advantage of these opportunities and in doing so, improve portfolio diversification. An unconstrained portfolio reduces reliance on equity risk and thereby can deliver less volatile outcomes around target outcomes.