INSIGHT

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BEA Union Investment

Do we need corporate bonds?

Credits in competition with treasuries and equities

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Article written by Quoniam Asset Management GmbH, Dr. Harald Henke and Mr. Helmut Paulus

Institutional investors will often question the rationale of including corporate bonds in their strategic asset allocations. They ask why they should invest in assets with limited upward but obviously unlimited downside potential. They question whether credits really offer an adequate return compensation for the embedded risk, and wonder whether an investment in treasury bonds and equities might not be much more efficient than a pure corporate bond investment. Finally, and unsurprisingly, given the latest credit crisis, they ask themselves whether they shouldn't avoid credits altogether.

Linking equities with credits

In the 1970s Professor Robert Merton defined the mandatory link between equity and credit markets: based on arbitrage considerations a corporate bond can be replaced by a default free bond obligation (e.g. treasuries) and a short put option related to the firm value – the latter being approximated by the stock price. The different behaviour of treasuries and corporate bonds is therefore driven by the put option, which relates directly to equity performance and its volatility. The fact that a bondholder is short the put option explains the asymmetric return distribution: ideally the bond holder earns the premium of the short put until its maturity or, in the worst case, loses the whole nominal value. There is no reason why this strategy of implicitly shorting put options in a diversified credit portfolio should be an inferior investment from a risk-return perspective. Indeed, as the following research will reveal: such 'synthetic' credit investments offer an additional source of alpha on top of equities.

How to compare equities with credits?

Firstly, we want to compare a portfolio of credits (A) with a portfolio of equities and treasuries (B) based on the aforementioned 'mandatory link' between equities and corporate bonds. To do this, we can either construct portfolios with equal volatility or with equal returns. The balanced portfolio can be constructed by determining the daily weights of treasuries and equities that replicate the volatility of a corresponding credit portfolio. To isolate return differences in asset classes, the treasury and credit portfolios have to be perfectly matched in terms of portfolio duration. Moreover, the comparison must confine itself to the days on which credit volatility can be replicated with a portfolio of equities and treasuries. Finally, the equities and treasuries portfolio can be compared with portfolios with different levels of credit exposure (leverage).

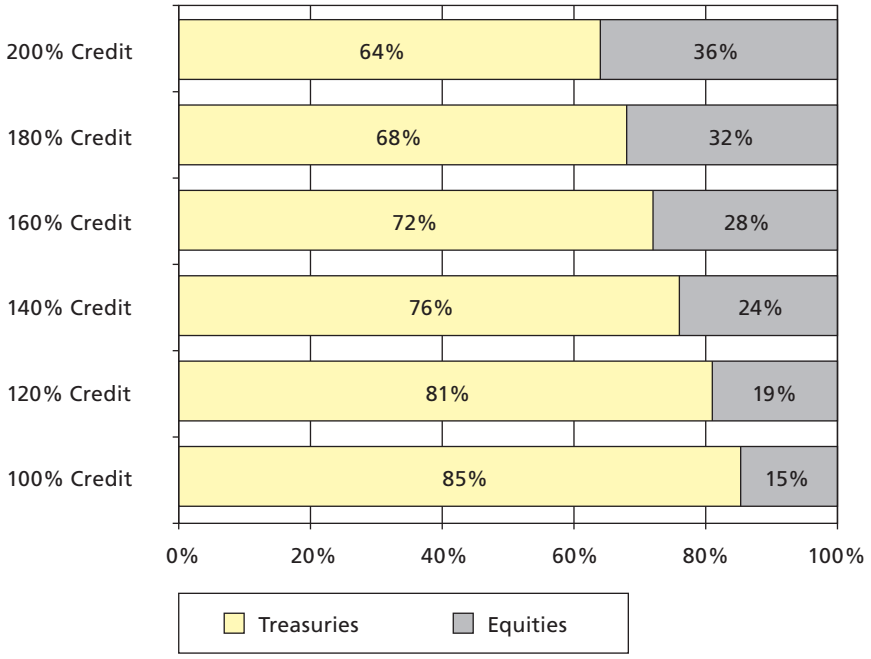
Firstly we construct two portfolios (A) and (B) with equal volatilities and compare their returns. The credit portfolio is approximated by the broad Lehman Euro Aggregate Corporate Index (recently renamed to Barclays Capital Euro Aggregate Corporate Index). We obtain a duration-equivalent treasury portfolio by subtracting the credit excess return from the index total return. The stock market is approximated by the DJ Stoxx 600 Return Index. For each day, we determine the weights of treasury assets and equities in our portfolio (B) in such a way that the portfolio volatility precisely matches the volatility of our credit portfolio (A) during the preceding 90 days. We account for non-synchronous trading and exclude days on which we cannot replicate credit volatility with equities and treasuries. We calculate average daily credit excess returns and their volatilities for credit portfolios with leverage factors of between 100% and 200%.

Secondly, we use the same methodology to construct, for each day, a treasury/equity portfolio that matches the return of our credit portfolio. When allowing for short positions, return matching is always possible. As this methodology is prone to outliers, we analyse median rather than mean volatilities.

Our analysis starts on 1 February 1999, using the preceding 90-day period to calculate returns and volatilities. The analysis ends on 30 April 2008, and thus includes the latest credit crisis.

Graph 1, below, shows credit portfolios with different levels of leverage on the vertical axis and the composition of the corresponding volatility-equivalent treasury/equity portfolios on the horizontal axis.

Average Risk Equivalent Portfolios Credit versus Treasury + Equities

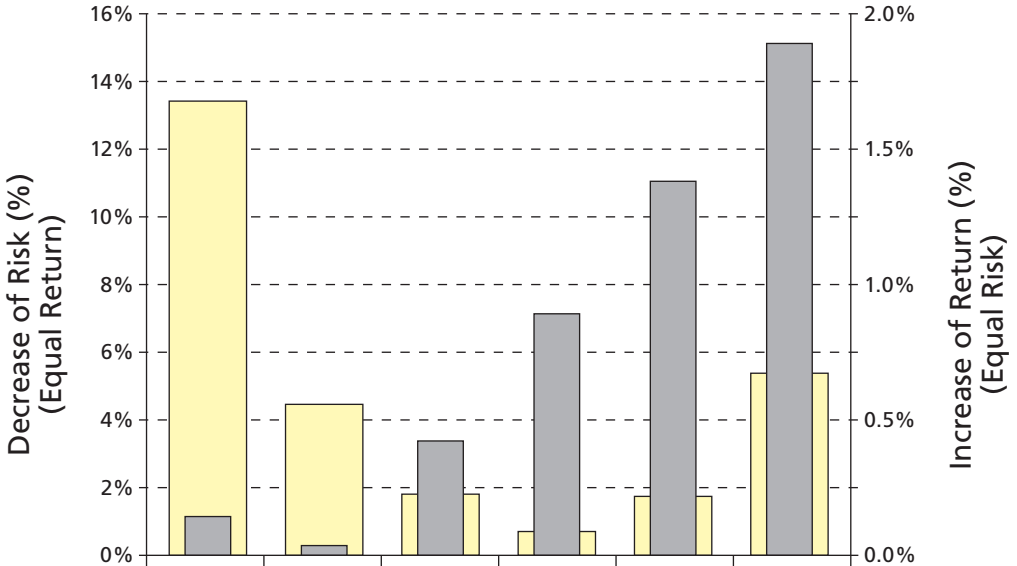


Graph 1

The graph above illustrates that a 100% credit portfolio is, on average, equivalent in terms of risk to a portfolio consisting of 85% treasuries and 15% equities. Remarkably, however, in this case we were not able to replicate an equal low-volatility portfolio using treasuries and equities on a considerable number of days. If we gradually increase the credit exposure of our portfolio to 200%, the equity share of the volatility-equivalent treasury/equity portfolio increases sharply to 36%.

Results for the volatility- and return-equivalent portfolios are shown in Graph 2, below.

Advantage of Credit Portfolios versus Treasury + Equities



	100% Credit	120% Credit	140% Credit	160% Credit	180% Credit	200% Credit
Decrease of Risk	13.4%	4.4%	1.7%	0.7%	1.7%	5.3%
Increase of Return	0.14%	0.04%	0.42%	0.88%	1.38%	1.89%

Graph 2

Graph 2 displays the volatility differential (left vertical axis) and the return differential (right vertical axis) between credit portfolios with different levels of leverage (given on the horizontal axis) and matched treasury/equity portfolios. The graph indicates that the volatility of the credit portfolios is, on average, lower than that of the return-equivalent treasury/equity portfolio, resulting in a volatility reduction of between 0.7% for a 160% credit portfolio and a considerable 13.4% for a 100% credit portfolio. Similarly, the credit portfolios outperformed volatility-equivalent treasury/equity portfolios by 0.04% for a 120% credit portfolio, and 1.89% for a 200% credit portfolio.

Eurex Options

Treasuries and short put options can replicate a credit portfolio and in turbulent markets, such as those experienced during the 2007/2008 credit crisis, it is useful to have such a "last resort" of liquidity as offered by the option market. Put options are available on a broad range of stocks at the largest European derivatives exchange Eurex and for maturities up to two years, credit protection can be easily bought or sold through equity options.

Conclusion

In this analysis we compared investment grade credit portfolios with balanced portfolios of treasuries and equities on a daily basis.

The analysis demonstrated, firstly that the risk of a 100% credit portfolio can be replicated with 85% treasuries plus 15% equities, on average. The risk of higher equity exposures can only be replicated by leveraging the credit exposure (e.g. €200 million in credits have on average the same risk as €64 million in Treasuries and €36 million in equities, thus the leverage is 200%).

Secondly, that all credit portfolios, on average, outperformed risk-equivalent balanced portfolios of treasuries and equities – even during the period including the latest credit crisis.

Thirdly, that the ex-post return equivalent portfolios of credits had, on average, less risky behaviour than balanced funds with the same returns. Finally, it showed that the implicit diversified writing of put-options within a credit fund generates an additional premium against the investment alternative in equities and treasuries.

There are two possible explanations for this seemingly "free lunch". Either, that the market pricing of put options – and therefore corporate bonds – is based on implicit volatility and because, the realised volatility is on average lower than the implied, credit funds reap the return advantage. An alternative explanation is that because credit funds are less liquid, there is an additional premium for that liquidity risk. The same holds for possible differences in tax treatment of the investigated asset classes.

In summary, corporate bond investments will enhance the risk/return behaviour of a strategic asset allocation. Nevertheless equities should not be "replaced" by credits – instead smart investors should allocate their risk budgets to both asset classes in accordance with their alpha requirements.

This material is prepared by Dr. Harald Henke and Mr. Helmut Paulus, Quoniam Asset Management GmbH

About Quoniam Asset Management GmbH

Quoniam is an independently operated asset management company in Germany with a strong German partner - Union Investment, one of the parent companies of BEA Union Investment Management Limited. The company specialises in pure quantitative strategies for institutional investors. Quoniam manages €10 billion in third-party assets, with a total staff of 62 at the end of September 2009.

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