



INTRODUCTION

MITIGATING RISK IN LISTED MARKETS

Listed securities offer unique opportunities to diversify and hedge risk, if investors have the capability to consistently simulate asset behaviours across all markets

Exchange-traded assets offer multiple opportunities for a portfolio manager to mitigate his risk:

- Immediate access to diversification through different asset types and classes.
- A large spectrum of cost effective hedges (futures, options).
- A very effective way to limit liquidity risk and counterparty default risk.

Such opportunities can lead to unnecessary exposures for managers who do not have the capability to quantify the joined behaviour of all the different assets in which they are invested.

term rates remain stable, you should borrow as much as possible in the short term and buy long term. Related returns can be huge, as well as losses, and therefore risks.

An efficient way to track “risk-adjusted” returns is to use “risk-adjusted” indices as benchmarks, such as those published by Riskdata. Such indices are portfolios in which the leverage ratio is adjusted on a daily basis, in

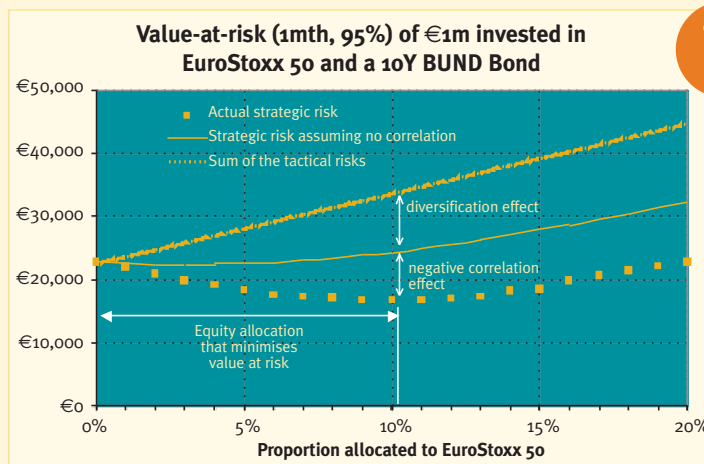
» AVOIDING BIAS

A common error, which may occur when running a multi-market portfolio, is to ignore the impact of correlation. This can lead to serious bias in the portfolio allocation. For instance, one could imagine that the less risky portfolio would be 100 per cent invested in AAA bonds.

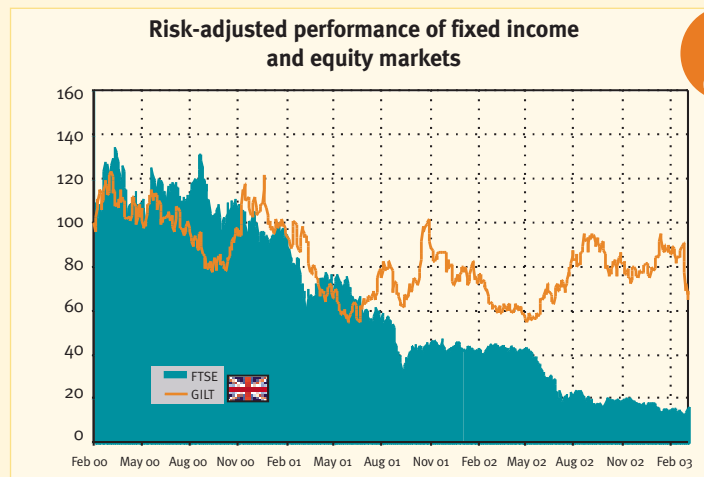
In current market conditions, that is not true, because fixed income markets are negatively correlated to the equity market: injecting around 10 per cent of equity reduces the fixed-income risk.

Another common error is a static view on the risk and return one can expect from each market: obviously, the risk of a five-year AAA bond is by far lower than that of an option on a Nasdaq equity.

But this is ignoring the fact that leverage brings the possibility, for a portfolio manager, to monitor his own level of customised risk: if you are 100 per cent sure the 10-year yield will go down, while short



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order to ensure that the level of risk remains at a given constant proportion of the net asset value.

Factor models are no longer sufficient to monitor risk diversification across listed markets. At this stage, we could imagine that a factor model would address the need for diversification optimisation. The traditional risk representation is to replicate each asset on a factor (or a set of factors) that drives the bulk of the risk in the corresponding market, then to add an independent noise in order to account for its specific risk. This representation may leave you with the feeling that you get a good diversification picture. But you would be wrong.

The first and main reason is strategic risk control. You are not looking for diversification only because it is supposed to deliver an optimised return/risk ratio.

Above all, you need to match the risk profile of your liabilities. Relying on a global factor model, which turns cross-market risk into a small set of factors, can lead to nasty surprises.

Let us consider the fixed-income example. Using a factor model, you may perhaps make sure that your exposure and duration on each market segment is the same on both sides. But what about the risk of maturity spread, which will turn out, in this case, to be the bulk of your risk?

You would therefore prefer to integrate this risk (as well as curvature risk) in your model, but then you need to merge swaps and bonds within a single yield curve in order to keep a tractable number of risk factors. You are now happy, having hedged “rotation” and “curvature” risks, but what about the spread risk: between swaps and AAA bonds, between countries and so on, which now turn out to be your main risks?

The second reason is that you would not be in a position to leverage the most powerful hedging instruments that exchange markets offer: derivatives. Because they replicate assets in a linear way, factor models cannot properly model the asymmetries in return distribution that these instruments offer: the “gamma”. The gamma is a risk hedge, paid by a “theta”, ie, the mechanical value decrease of derivatives through time if markets remain inactive.

» SIMULATION

Aggregating the risk on listed markets, in order to properly monitor diversification means being able to accurately simulate any risk source, therefore any possible source of future returns:

- Each individual equity is in itself a source of return, as well as the spread between any equity pair. Therefore, equities must be considered as individual market variables, without replication.
- You can also earn money by arbitraging the spread between various fixed income markets – countries, swaps, corporates. Therefore each of them should be simulated independently.
- And, as the risk-adjusted return strategies show, maturity spread can be a very high source of returns – therefore any maturity spread should be simulated.
- Finally, if you seriously consider using derivatives to hedge your risk, you must incorporate the “volatility of volatility”, and the correlation between the volatility and other variables: simply because market implied volatility is a key driver of the value of a derivative.

Factor models are no longer sufficient to monitor risk diversification across listed markets

The essence of risk is about what is going to happen tomorrow. In the face of such complexity, the solution is simplicity itself: going back to the ground level, where risk means asset prices.

Rather than pointing out such or such risk factor, which, once eliminated, will let another one take the lead, one needs to know the actual probabilities of possible outcomes, jointly with other assets for a best use of hedges.

A massive random generation of market scenarios – so-called “Monte-Carlo simulations”, such as those performed by Riskdata on a worldwide basis – is the only way to achieve the necessary unified framework of all markets and asset classes.

Unlike the crystal ball, random scenarios don’t tell us what will happen tomorrow, but only what may happen. However, these possible “may happens” are generated and quantified in such a way that their statistics match those of observed past events, including non-trivial dependencies (option vs underlying, yield spread vs issuer’s stock, etc). Then the role of the investor is brought back to his core expertise: selecting and designing asset allocation under full knowledge of the resulting portfolio distribution of returns.

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» CORPORATE STATEMENT

Riskdata was founded by a team of scientists, finance professionals and IT experts. Its aim is to offer to all money managers easy, interactive and intuitive access to a powerful unified risk framework. It is supported by leading figures, such as Professor Robert Mundell, a past winner of the Nobel Prize for Economics. It is the first service offering a daily updated view across all market classes: equities, bonds, listed and OTC derivatives. As an interactive system, rather than classic ASP model, there is no exporting of clients’ positions.



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