Market Risk

Context

Risk in investment management is a comprehensive and complex subject. The term Enterprise Risk has been coined to represent the total risk facing a fund management company and this is a large subject, forming the basis of another factsheet. Within Enterprise Risk, fund managers talk about Market Risk, Operational Risk and Counterparty Risk. This factsheet will focus on Market Risk.

What is Market Risk?

Market risk can be defined as the risk on a fund due to market forces. As such, market risk has to consider the following, although this is not an exhaustive list:

- Performance and Strategy Risk
- Volatility Risk
- Liquidity Risk
- Currency and FX Risk
- Credit Risk
- Settlement Risk

In general, fund managers are responsible for positioning their funds at the optimum point on the risk return curve. Fund managers are responsible for delivering outperformance (Alpha) against a specified index. The usual strategy is for a fund manager to decide which aspects of risk he wants to use to generate Alpha and to encapsulate this strategy in the fund mandate or prospectus - mandates will usually contain rules that act as a 'back-stop' for risk. The fund manager will then be constrained to hedge his fund against other significant risks it is exposed to. For example, a fund mandate might only allow a fund manager to add value by picking stocks, forcing him to hedge out all other risks. Alternatively, fixed income managers are often allowed to use currency and credit to generate Alpha. Hedge funds, with their normally 'lite' mandate restrictions usually have carte blanche as to which risks they can use to generate Alpha.

Elements of Market Risk

Performance & Strategy Risk - It is fundamental these days for fund managers to use performance and attribution systems to analyse their funds. Attribution shows the fund manager where the performance of his fund is coming from, e.g. stocks, currency, sector, etc. allowing him to understand how the fund works in relation to its investment strategy and allowing him to fine-tune it accordingly.

Fund managers can model the performance of their fund in two ways. Ex-post modelling is the process whereby the performance of the fund is analysed by applying historic price data. This type of modelling will show whether the fund would have made or lost money if it had been launched in the past. Given similar ongoing market conditions the assumption is that it will react in the same way in the future. Ex-ante modelling uses historic data to extrapolate future conditions and these conditions are applied to the fund. Ex-ante modelling is much less developed than ex-post and is a 'holy grail' of the industry.

Ex-post modelling can also be used to assess the fund's robustness in the face of disasters and different macro-economic situations that occurred in the past. Favourite scenarios are based on well known disasters such as 9/11. In addition, many packages allow swap curves to be 'shocked' e.g. shifted up or down a specific number of basis points allowing the fund manager to design his own stress scenarios, although these are often pre-defined in the analysis tool.

Special care needs to be taken where a fund is permitted to use derivatives. Examples are:

- 'Writing options' and 'selling credit protection' - losses can be extreme (in some cases unlimited) and careful risk and exposure reporting is required.
- The use of leveraged assets. Leverage multiplies the profit or loss associated with the underlying asset. For example, using a CFD to provide exposure to an equity means that the fund manager does not have to lay out the principle, only meet profit and loss margin payments. Therefore, the fund can build up large effective positions, which potentially carry large loss risks. Careful monitoring and control is required for such positions.

Some common terms in risk analysis

The Efficient Market Principle – is a fundamental assumption underlying most modern financial theories and in particular modern risk theory. It states that everything that can be known about a stock is already factored into the stock's price. As a corollary, it states that if an investor discovers information that gives him an advantage, then market forces will work to neutralize this situation. As a further corollary, it also implies that in the long term, no one can out-perform the market. The principle is based on the assumption that companies will continually publish honest information about themselves as it becomes available. Recent disasters such as the failure of Enron question this assumption.

Systematic Risk – is the risk that is common to an entire class of assets or liabilities. Systematic risk is therefore usually linked to macro-economic factors such as interest rate changes, inflation etc. Diversification strategies based on asset class or sector can protect against systematic risk because different portions of the market tend to outperform as other parts under-perform.

Unsystematic Risk – is the risk associated with individual assets: it is concerned with price changes due to the unique circumstances of the asset as opposed to the overall market. Asset diversification strategies are used to minimize this type of risk.

Diversification – is the principle of reducing risk by combining a variety of assets and asset classes, which are unlikely to all move in the same direction at the same time. The aim of diversification is to reduce both the upside and downside potential of a fund and to allow for a more consistent performance under a wide range of economic conditions. Diversification strategies must be constantly monitored and tuned as market conditions change.

Some leading market risk suppliers and systems

RiskMetrics – provides comprehensive risk solutions across all areas of market risk. The company is considered to be a market leader in the provision of risk solutions.

Algorithmics – provides innovative enterprise-wide financial risk management software that enables financial institutions to proactively manage risk. They are also considered to be a market leader in the provision of risk solutions.

SunGard Reech 'RiskHedge' - supports historic, Monte Carlo and parametric Value at Risk, as well as stress testing, sensitivity analysis, scenario analysis, sector analysis and liquidity risk across a broad range of asset classes including commodities, credit, equity, FX and interest rate instruments, both cash and derivatives.

Lombard Risk has three risk offerings - **'Oberon'** covers FX, money market, interest rate derivative, inflation derivative and fixed income; **'Firmament**' covers credit and equity products; and they also have **'Independent Valuation & Risk Services**', a web-based outsource service.

KMV Moodys 'RiskFrontier' – is risk solution covering assets such as credit cards, corporate loans, equities, credit-default swaps and CDO tranches.

Bear Measurisk – has two risk solutions, an institutional solution and one for hedge funds allowing risk analysis of complex strategies such as convertible arbitrage, fixed income arbitrage and merger arbitrage.

Citisoft Services

Citisoft is a specialist consulting firm focused on investment management. With a client base of more than 75% of the top 50 global investment managers, Citisoft is the foremost supplier of strategic planning and implementation services to the institutional, wealth management and alternative investment sectors.

Established in 1986, Citisoft offers complete end-to-end solutions. Although expert in all market systems, Citisoft is totally independent of all suppliers and service companies.

Volatility Risk – Volatility is a measure of the probability of the value of a fund swinging about wildly over a given timeframe. In a low volatility fund, the fund value might steadily gain or lose value depending on the fund manager's ability to generate Alpha, but wild random value swings are not expected. On the other hand, volatile funds *will* exhibit wild swings in value. Fund managers generally assess the volatility of their funds using Value at Risk (VaR) analyses. VaR calculations provide the fund manager with a measure of the loss value that they can expect for a given probability over given number of days. For example a VaR of 4% over 10 days with a 99% level of confidence, means that there is, on average, a 1% possibility that the fund will lose 4% of its value in 10 days due to volatility.

Liquidity Risk – is an assessment of the ability of the fund to be able to generate liquid cash within a specific notice period. Retail mutual funds have an obligation to their investors to be able to deliver against redemptions within a reasonable time period and this is usually enshrined in the fund mandate. A liquidity objective might be expressed as an obligation on the fund manager at any time to be able to liquidate 75% of the value of the fund within 5 working days.

Liquidity risk is far less objective than other risk factors and will depend largely on the availability of market makers who are willing and able to purchase a fund's assets. Other factors might be the size of holdings and the market's ability to absorb them, general market conditions and the likelihood of other funds flooding the market with the same stocks. An analysis of bid and offer prices over a period of time can also give an indication of the relative liquidity of a specific asset.

Currency and FX Risk – is concerned with assessing the risk of FX fluctuations affecting the conversion of a fund's returns into its base currency. For a multi-currency fund, profit and loss is usually expressed in base currency and an unrealised profit in a local currency can be wiped out by an adverse movement of the FX rate between the local and base currency. This risk can be removed by using forward FX trades or swaps to lock in the profit over a specified timeframe.

Credit Risk – is an assessment of a fund's exposure to issuers and their ability to be able to meet their financial obligations. Credit rating agencies publish company ratings that indicate the probabilities of companies defaulting on their financial obligations. A 'AAA' company is considered to be totally trustworthy and holders of bonds issued by these companies can be assured that the company will repay their debt. However, a BB rated company is considered to have a higher probability of default but the debt it issues will pay a higher yield. Credit Default Swaps allow a fund manager to insure himself against a company defaulting, and therefore he is able enjoy the higher yields from a safer position.

Settlement Risk – is concerned with making sure that firstly, a fund will have the cash or stock required to settle future trades on the days it is required, and secondly, that the fund is not overly exposed to counterparties who could theoretically fail to settle due to company failure (Herstatt Risk). Stock and cash availability is usually tracked via cash at bank and settled stock ladders which show projected positions on future dates. Herstatt risk is usually mitigated by ensuring that not too much short term settlement exposure is placed with any one counterparty and this is usually done by setting a blanket limit in an organisation for each counterparty.

Current Challenges and Initiatives

In financially uncertain times good risk analysis and management is becoming ever more important and of vital concern to clients.

One of the most important challenges facing fund managers is the incorporation of ever more complex instruments into the risk analyses of their portfolios. The explosion in the use of complex OTC derivatives and the increasing use of more obscure investments such as Corporate Loans is seriously stretching the capabilities of established risk engines. Some risk system suppliers are grabbing the bull by the horns and incorporating these derivatives into their systems, but progress is slow and the playing field is by no means level.

Hedge funds are at the cutting edge when it comes to using complex derivative strategies and Citisoft has extensive experience in helping hedge funds to understand where their current system solution might be lacking and in helping them to assess and select alternative solutions. However, UCITS III meant traditional long-only funds can now invest in complex derivatives and this has lead to the emergence of 130/30 funds based on derivative strategies to achieve the 'short' component.

Citisoft is a leading consulting firm with specialist knowledge of alternative investments and can help fund managers in a number of ways:

Education – Citisoft can help educate staff and advise project leaders on OTC derivatives, other more complex instruments and in risk principles.

Risk Gap Analysis and System Selection – Citisoft can help fund managers assess their current risk regimes and to select alternative risk solutions where appropriate.

For more information please contact Emma Norval, tel: +44 (0)20 7776 1111 or by email to europe.info@citisoft.com