

## Introduction

“Money is like muck, not good except it be spread.”

Francis Bacon (1561–1626)

### DEFINITION OF RISK

Risk means very different things to different audiences at different times; risk is truly in the eye of the beholder. In the context of portfolio management the *Oxford English Dictionary* provides a surprisingly good definition of risk:

The potential impact of an event determined by combining the likelihood of the event occurring with the impact should it occur.

Risk is the combination of exposure and uncertainty. As Holton<sup>1</sup> (2004) so eloquently points out it is not risky to jump out of an aircraft without a parachute, death is certain. Holton also points out that we can never operationally define risk; at best, we can operationally define our perception of risk.

Another common and effective, but broader definition of risk is **exposure to uncertainty**.

### Risk types

Within asset management firms there are many types of risk that should concern portfolio managers and senior management. For convenience I've chosen to classify risk into five main categories:

Compliance Risk  
Operational Risk

<sup>1</sup> Glyn A. Holton (2004) Defining Risk. *Financial Analysts Journal* 60(6).

Liquidity Risk  
Counterparty Risk  
Portfolio Risk

These risks are ranked in my priority order of concern at the point in time I assumed the role of Director of Risk Control at an asset management firm in the late 1990s.<sup>2</sup> What I didn't appreciate fully then, but appreciated much later, is that priorities will vary through time; during the credit crisis I'm sure counterparty risk became the number one priority for many firms.

Although a major concern of all asset managers, reputational risk does not warrant a separate category; a risk failure in any category can cause significant damage to a firm's reputation.

Compliance or regulatory risk is the risk of breaching a regulatory, client or internally imposed guideline, restriction or clear limit. I draw no distinction between internal or external limits, the breach of an internal limit indicates a control failure, which could just as easily have been a regulatory, or client mandated limit. Of course the financial impact of breaching limits can be significant; in August 1996 Peter Young of Morgan Grenfell Asset Management allegedly cost Deutsche Bank £300 to £400 million in compensation payments to investors in highly regulated authorised unit trusts. Peter Young used Luxembourg listed shell companies to circumvent limits on unlisted and risky holdings.

Operational risk, often defined as a residual catch all category to include risks not defined elsewhere, actually includes the risk of human error, fraud, system failure, poor controls, management failure and failed trades. Risks of this type are more common but usually less severe. Nevertheless it is important to continuously monitor errors and near misses of all types, even those that do not result in financial loss. An increase in the frequency of errors regardless of size or sign may indicate a more serious problem that requires further investigation and corrective action. Although typically small in size, operational errors can lead to large losses. In December 2005 a trader at the Japanese brokerage firm Mizuho Securities made a typing error and tried to sell 610,000 shares at 1 yen apiece in recruiting company J-Com Co., which was debuting on the exchange, instead of an intended sale of one share at 610,000 yen, an example of fat-finger syndrome. Mizuho lost approximately 41 billion yen.

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<sup>2</sup> In truth I did not identify liquidity risk as a separate risk category at the time.

Liquidity risk is the risk that assets cannot be traded quickly enough in a market to change asset and risk allocations, realise profits or prevent losses. Perhaps liquidity risk has received less attention than it should in the past but it is capable of causing significant damage. Understanding liquidity risk in both normal and turbulent markets is a crucial element of effective risk control; the relatively recently identified phenomenon of crowded exits is a characteristic of those turbulent markets.

Counterparty risk occurs when counterparties are unwilling or unable to fulfil their contractual obligations, at its most basic through corporate failure. Counterparty exposure could include profits on an OTC derivatives contract, unsettled transactions, cash management, administrators, custodians, prime brokers, and even with the comfort of appropriate collateral the failure to return stock that has been used for stock lending. Perhaps the most obvious example of counterparty risk is the failure of Lehman Brothers in September 2008.

In the middle office of asset management firms we are most concerned with portfolio risk, which I define as the uncertainty of meeting client expectations. Is the portfolio managed in line with the client's investment objectives? The consequences of not meeting client expectations can be quite severe. Early in 2001,<sup>3</sup> the Unilever Superannuation Fund sued Merrill Lynch for damages of £130 million claiming negligence that Merrill Lynch had not sufficiently taken into account the risk of underperformance. Ultimately the case was settled out of court for an undisclosed sum, believed to be £70 million, the perception to many being that Unilever won.

I'm sure readers can quickly add to this brief list of risks and extend through various subdivisions, but I'm fairly certain any risk I've not mentioned so far can be allocated to one or more of the above categories.

Credit risk (or issuer risk) as opposed to counterparty risk is a type of portfolio risk. Credit risk or default risk is the investor's risk of a borrower failing to meet their financial commitments in full. The higher the risk of default the higher the rate of interest investors will demand to lend their capital. Therefore the reward or returns in terms of higher yields must offset the increased risk of default. Similarly market, currency and interest rate risks taken by portfolio managers in the pursuit of client objectives would constitute portfolio risks in this context.

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<sup>3</sup> A.F. Perold and R. Alloway (2003) *The Unilever Superannuation Fund vs. Merrill Lynch*. Harvard Business School Publishing.

### **Risk management v risk control**

It is useful to distinguish between the ways portfolio managers and risk professionals see risk. For this purpose, let us refer to portfolio managers as “risk managers” and to risk professionals as “risk controllers”. Then there is a clear distinction between risk management and risk control. As risk managers, portfolio managers are paid to take risk, and they need to take risk in order to achieve higher returns. For the risk manager “Risk is good”.

Risk controllers on the other hand are paid to monitor risk; their role is to measure risk and make transparent to the entire firm how much risk is being taken by the portfolio manager (and often from their perspective to reduce risk). The risk controller’s objective is to reduce the probability or eliminate entirely a major loss event on their watch. For the risk controller “Risk is bad”.

Risk managers’ and risk controllers’ objectives are in conflict leading to a natural tension between them. To resolve this conflict we need measures that assess the quality of return and answer the question, “Are we achieving sufficient return for the risk taken?”

### **Risk aversion**

It is helpful to assume that investors are risk averse, that is to say, that given portfolios with equal rates of return they will prefer the portfolio with the lowest risk.

Investors will only accept additional risk if they are compensated by the prospect of higher returns.

### **Ex-post and ex-ante**

Risk is calculated in two fundamentally different ways, ex-post and ex-ante. Ex-post or historical risk is the analysis of risk after the event; it answers the question how risky has the portfolio been in the past.

On the other hand ex-ante risk or prospective risk is forward looking, based on a snapshot of the current securities and instruments within the portfolio and their historical relationship with each other; it is an estimate or forecast of the future risk of the portfolio. Obviously the use of historical returns and correlations to forecast future risk is problematic, particularly for extreme, low probability events. Increasing the length of the historical track record or increasing the frequency of observations

does not always result in an improvement because of the changing nature of markets and underlying securities. Older returns may be less reliable for future predictions, but on the other hand more recent observations may not include the more extreme results.

Ex-post and ex-ante risk calculations are substantially different and therefore can lead to completely different results and conclusions. Differences between ex-post and ex-ante risk calculations provide significant additional information which should be monitored continuously.

### **Dispersion**

For the most part risk managers and risk controllers use dispersion measures of return as a proxy for their perception of risk.

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