



December 2008

Tracking error and risk management

Investors are subject to several different risks, one of which is the risk that their investment returns will differ substantially from those they envisage (in relation to their benchmark). In this article, we consider one particular measure of such risk, 'tracking error'. We explain how tracking error statistics are used typically to manage risk and we describe how we approach portfolio risk management at Newton.

Introduction

One of the key measures of relative-return risk is tracking error, which measures the volatility of relative (to benchmark) returns from an actively managed portfolio. Tracking error gives an indication of the extent to which the returns from a portfolio are likely to deviate from the returns of that portfolio's benchmark. As a result, it is used commonly to describe the level of 'risk' that a portfolio is taking. Tracking error restrictions are used (and often misused) widely to try to manage risk in investment portfolios. At times of changing market conditions, tracking errors can be very poor indicators of actual risk levels and this has serious implications for those investors who are heavily reliant on the use of tracking errors for risk-control purposes.

Newton has long argued against over-reliance upon tracking error statistics to control risk. In this article, we explain that a clear understanding of how

tracking-errors are derived (and of their limitations) is important in ensuring that portfolio risk is measured and controlled effectively. We explore also how tracking errors should be used appropriately.

The use of tracking error statistics to manage risk

For a number of years, tracking error has been used widely by investors to measure the level of risk in investment portfolios. Tracking error can be calculated on an ex-post (historic-return) basis or on an ex-ante (forward-looking) basis. Ex-ante tracking errors are usually of most interest to those seeking to control risk. They provide 'single-figure' estimates of the scale of future relative performance and claim to capture the full implications of the construction of portfolios. The attractiveness of an all-encompassing, single-figure measure of risk has led to the widespread use of tracking errors, with some portfolio managers and clients using restrictions on tracking error levels in order to seek to control risk.

However, tracking errors are estimates that rely heavily on a set of assumptions, and they are susceptible to some degree of 'estimation error' (the difference between what is predicted and what actually happens subsequently). The level of estimation error will vary over time but, during periods of fast-changing market conditions (such as throughout 2008), the scale of this error can be significant. Estimation error means that the effectiveness of any approach that relies too heavily on tracking error as its method for controlling risk will be reduced; portfolios may experience relative performance that differs significantly from that which was expected.

Estimation errors occur because of the underlying assumptions made when calculating tracking errors, namely that historic volatility in markets remains constant and that it can be extrapolated. While this assumption may be reasonable over the long term, market volatility in the short term can differ substantially from the long-term averages that are used to determine tracking errors. This can lead to actual risk levels that differ substantially from risk levels implied by models. In addition, there is more than one type of risk model and more than one provider of such models. Each model will use a slightly different methodology and different historic data, leading each to produce a different estimate of tracking error and a different level of estimation error at any given time.



Risk models that are currently in use will have been calibrated according to the comparatively benign volatility which has prevailed in recent years. The very significant increases in market volatility that have occurred in recent months will not have been anticipated by the models. As a result, those funds that have relied too heavily on these models will have underestimated significantly the risks that they have faced subsequently. Our own internal analysis indicates that the scale of this underestimation by some of the models during the course of this year has been in the order of 40-50%. For an investor who is unaware of the potential for estimation error, the sudden experience of volatility that was 50% higher than the level anticipated would be an uncomfortable experience.

The chart below shows the VIX Index from the start of 2004 to the present. This index represents the level of implied volatility in the S&P 500 Index (of US equities) that is expected by the market and is often used as a proxy for market risk levels.

The chart demonstrates clearly that, between early 2004 and the summer of 2007, S&P 500 volatility levels were low and stable. Over the last 18 months, however, these levels have risen markedly, culminating in a huge leap in risk levels in the second half of 2008.

This clearly calls into question the efficacy of extrapolating historic levels of risk into the future.

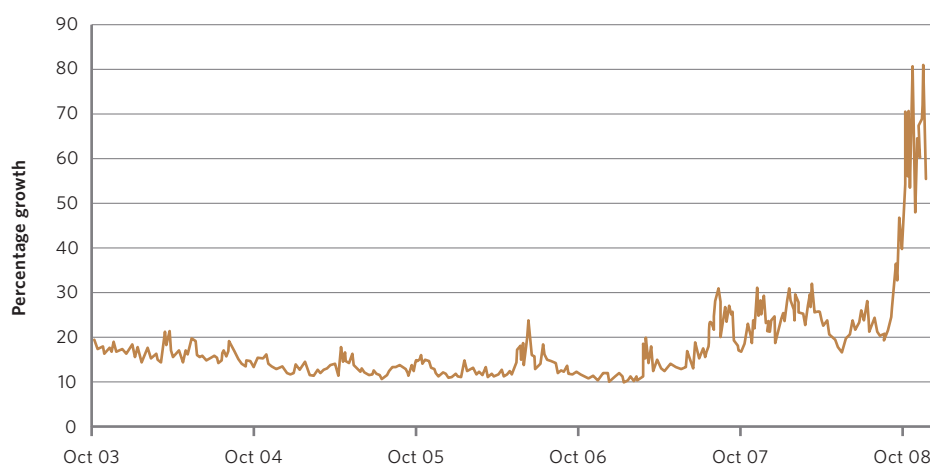
These factors have important implications for those investors who rely upon tracking errors as their primary method of controlling portfolio risk. Limits and restrictions on tracking errors are blunt tools that do not take account of the scale of any short-term estimation error.

The use of such limits and restrictions exaggerates the reliability of tracking error estimates and the importance of those estimates in managing portfolio risk. Furthermore, the use of different construction methods and varying time periods by different risk management systems means that such systems will produce divergent estimates of risk and of estimation error.

These factors should be borne in mind in cases where different systems are used to produce risk estimates on different funds. Otherwise, investors may draw inaccurate and misleading conclusions about the risk to which portfolios are exposed.

The concerns about tracking errors to which we refer above have always been relevant, but periods of major change in market behaviour (such as that which we are witnessing currently) make such concerns more significant. Newton has argued consistently that tracking error statistics need to be used with caution and that good risk management needs to be more comprehensive than relying upon a single (tracking-error) figure.

VIX INDEX FROM THE START OF 2004 TO THE PRESENT



Source: Bloomberg



Newton's approach to portfolio risk management

Risk is a natural consequence of active portfolio management. The performance that we have generated at Newton over the last 30 years on behalf of our clients would not have been possible without taking active 'risk'. However, risk should be understood properly and it should be taken appropriately. There are two key elements that are required to ensure that this is the case.

The first element is a clearly defined risk-management structure, which is fully integrated in the investment process and in the management structure of a fund management firm. At Newton, this starts with fund managers, who manage the risk and return characteristics of their portfolios on a daily basis. In addition to this, Newton has a team of investment risk professionals, the portfolio analytics team (PAT), which sits within the investment team as a whole and whose job it is to analyse and interpret risks across portfolios. The PAT is an integral part of the investment process, but it maintains independence from the fund management desks. The portfolio analytics group (PAG) is a management committee that comprises members of PAT as well as a cross section of investment managers who represent different strategy areas within Newton. PAG's aim is to provide constructive and objective peer-group oversight. It forms an independent opinion on the appropriateness and consistency of portfolio risk across Newton and

has clear accountability to both the chief investment officer and Newton's investment committee.

The second element in the proper application of risk is the existence of a robust process for analysing portfolios. It is important that the construction of all portfolios is analysed and investigated to determine whether positions are appropriate in relation to, and consistent with, the implementation of particular strategies. Tracking errors, and risk models more generally, are key to this, but they are small components of a broad and comprehensive process. Most significantly, human judgement is required in the interpretation of portfolio data. In relation to risk models, a full understanding is required of both the limitations of analysis and of how data incorporated in models relates to current market conditions. In addition, risk has to be monitored in the context of a thorough understanding of the investment process and philosophy to which it relates. For example, in the period before recent market turbulence, risk models were indicating that our portfolios should greatly increase their exposure to large Western financial stocks, which were seen as being stable investments that would reduce the risk in portfolios. A pragmatic interpretation of this analysis, in the context of our analysts' and fund managers' views, prevented us from holding financial stocks to the extent that would have been determined by a purely model-driven process.

By taking these two elements together, we have established a strong framework for monitoring and managing risk in our clients' portfolios. This framework has been tried and tested through different market conditions and has helped contribute to consistent long-term outperformance and attractive risk-adjusted returns.

The table below illustrates this by showing the five-year information ratios of some of our key strategies. An information ratio measures the extent to which a fund manager has generated outperformance in a consistent fashion (being excess return divided by tracking error). A number above zero indicates the achievement of risk-adjusted outperformance. Newton's information ratios are strong across a range of strategies*.

Strategy (composite)	info. ratio
Balanced institutional composite	
v composite benchmark	1.52
Institutional global equity composite	
v MSCI World NDR Index	0.42
UK equity core composite	
v FTSE All Share Index	0.65
Global fixed income unhedged composite	
v JPM Global Government Bond Index	0.67

Risk is an integral part of our investment process at Newton and we are committed, via the use of sound risk-management techniques, to ensuring that our clients benefit fully from our investment process in ways that are appropriate to the fulfilment of their objectives.

*This information is for illustrative purposes only. The composites shown comprise institutional funds, whose performance may differ from that of private client equivalents.

This is a financial promotion and is not intended as investment advice. Past performance is not a guide to future performance. The value of investments, and income from them, is not guaranteed and can fall as well as rise due to stock market and currency movements. When you sell your investment, you may get back less than you originally invested. The opinions expressed in this article are those of Newton Investment Management and should not be construed as investment advice. In addition the information contained in this article should not be construed as a recommendation to buy or sell a security. Issued by Newton Investment Management Limited, The Bank of New York Mellon Centre, 160 Queen Victoria Street, London EC4V 4LA. Registered in England No 1371973. Newton Investment Management Limited is authorised and regulated by the Financial Services Authority. 17325 12/08



BNY MELLON
ASSET MANAGEMENT