

A Practical Framework for Managing Market Risk

Alankar Karol & Richard Hughes

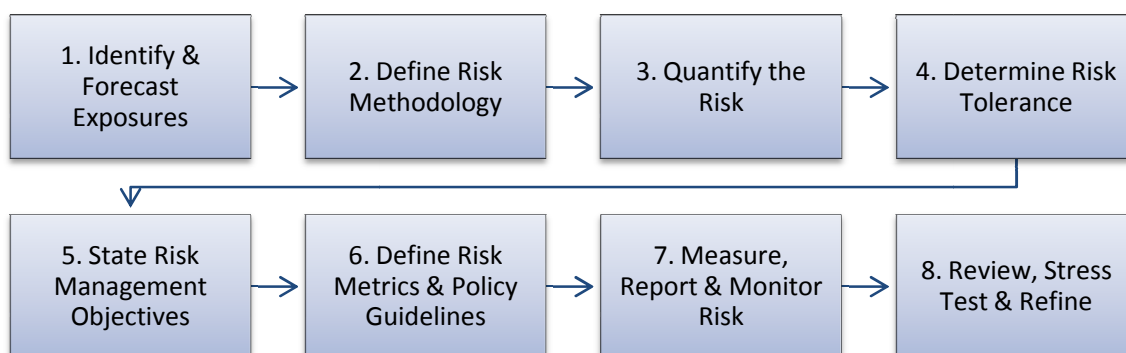
September 2010

For many companies, market volatility can have a major impact on earnings. In particular, losses arising from unexpected movements in exchange rates, commodity prices or interest rates can materially erode gains made in others parts of the business. In order to limit the potential adverse impact of such market movements, all companies need a well defined policy framework to guide their risk management activities.

In this article, we describe a series of steps which can be applied to develop a coherent market risk management policy. In a series of further articles to follow, we will focus in on the detail of these steps with a few case studies.

8 steps to best practice risk management

A best-practice risk policy should clearly communicate the risk management objectives and requirements of senior management. It should be designed around the core assumption that market behaviour is completely unpredictable and that most forecasts are unreliable. Risk managers must expect and plan for the unexpected.



1. Identify & Forecast Exposures

Firstly, it is crucial to identify the primary market risk factors and establish how significantly they contribute to the overall enterprise risk carried by the company. In companies with numerous market risk factors, it is also important to identify any possible inter-relationships or correlations between the different risk factors.

Once key risk exposures have been identified, accurate forecasts of those exposures will become the baseline for modelling all subsequent risk management activities. Forecasting must be based on a reasonable time horizon ensuring that it is not too short that the risk is understated and not too long whereby forecasting accuracy may be lost to uncertainty. Forecasts should incorporate any natural hedging or seasonality that may occur in the business cycle.

2. Define Risk Methodology

Prior to quantifying the potential impact of risk exposures, we need to establish an appropriate methodology for the measurement of that risk. Market risk can be measured using either an earnings/cashflow approach or an economic-value approach. For example, in the case of an interest rate debt book, the best methodology would be a cashflow approach since an increase in interest rates would increase the interest cost and thereby have an adverse effect on earnings. On the other hand, an investment portfolio of fixed income securities would be best suited to an economic-value approach since the present value of the portfolio would decline with an increase in the interest rates.

3. Quantify the Risk

There are three main methodologies that can be applied to quantify risk

- *Scenario modelling* is the simplest approach and attempts to project a range of 'likely', 'worst-case' and 'best-case' forward-looking scenarios for the risk factors. This allows us to measure the sensitivity of the exposures to different scenarios and quantify the potential impact on cashflow. The risk can then be reported as a variance between the 'likely' and 'worst-case' outcomes or between the 'best-case' and 'worst-case' outcomes.
- *Cashflow-at-Risk (CFaR)* is a more sophisticated method that applies Monte Carlo simulations to generate large numbers of future price paths and applies them to the forecast exposures. This simulation approach generates a broad range of possible cashflow outcomes and then calculates the statistical probability of such outcomes occurring.
- *Value-at-Risk (VaR)* applies either historical rates or simulated price curves to study the possible impact on market values rather than future cashflow. Statistical analyses are then carried out to assess a range of valuation sensitivities.

Another metric for measuring risk is *Duration* which is applied mainly in managing bond portfolios. In most circumstances, Scenario modelling and CFaR are most appropriate for corporates whilst VaR is popular with financial institutions. All of these metrics can be used either in isolation or in conjunction to provide differing views of the risk profile.

4. Determine Risk Tolerance

One of the most important steps in designing any risk management framework is to relate the risk to observable financial outcomes. For example, any potential loss in earnings from a 'worst-case' outcome should be assessed in terms of its impact on company profit. Such measures will clearly quantify how much market risk the company is exposed to and then help management in deciding how much of that risk they are prepared to tolerate.

5. Risk Management Objectives

It is critical to clearly identify the fundamental objectives that must drive the overall risk strategy. Most commonly, a risk management strategy will be employed to:

- smooth and delay the impact of market fluctuations with rolling hedge strategies
- defend short to medium term company profitability or
- defend specific rate, price or cashflow targets

6. Define Risk Metrics and Policy Guidelines

Risk metrics are clearly defined observable measures that can be applied to guide treasury activities and should be monitored on a regular basis to gauge the effectiveness of any risk management strategy. Typically, these metrics may include:

- *Hedge Ratios* which provide a maximum and minimum percentage range of the exposures that should be hedged. They can be effectively applied to manage the implementation of rolling hedge strategies.
- *Targets* which could include interest rate, currency rate, commodity price or defined cashflow targets. These are useful measures to ensure certain financial objectives are defended. Along with hedge ratios, such targets will help to manage the level of hedging that needs to be applied over time.
- *Duration Limits* which will define the maximum and minimum duration range for bond portfolios.

Risk can be managed with vanilla or exotic hedging instruments. The policy must clearly specify the types of instruments that are permitted. Their potential impact under different accounting standards such as IAS 39 should also be carefully considered for reporting purposes.

7. Measure, Report and Monitor Risk

Specific content guidelines for the reporting of risk to different levels of management must be established and maintained. Ongoing measurement and reporting is a core process which should be performed regularly to ensure continuous adherence with the risk policy. Reporting must be designed to be clear, consistent and any breaches must be identified and rectified quickly.

8. Stress Test, Review and Refine

Stress tests of all portfolios should be performed on a regular basis to ensure that unforeseen market events are not ignored and that the macro framework and risk metrics being applied will remain effective in managing the unexpected.

Once Steps 1-7 are being practically applied, they should be regularly reviewed and occasionally back-tested to ensure they remain effective, practical, and appropriate for the company within a changing market and business environment.

Next Article

The next several articles in this series will employ case studies to illustrate key aspects of each step and demonstrate how this 8 step methodology can be applied to practically develop an effective risk management policy.

Visual Risk provides treasuries with advanced software solutions. Our clients are mid to large size companies and financial institutions, We were founded in 2001 with a strong focus on developing our distinctive brand of forward-looking risk analytics. Since then, we have successfully diversified into asset-liability management, hedge accounting and treasury management. This has delivered a unique suite of treasury modules which can be implemented individually or as a fully integrated front-to-back office treasury system. From our Sydney base we now service over 100 companies across Australia and New Zealand, making us the most widely applied treasury system in Australasia and the clear market leader.