

# IMPLEMENTING INTEGRATED FINANCIAL RISK MANAGEMENT

By Finn Dalheim

*Some of the typical questions one gets when a shipping company CEO or CFO is convinced of the potential benefits of enterprise risk management for his company, are: "But how do we implement a cost-effective risk management framework within our lean, busy organization? What are the main implementation challenges, and how do we overcome them?"*

*In order to answer these questions, below collected are some useful advice for a step-by-step, low-cost, best practice, risk management implementation for a shipping company.*

## THE BENEFITS

In a cost/benefit analysis for establishing a risk management framework, the costs consist mainly of spending some more management time thinking about risk.

What are the benefits?

The ultimate goal of risk management is to maximize shareholder value. To determine a company's optimal risk management policy, we must begin by understanding how uncertainty surrounding expected future earnings and future firm value affect the market value of the firm.

The main benefits that we want to achieve from an enterprise risk management implementation for a shipping company are the following:

- Avoid costly default or distress situations
- Lower cost of credit from

- improved credit rating
- Less fluctuation in earnings gives lower risk premium on share price
- Better understanding of the company's risks and how to manage them
- Performance measurement and compensation on risk adjusted basis

The value of these benefits can be more difficult to quantify, but most shipping executives seem to feel intuitively that they can represent considerable amounts of money. In any case, the key to success is that senior management has to be convinced at the start of the implementation, that the benefits far outweigh the costs.

A working paper written by [Lisa K. Meulbroek, Harvard Business School 2002](#), "[Integrated Risk Management for the Firm: A Senior Manager's Guide](#)"

is recommended as a good primer for senior managers who want an update on the theory underlying modern risk management. She points out that "Companies have three fundamental ways of implementing risk management objectives: Modifying the firm's operations, adjusting its capital structure, and employing targeted financial instruments (including derivatives). "Integration" refers both to the combination of these three risk management techniques, and to the aggregation of all the risks faced by the firm."

## WHATS REQUIRED?

First of all, avoid the trap of thinking that establishing a risk management framework in a shipping company is primarily a software development project. Obviously, you need to do a bit of work on quantifying and

computing risks, but this is not the main challenge.

In a typical shipping company risk management implementation project, software is not one of the key factors. In banks and financial service companies with high frequency, high volume trading of a large number of securities by a large number of traders, advanced risk management software is very important. But in a typical shipping company the main challenges are to understand the big picture, the most important risks, how they work together to form the net risk exposure of the total corporate portfolio of assets and liabilities, and how they are best managed in a cost-effective way. Microsoft Excel, with some add-ins, is normally powerful enough for modeling these risks, and is the obvious choice from the start if the compa-

ny's capital budgeting is already implemented in Excel. However, don't worry about computing and statistical methods, they are important but not critical. The actual cooperation of senior management in modeling the key risk factors, establishing risk targets and agreeing on how to best manage the identified risks is what really matters. This is where an implementation project succeeds or fails.

### GETTING STARTED

Both for enterprise-wide risk management and for capital budgeting, it is necessary to know the volatility and correlations of cash flow returns on the firm's overall portfolio of assets.

Getting hold of sufficient, good quality time series data required for volatility and correlation calculations is often difficult in finance markets, but does not usually present a significant problem in shipping. Monthly prices are usually sufficient to start with, and they are widely available for the relevant freight rates, second-hand vessels, bunker fuel, interest rates and currencies.

The standard for measuring and communicating financial risk is now Value-at-Risk (VaR), together with portfolio stress testing and extreme value analysis

(EVA). Value-at-Risk is defined as the maximum loss that you can expect for a portfolio over a specific period of time (e.g. one month) at a specific confidence level (e.g. 95%). The most powerful tools for VaR analysis are simulations. Since typical shipping portfolios often contain options, have relatively few different types of variables, and do not need very frequent updating, historical simulation and Monte Carlo simulation are the methods of choice.

Having an estimate of the probability distribution of the future cash flows of the company, you can then determine the value of reducing distress risk and compare this with the marginal costs of risk reduction.

### THE MAIN IMPLEMENTATION CHALLENGES

Shipping company implementations differ in many respects from the standard financial services company risk management implementation. Market risk is high, credit risk often not important, operational risk can be linked to market risk in complex ways. Any implementation project has to be tailored to the specific company in question.

The relatively small organizations found in most ship-

ping companies makes it necessary to hire in outside experts to a greater extent than in a typical bank or oil company. This applies also for risk management expertise.

Key personnel will need training in risk management principles and methods. Training in risk management is most efficient when based primarily on in-house, short but frequent sessions, workshops or seminars precisely targeted to the identified needs, organized with the help of an experienced consultant.

### PRACTICAL SOLUTIONS FOR SHIPPING COMPANIES

Make as few changes as possible, i.e. start by looking at existing cash flow budgets and earnings budgets and add probability distributions based on e.g. historical simulation for the budget numbers. If you have sufficient relevant historical data for the simulation, this will already give you important new information regarding the budget figures. After seeing Cash Flow at Risk (CFaR) and Earnings at Risk (EaR), it may be time to take a look at the balance sheet and include secondhand values in a VaR analysis.

Value-at-Risk is based on the assumption of a normal or lognormal distribution of e.g. daily or monthly price

changes. We know that these changes are in fact not normally distributed. However, for most practical purposes it still makes sense to make this simplifying assumption. Non-normality of key risk factors in shipping like freight rates, secondhand values, bunker prices and interest rates does not seriously compromise the reliability of VaR estimates at the 95% confidence level. For the overall portfolio it is even easier to estimate VaR reliably, than for the individual assets.

Unless one's company already has a significant derivatives trading volume in freight, fuel or interest rates, a monthly risk report and review is usually sufficient. An Excel based solution with simulation or risk analysis add-ins is usually sufficient. However, as soon as derivatives trading activities grow to become more than sporadic, limited hedge operations, then daily risk reporting with weekly reviews are strongly recommended. At this stage you will also usually need to invest in a more advanced trade capture and risk management software solution. There are a large number of software solutions available on the market already, but many of them are either too expensive or not well suited for the typical requirements of a shipping company.

With cleared futures or options contracts, there is practically no credit risk. However, the credit risk in OTC freight derivatives contracts is significantly different from the risk in a timecharter or contract of affreightment, since there is no security in a related cargo or vessel to arrest. There may often be a need to make quick decisions on derivatives deals. Therefore the internal credit process for freight derivatives counterpart credit line approvals needs to be more thorough and formalized than is common in physical shipping. The risk manager needs to develop and maintain a list of approved counterparts and the maximum credit lines for each counterpart. The credit limits should be set both in terms of total allowed face value of deals, maximum length of contracts, and maximum allowed VaR.

A next logical step when a VaR based risk management framework is in place is to calculate risk adjusted return on capital (RAROC) for each business area and to allocate investment capital and measure performance based on RAROC.

### CREDIT RATINGS ARE AFFECTED

When risk management is used to lower the default risk of a firm, since credit

ratings are directly connected to default risk, the firm's ratings will normally improve.

The rating agencies seem to be generally aware of the developments in freight derivatives and the potential for risk management to reduce default risk, but have limited actual experience yet in including such factors into their rating process.

When I asked David Berge at Moody's how they typically proceed to include in it's rating of a shipping company the effect of the company's new risk management program, he says their primary concern is the effect on the stability of the revenue stream. He says he "would be very skeptical of how air-tight the contract is. It's one thing to take into consideration interest rate hedges, or fuel hedging done on large, well-established futures and options markets. For freight hedging the scope, history, and credit-worthiness of the freight derivatives instrument (forward/future) will have to be presented with a lot of evidence behind it."

### ORGANIZATION

Usually, the two key organizational changes that are recommended for a shipping company to implement enterprise risk management are the appointment of a

risk manager and the formation of a corporate risk management committee. Typically the role of risk manager is not initially a full time job, and can be performed by a quantitatively oriented person like a controller or a financial analyst. However, the risk manager should not have direct trading responsibility, and in his role as risk manager he should not report to a CFO who has responsibility for hedging and trading operations.

The risk manager typically acts as the secretary for the corporate risk management committee. Other key members of the committee are typically the CFO, the CEO, the controller, the VP Chartering, the derivatives trading responsible, and preferably also one of the members of the company's board of directors. The central corporate risk management committee should be responsible for setting and monitoring overall guidelines, risk targets and trading limits, while implementation of hedging within the allocated risk limits should be decentralized. Each business unit should be responsible for the independent execution of derivatives hedging within its given limits.

The "owner" of a risk management implementation

project in a shipping company is typically the CFO. One reason for this is that the best results are obtained when the company has an integrated approach to risk management, capital budgeting and capital structure policy. Another reason is that a practical first step in the implementation project is usually to analyze CFaR and EaR as an add-on to the existing budget process of the company.

### THE IMPLEMENTATION PROJECT

A realistic timeframe for any project involving organizational change of this type, even if it is very limited in scope, is a minimum of 3-6 months. Unless for some reason the need for implementation of risk management becomes very urgent, the project plan should therefore be based on a six month timeframe.

The "kick-off" meeting for the implementation project is a good opportunity to explain and discuss thoroughly the expected benefits for the company. This meeting can be used to announce the appointment of a "corporate risk manager" and to get a "buy-in" from all key parties. If a "corporate risk management committee" is also appointed already at this stage, it can function effectively as a "steering group" for the

implementation project. Added focus on the sources of risk and how to manage them will lead to a better understanding of the business of the company.

In summary, the main steps in the project are the following:

1. Assign key roles
2. Identify risk factors
3. Select methods for quantifying risk
4. Quantify risk of each asset as VaR, based on volatility
5. Quantify risk of complete portfolio based on VaR for each business area plus correlations.
6. Perform stress testing and scenario analysis in addition to VaR
7. Determine which level it is critical to keep the cash flow above
8. Optimization of risk exposures
9. Critical cash flow level is influenced by total equity level and liquidity of investments

10. Dialog between chartering, trading and finance staff
11. Find lowest cost solutions for optimal hedging
12. Develop and implement hedging policy
13. Make sure that all risks are assigned a single name in the organization
14. Communicate risk level to board of directors
15. Calculate economic capital employed for each business area
16. Review capital allocation within the company in view of risk picture
17. Performance measurement, both for units and managers
18. Rewarding managers based on risk-adjusted performance

#### TIMING

When is the right time to develop and implement enterprise risk management for a company? Probably

not when the finance department and the CFO already have a heavier load than normal due to other large projects presently being implemented. But any other time is OK, since a shipping risk management project is usually best run as a slow, low-level activity project. No revolution, just careful, gradual change without disturbing the existing operations.

Normally, implementing enterprise risk management is an important but not urgent undertaking. Some indications that the timing may be right for implementation are the following:

- The market has been very volatile and your company's quarterly or annual earnings and share price have fluctuated strongly.
- The company is considering significant investments in additional tonnage or a new business area.
- The company wants to understand better the

sources of risk in your business.

- The company is preparing share buy-back programs and need to determine the optimal equity size and capital structure for your company.
- The company's derivatives trading operations are increasing.
- The company wants to reduce your cost of credit.
- The company wants to find better ways to reward management performance.

#### ADDICTIVE

A final warning: Risk management can be addictive. Once the company is used to getting monthly cash flow and earnings forecasts with probability distributions and VaR/CFaR/EaR included, it will likely never want to go back to the single number presentations it used to get in the past. But then again, why should it?

*Finn Dalheim is a consultant with Terminsikring AS ([www.termsikring.com](http://www.termsikring.com)), a Norwegian independent consulting company (founded 1986) focusing on integrated financial risk management, energy and freight derivatives trading strategies and trading organization development. The author has more than 25 years of experience from management and consulting in the oil and energy industry, the petrochemical industry, IT, and bulk shipping physical and derivatives markets. He can be contacted at [fdalheim@termsikring.com](mailto:fdalheim@termsikring.com) or Tel. +4793438600.*