



SOCIETY OF ACTUARIES

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Risk Management: Some Guidelines for Practitioners

by Kevin Dowd

Risk management is a complex and subtle subject, and being a good risk manager requires a dauntingly wide range of skills. Inevitably, most of these are not “taught” but “learned” (i.e., on the job) and every experienced risk manager will have learned these the hard way and formed their own unique perception of what risk management really entails.

The nature of this subject is also such that no one can speak with absolute authority. However, it is possible to suggest guidelines, and this article offers a collection of them. The guidelines suggested here fall under four general headings: your role in the organization, general risk management, the use of derivatives and risk measurement systems.

Your Role in the Organization

Before taking the job, try to work out what your employers really want, what kind of people they are, and so on. If you have reservations on any of these points, don't take the position in the first place. You can also expect major problems if different people have different expectations about your role and about who you are “really” accountable to, and the prospect of such problems is another good reason for not accepting a position. However, having accepted the post:

- Make sure you know the business in which your firm is engaged and know the risks this line of business entails
- Be clear about your role, what your job description involves, and so forth.
- Be clear about what others expect your role to be, and make sure that others are aware of what you see it to be. If these expectations are not in harmony, you have a problem and need to do something about it.
- Be clear about your own ethics, and expect at some point to have your ethical values confronted. Make it clear what you will not put up with—if you are ever put in an untenable position, you must either make it tenable or leave.
- Understand the moral and legal implications of your position as a company officer: your obligations to stakeholders, your

obligations to look after other people's money and the like.

- Remember that you are always accountable: you are always responsible for what you choose to do, even if you are operating under pressure.
- Learn to be politically aware, and try to avoid repeating the same mistakes: experience is a costly school. Be aware of the dangers of being compromised (e.g., going along with what you know to be wrong, humoring other people to avoid upsetting them, etc.). Always consider your exit strategy such as what you will do if things go wrong.
- Refine the following skills: observe human behavior, study how organizations work, learn how to read people, know whom you can trust (and whom you cannot), develop your interpersonal skills (e.g., courtesy is intrinsically right and costs nothing) and keep up to date with what is going on. It also helps to read good books, and keep in mind that the old classics are much better than any book spouting the latest in “management thinking.”
- Don't indulge senior management when they say risk management is expensive. The cost of risk management is not the salaries and other expenses required to have a risk management department, but what might happen if risks are not managed. Don't let them regard risk management as a drain on profits.
- Don't expect to be popular with senior management: your job is to warn them of the risks the firm faces, and this will sometimes require you to take a difficult position that flies in the face of the “corporate vision.” If you have to upset the CEO, remember to be careful—the trick to survival is to keep a straight face and laugh afterwards.



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On General Risk Management

Make sure you know your own business and the risks it entails. You should also have some idea of the risks your firm is taking and why. The objective of risk management is not to eliminate or even minimize risks, but to manage them appropriately, taking into account the potential benefits from risk-taking. Remember that risk management is a form of engineering: it *uses* science, but ultimately *depends* on judgement. Judgement is everything.

- The ultimate protection against risk is good judgement and alertness—your own and that of your colleagues. Observe what goes on elsewhere and learn from the mistakes of others. If you are sufficiently concerned about similar problems occurring in your firm, do something to prevent them. It is particularly important to learn from others when they lose huge amounts of money or go bankrupt. When you see that happen, ask yourself if your firm is *really* covered. Remember that when firms get into major difficulties, the problems involved are usually ones that senior management persuaded themselves they had taken care of. It is the operational risks—rogue traders and the like—that usually bring institutions down (e.g., Barings). The best defenses against operational risks are sound systems of management control and vigilant managers.
- Be on the lookout for the obvious: business units that are apparently earning very large profits for no clear reason, figures in reports that are suspicious, sudden deteriorations in performance, junior managers under severe stress, high turnover of staff, etc.
- Find good people you can trust, pay them well and back their judgement. Good people are far more valuable than good systems. Never think that a fancy risk management system takes care of your risks for you and thereby relieves you of the need to stay alert. Understand the limitations of your risk management systems. Be clear about the risks your systems do not cover well, especially operational ones. Ask what could go wrong, ask yourself if the results seem right and so forth. Always ask where you might be vulnerable.

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- Have your risk management systems occasionally checked over by outside experts, and listen to their advice. Listen to your auditors as well. Remember that risk management is definitely not an exact science, so don't be fooled by spuriously precise answers or be impressed by people who talk in such terms. Remember that stress testing and contingency planning exercises are key features of good risk management.
- Policy statements should give substantial objectives and policy guidelines, as opposed to the meaningless platitudes that abound in modern corporate life. When drawing guidelines up, you should ask yourself: “Do they come across as just so much more management nonsense that no-one ever pays any attention to? Do they give the impression that they are merely written to protect the management against criticism or lawsuits? Are they condescending to workers, shareholders and other stakeholders? Do they exaggerate the priority really given to risk management issues?”

Dealing with Derivatives

Don't be put off by the use of derivatives by well-publicized problems with derivatives. Derivatives are very useful tools, when used properly. Remember that derivatives have one or more of many uses: to take a position, i.e., to speculate, to hedge or to reduce funding costs. If you are thinking about using derivatives, be clear why. Derivatives can therefore increase or decrease your overall risks, depending on how you use them.

- Be aware of the leverage, i.e., the potential for gains or losses, in your derivatives positions—particularly leverage that might be hidden in complex derivatives positions. If you are using derivatives to reduce funding costs, make sure you understand why/how the contract gives you lower funding costs. In particular, make sure that you have not agreed to hidden options or other contingent payoff clauses that could later lead to large losses.
- When dealing with derivatives providers, recognize that they always know more than you do. When considering contracts with derivatives providers, satisfy yourself that *you* broadly understand the risks you are thinking of taking on. When considering any derivatives contracts, satisfy yourself that you *want* to take on the risks involved.

- In assessing a derivatives contract, particularly a complex one, have the contract reverse-engineered into its basic building block components—this helps in understanding the risks involved—and consider whether you would be better off taking on the building blocks instead.
- Shop around for quotes from different derivatives providers before agreeing to a particular contract. Protect yourself against unscrupulous providers by seeking qualified second opinions. You can also protect yourself by asking questions and insisting on full written answers. Questions should focus on prospective losses for different realizations of the underlying risk variable(s), i.e., scenario analyses. If you are not sure what questions to ask, seek guidance from your own risk managers or outside consultants. Always check with them anyway before signing anything. Also, if the answers you get are incomplete, unclear or otherwise unsatisfactory, don't get involved in long, drawn-out negotiations. Just assume the worst and take your business elsewhere.
- Know your exit costs. When negotiating with providers, try to nail down your likely liquidation costs in advance by asking for written quotes that specify the terms on which they would unwind your derivatives positions later. Before finally agreeing to any contract, decide on your stop-loss position, so you know *in advance* the maximum loss you will tolerate before bailing out. Ensure that everyone else involved also knows the stop-loss position. Having established your stop-loss strategy, keep to it.
- When dealing with outside consultants, deal with people you can trust. As a general rule, employ consultants who have no axe to grind because they are not trying to sell you their own systems.

Dealing with VaR and Associated Systems

Understand clearly what different risk measures—VaR, expected shortfall, etc.—and actually mean. More important still, understand what they don't mean (i.e., understand that VaR does not give the maximum possible loss, and so on). Recognize that there are serious problems with the VaR as a measure of financial risk (e.g., VaR does not tell us what loss we might suffer if we get a loss exceeding VaR, the use of VaR in risk-expected return decision making can lead

to highly undesirable outcomes, etc.). Most of all, VaR is a poor measure of financial risk because it is not subadditive.

- Understand subadditivity—risk of the two positions combined will never exceed the sum of the risks of the two positions separately considered—and appreciate that it is a basic requirement of any “sensible” risk measure. This said, VaR does have its uses. For example, the VaR is a quantile, and quantiles are often useful in probability-of-ruin type problems.
- Fortunately, there are much better risk measures than the VaR, most particularly, the expected shortfall (ES), which is what we can expect to lose if we get a loss exceeding VaR. (This measure is also closely related to the conditional tail expectation, and similar measures.) The subadditivity of the ES makes it a much better risk measure than the VaR. Recognize too that ES-type measures are becoming increasingly widely used, and also are being adopted by regulators for capital adequacy purposes.
- Modern risk theory (e.g., the theory of coherent risk measures) also suggests that the outcomes of stress testing exercises satisfy many of the requirements we would expect of sensible risk measures. You should treat stress tests as “bona fide” risk measurement exercises and not look down on them as inferior to probabilistic risk measurement exercises (e.g., VaR).
- Remember that you never really understand any risk measure until you have estimated it a few times. Try to get some feel for what the different risk measurement systems involve: their strengths, their potential uses, their limitations and weaknesses, etc. Familiarize yourself with related systems, such as cash-flow-at-risk (CFaR) systems. Familiarize yourself with enterprise-wide risk measurement (ERM). You should appreciate what benefits ERM might bring, but also appreciate what ERM actually entails (i.e., in terms of



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changing the organization and how it operates).

- You should investigate what benefits these various systems (VaR systems, CFaR systems, ERM systems, etc.)—could bring to your particular firm. However, recognize that the benefits can vary a lot from one firm to another, depending on each firm's particular business and circumstances.

If you decide to adopt any of these systems, be clear why. There is only one good reason: you should adopt them if and because they fit your business needs.

- *Don't* adopt VaR and associated systems just because your competitors are doing so. Resist the temptation to behave like a lemming.
- *Don't* adopt them just because you have some vague idea that they will help you steal a march on the competition. You are unlikely to steal a march on the competition if you don't know what you are doing.
- *Don't* adopt them in response to pressure from shareholders or systems providers. Shareholders pay you to make these decisions for them and systems providers are looking for business.

Pay attention to what other firms are doing, and learn from them.

- *Don't* be hurried, and remember that there is always the option of wait and see. Waiting allows you to see what mistakes other firms make so you can avoid them. Waiting until later will also be cheaper, because costs will fall over time.
- Think carefully (and seek advice) about the level of technology that is adequate for you.

Establish the level of technology that is adequate to your needs—historical simulation, variance-covariance, or Monte Carlo simulation.

- The systems with the lowest level of technology are historical simulation ones, the highest tech ones are Monte Carlo systems, and variance-covariance systems are some where between.
- As a general rule, you are better off adopting the system with the lowest adequate level of technology. The higher the level of technology, the greater the expense, the

more difficult the system is to use and the greater the chances of something going horribly wrong.

- Don't ever buy a complex system without justifying that you really need it—don't buy an expensive Monte Carlo system, say, when a simple historical simulation system will do.
- Be discriminating. Systems must suit your particular business needs. As a general rule, large firms need systems fitted for them, as opposed to systems just bought off the shelf and imported without much thought. Be wary of buying expensive systems off the shelf, and be wary of providers who would sell you complex systems that only rocket scientists can understand. Shop around for systems and service providers, and don't confuse expense with quality. It is very easy to spend a lot of money on a poor or inappropriate system. Never, ever, buy complex systems that no one in your firm is comfortable with. Either the systems are unnecessarily complex or else you need to hire people who can work with them.
- Make sure you have access to advice from people who understand the area. When setting up risk measurement systems, ensure that you also develop good stress testing capability. Make sure that you use these systems in conjunction with regular and detailed stress tests. Take some interest in stress testing exercises, if only to inform the broader planning process.
- You should insist that your risk reports be informative, but not unnecessarily so. They should be short and to the point and written in plain language. Besides reporting key numbers, they should also warn of important problems or qualifications that you should be aware of.
- Insist on periodic longer reports that go into more detail and keep you warned of medium-to longer-term problems and other issues that would not make it into your more regular risk reports. Keep in mind that no system ever gives guaranteed results.

Conclusions

There are of course no absolute guarantees in the risk management business. However, if you follow these (or similar) guidelines, you are unlikely to get into serious problems. At the end of the day, the key to good risk management is simple: be conscientious. ♦

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