



Craig Turnbull
Craig.Turnbull@barrhibb.com

The principle-based approach says, 'Do the right thing and explain it.'

Making the most of a principle-based system

Globally, risk-management rainmakers (politicians, regulators, consultants, rating agencies, and senior managers) have embraced principle-based approaches to risk and capital as a best practice to which we should all aspire. But, as with anything else, the beauty of a principle-based risk measurement system lies in the eye of the beholder. To purists, current practices and future intentions may appear to fall short on some of the fundamentals that differentiate a principle-based risk measurement system from the prescriptive approaches that they replace.

The essence of a principle-based risk or capital assessment is that the onus of accurately assessing the risks created by a business's specific risk profile is placed internally on the business itself. This contrasts with a prescribed approach, where risk measurement is a generic, one-size-fits-all, externally prescribed calculation that doesn't consider the differing forms of risk exposure that may be found in each particular business to which it is applied.

At its most basic, the principle-based approach says 'Do the right thing and explain it'. Figuring out what's 'right' is difficult, but the process of thinking seriously about the answer will bring benefits. Prescription simply provides a formula, so there's no need to think and or understand.

A principle-based system offers two core benefits:

1. It should result in more efficient, accurate, and transparent risk measurement. Industries are rarely homogenous across firms or over time. In a principle-based system, risk models and calibrations can be tailored to the particular risk profile of the business. This is particularly important when we consider the benefits of parsimonious and transparent risk models that are focused on relevant risks. By contrast, a one-size-fits-all model needs to cater for all possible risks. This goes against one of the basic principles of effective model building. In the remainder of this article, I'll refer to this benefit of a principle-based system as the accuracy benefit.
2. It should create incentives to implement effective risk-management strategies. A fundamental benefit of the principle-based approach is that it removes the incentive to game the risk-measurement system. Under a prescription-based system, businesses have an incentive to follow risk-management strategies that minimize prescribed measures rather than the true risks of the business. The inherently adaptive nature of risk measurement in a principle-based system mitigates this damaging effect—management focus is on what is actually measured, not the intent of whoever designed the prescribed formula. In a principle-based system, the risk-management strategy drives the risk-measurement model; in a prescription-based system, the measurement model drives the risk-management strategy. Hereafter, I'll refer to this benefit of a principle-based system as the incentive benefit.

My argument above suggests that effective principle-based risk measurement systems need to be:

- Local (to the specific risk profile being measured);
- Independent (the risk-measurement methodology should be continuously reviewed as the risk-management strategy changes, and responsibility for this review should be independent from the risk-management decision maker);
- Adaptive (to changes or considered changes in the risk profile).
- The local property is key to the accuracy benefit. The independent property is key to the incentive benefit. And the adaptive property is the fulcrum of a principle-based system. It's essential to both of these core benefits.

So, how do current practices compare with these criteria for success? There are a number of examples from around the world that we can compare and contrast with this model of a principle-based system.

Economic capital at multinationals

Great strides have been made over the last five to ten years in implementing group-wide economic capital assessments at multinational insurance groups. These have undoubtedly raised the quality of information that's available for internal and external consumption on these firms' risk exposures.

The implementation model generally involves local businesses developing stochastic models of their assets, liabilities, and risk-management strategies and using those models to generate risk-measurement results for consolidation at the group risk function. However, the stochastic economic scenarios that are used in this exercise are generally produced (prescribed) at the group center and then distributed to all business units for their use. It's also worth noting that real-world stochastic scenarios may not be used in this process—rather, a series of stress-test scenarios will often be used to generate input into a capital aggregation model. In this case, the same form of stress tests will be used across all business units and will be prescribed at group center—again the extent to which the risk assessment is fitted to the specific risks left behind by a particular business unit's risk management strategies is limited by the centralized nature of the process.

This process for usage of stochastic economic-scenario modeling doesn't stack up very well with our ideal principle-based system: the risk model is neither local, adaptive, nor independent. This centralized process generally will not be adequately close to the specific risks left behind by a business unit's risk-management strategy to tailor that unit's modeling and calibration to those risks. Nor will it encourage a dynamic adaptive process in which the risk-measurement model changes as the unit's risk-management strategy and resultant exposures change. It encourages gaming risk to the economic scenarios prescribed by the group.

Of course, some companies will have made more progress than others in recognizing and addressing these barriers to the benefits of a fully principle-based system. However, the current implementation model for much of the European Community (EC) group is arguably an inherently prescriptive risk-measurement system that will tend to inadequately capture either the accuracy or incentive benefits of a fully principle-based approach.

Valuation of variable annuity guarantees

U.S. GAAP (generally accepted accounting principles) requires market-consistent valuation of some of the financial guarantees embedded in variable annuity (VA) liabilities. Generally, we would expect real-world risk assessment to be more sensitive to the defects of a principle-based system than market-consistent valuation. But this example provides some insight into the issues that can arise when risk/cost measurement isn't separated from risk management.

Many firms dynamically hedge the U.S. GAAP P/L (profit/loss) volatility that is generated by their VA guarantees and U.S. GAAP valuation requirements. Interestingly, because this valuation is a highly technical and difficult task, those who are responsible for determining the risk-management strategy (which risks are hedged, and with which financial instruments) also often have a major influence on the models that are used to measure the value of the liabilities (and their sensitivity to financial market risks).

When hedging teams' performance is assessed on the accuracy of short-term P/L volatility results, this creates an incentive for them to define the valuation models—and the valuation's sensitivity to risks—in a way that's easy to hedge (in the short term). For example, by ignoring credit default risk or equity-option-implied volatility skew in the market-consistent guarantee valuation, there's less apparent risk that then needs to be hedged in order to deliver a less effective hedging strategy). This improvement in short-term performance comes at the expense of long-term hedging performance. The experience of the fourth quarter of 2008 highlights how significant this effect can be. There were significant market risks driving VA behavior that were simply absent from the

...local modeling without independence between risk measurement and risk management can limit the incentive benefit of a principle-based system.

valuation calculation (in particular, the credit risk in underlying VA funds, which is arguably the single biggest risk exposure for VA business in the presence of good equity and rate-hedging programs).

This is an example of how local modeling without independence between risk measurement and risk management can limit the incentive benefit of a principle-based system.

Statutory capital for variable annuities

A principle-based approach to statutory capital for variable annuities has now been in place in the U.S. for several years. The Academy provides an economic scenario set for interest rates and equities that's been pre-approved by regulators and a majority of firms use it, regardless of whether the risk-management strategy that's being undertaken is a naked equity exposure, a dynamic delta hedging strategy, or a static option-based hedging strategy.

This is worrying as the natures of the risk exposures that are left behind by these strategies are fundamentally different. Firms with no equity hedging strategy are exposed to poor long-term equity returns (e.g., an equity total return of zero over the next 10 years). That's no longer a risky scenario for those with a dynamic delta hedging strategy. The risky scenario is one in which weekly equity volatility spikes to 100 percent for several months over the next 10 years, or where there is a 30 percent equity fall in one day.

The pre-approved scenario set was designed and calibrated to capture long-term equity-return behavior and isn't effective in capturing forms of equity-risk exposure left behind by dynamic hedging strategies. Moreover, the equity volatility levels produced by the pre-approved scenario set are so much lower than those implied by equity-option prices in recent years that they significantly understate the risk-capital reduction that reasonably could be estimated to have been achieved by an option-hedging strategy (by understating the pre-hedged risk capital requirement). This risk management disincentive is the ultimate anathema for a principle-based risk system.

My point is that a model/economic scenario set that represents one of those risks reasonably well may do a very poor job elsewhere. And the benefit of a principle-based system is to allow a firm to choose the model/calibration that efficiently and effectively represents the risk profile left behind by its risk-management strategy. This adaptive dynamic that's at the core of the principle-based approach is absent from market practices in U.S. principle-based approaches to statutory capital.

Solvency II

Unlike the above examples, Solvency II's implementation isn't yet complete. But the risk-measurement production architectures that are being discussed tend to share many of the above traits. For example, a number of large groups intend to centrally own and develop economic scenarios for application in the capital assessments of the business units, using a similar process to their current group EC processes. In some territories, the local regulator has raised the prospect of the provision of a standard scenario set that could be used by all businesses in the principle-based regulatory capital assessment. Both of these sources of scenarios are arguably examples of external prescription rather than a local, adaptive principle-based process.

The option to use the standard formula in the solvency capital requirement is unambiguously a prescriptive approach. That doesn't mean it's not appropriate to include the standard formula as an option for firms where the materiality of risk exposure makes a simpler, prescriptive approach quite reasonable (as a general rule, principle-based approaches are more costly and complex to implement than prescriptive approaches). But we should at least be clear that this is a prescriptive method, and that the benefits associated with principle-based approaches cannot be expected to accrue under this approach. As with any other prescriptive approach, there will be incentives to game the risk measure and to structure risk-management strategies that are designed to exploit regulatory arbitrage opportunities rather than mitigate economic risk.

While the standard formula is a significantly better method of prescription than net premium valuations, it looks increasingly likely that it will include some features like the equity dampener that limit a robust measurement of market risk. A universal rule of investment banking is that

Firms striving to pass the Use Test should implement a dynamic risk-measurement function that sits at arm's length from risk-management decision-making.

it's very good at creating ways to exploit a government-prescribed capital formula, and the more ad-hoc formula adjustments that are included, the more likely it is that those formula-beating trades will contain less genuine risk reduction.

The interpretation of Solvency II's "Use Test" may create confusion between risk measurement and risk management. Clearly, the Use Test means that internal risk measurement has to be used for risk management. However, if this is simply interpreted as meaning that risk-management decisions need to be taken according to current internal model results, there's a risk that this simply gets back to the prescription-based problem of encouraging the arbitrage of risk-measurement calculations. Even though the risk metric may be an internal model in this case, that interpretation would imply that the model is static and exogenous to the risk-management strategy. Instead, firms striving to pass the Use Test should implement a dynamic risk-measurement function that sits at arm's length from risk-management decision-making, and which continuously and independently revises its measurement methodology as risk-management strategy develops.

Towards a true principles-based system

In summary, it could be argued that while each of the above examples has moved from an actuarial formula to a simulation-modeling approach (and reaped significant benefits in the process), none have yet managed to create the fundamental dynamics of a truly principle-based approach. This is particularly true in the use of stochastic economic scenarios. To continue to progress towards a fully principle-based system, two fundamental (and related) developments will be key across all of these implementations:

1. More risk modeling must be decentralized and owned at the local business level, so that risk-measurement models can be tailored to local risks. This will facilitate better measurement of the risk exposures of each business. It will also remove the local business unit's incentive to game its risk-management strategy against a prescribed model provided by their regulator or head office. This decentralization of the risk-modeling process will create practical and technical difficulties. For example, aggregation of business exposures to create a group-level measure will be harder when each business area is using different equity models. But different business areas may face completely different forms of equity risk—some are exposed to long-term equity falls, some are exposed to high levels of short-term volatility. We are fooling ourselves if we believe a prescriptive one-size-fits-all approach is capturing all risks well merely by virtue of using stochastic simulation instead of a formula.
2. There needs to be a clear demarcation between risk measurement and risk management. Risk managers shouldn't be responsible for the design or calibration of the risk-measurement model. Indeed, the less they know about it the better (in a principle-based system this knowledge is less useful in any case, as the risk-measurement area will revise the model as risk-management strategy changes). The risk-management function should manage economic risk exposures as they find them. The risk/capital-measurement function should independently assess what risks have been left behind.

Disclaimer

Copyright 2010 Barrie & Hibbert Limited. All rights reserved. Reproduction in whole or in part is prohibited except by prior written permission of Barrie & Hibbert Limited (SC157210) registered in Scotland at 7 Exchange Crescent, Conference Square, Edinburgh EH3 8RD.

The information in this document is believed to be correct but cannot be guaranteed. All opinions and estimates included in this document constitute our judgment as of the date indicated and are subject to change without notice. Any opinions expressed do not constitute any form of advice (including legal, tax and/or investment advice).

This document is intended for information purposes only and is not intended as an offer or recommendation to buy or sell securities. The Barrie & Hibbert group excludes all liability howsoever arising (other than liability which may not be limited or excluded at law) to any party for any loss resulting from any action taken as a result of the information provided in this document. The Barrie & Hibbert group, its clients and officers may have a position or engage in transactions in any of the securities mentioned.

Barrie & Hibbert Inc. and Barrie & Hibbert Asia Limited (company number 1240846) are both wholly owned subsidiaries of Barrie & Hibbert Limited.