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Capital to do what?

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The last five years have borne witness to a fundamental and global shift in approach to the assessment of capital requirements for insurance groups, both for regulatory and internal management purposes. Traditional, prescriptive, actuarial formula-based approaches have given way to principle-based approaches that empower firms to use internal risk management models to assess their own particular risks.

This trend has been seen in many of the world's largest insurance markets. In Europe, the United Kingdom's FSA was one of the first regulatory regimes to fully embrace principle-based reserving. The Solvency II process will roll out a similarly principle-based regime across the European Union over the next few years. In North America, the Academy of Actuaries' Principle-Based Approaches pursues a similar agenda for U.S. insurance regulation. And South Africa recently implemented a sophisticated principle-based regulatory capital regime for its insurance sector.

The shift from prescription to principle-based capital assessment can revolutionize the measurement of the often complex market risk exposures that sit on insurance group balance sheets. This richer risk measurement information can be used in a number of core areas of financial management for insurance groups: it can facilitate and incentivize more rigorous capital and risk management strategy; ensure a better alignment of risk and capital; and bring transparency and discipline to product pricing and design. Of course, these benefits do not come for free. The development of internal models often requires significant actuarial and IT resources. For the users of principle-based capital results (regulators, rating agencies, auditors, analysts, internal management), there is a requirement for sophisticated skills to be used in the appraisal of the firm's implementation of the capital assessment process (which in turn requires firms to make appropriate disclosures and communications to meet these demands).

One of the most striking requirements of a principle-based approach is the need it creates for an unambiguous definition of what capital adequacy means. In other words, what is the purpose of prudential capital? What definition is used to determine how much capital is enough?

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Broadly speaking, two distinct schools of thought have emerged on the definition of principle-based prudential capital.

The first defines capital as the amount required to fund all future liability cash flows from existing business as they fall due, at some specified level of confidence.¹ This is perhaps



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¹ This is typically defined as the 95th percentile, i.e., how much capital is required to ensure all liability cash flows can be funded in 95 percent of stochastic simulations. Some territories use a conditional tail expectation (CTE) as an alternative definition of the required confidence level. For example, a 90 percent CTE means capital is held to meet the average additional capital required in the worst 10 percent of simulated scenarios. This type of confidence definition is most commonly used in North American capital assessment.

the most natural probabilistic implementation of traditional actuarial thinking on the purpose of prudential capital. We refer to it as the run-off approach.

The second approach takes a different perspective: instead of asking how much capital is required to fund the run-off of all existing liabilities and their embedded risks, this approach looks at how much capital is required to fund the short-term transfer of liabilities and their risks to a willing third-party, again at some specified level of confidence.² This amount is assessed by calculating market-consistent values for liabilities and projecting the market value balance sheet (usually over a one-year horizon). Required capital is then defined as the amount needed to ensure sufficient assets are available to meet the year-end market-consistent liability value at the specified confidence level (this is usually referred to as the value-at-risk). We refer to this as the VaR approach.³

Which is the Right Approach?

These two capital definitions represent fundamentally different perspectives on what capital is there to do.

- Proponents of the VaR approach argue that the insurance firm's option to transfer its risk to a third party should be recognized by the capital assessment definition. They might also argue that, as the market-consistent liability value represents the current cost of hedging, it should be a floor for the required capital, and that any asset strategy that does not hedge should incur an explicit additional capital charge. The VaR approach has those properties.

- Proponents of the run-off approach argue that short-term market price volatility should not be the focus of long-term insurers' prudential capital assessment. They will point out that, in the short term, markets often get it wrong and overreact. And in any case, the size and illiquidity of insurance liabilities makes the "cost of transfer" a purely theoretical quantity, and prudential capital isn't theoretical.

Pragmatists might consider an alternative perspective on this question: of these two definitions, is one of them clearly easier to objectively calculate? We like this approach. However, even this question has no clear-cut answer.

Run-off assessments can suffer from significant sensitivity to a range of very difficult long-term modelling assumptions—from assumed management actions that would be taken decades from the assessment date, to very long-term assumptions regarding the size of the equity risk premium.

However, under the VaR approach, there are also challenges. In particular, the market-consistent valuation of long-term liabilities is difficult when so many of insurers' market risk exposures are not generally traded in an observable market (e.g., 30-year S&P 500 market-implied volatility, any real estate volatilities, long term equity / interest rate correlations, etc.).

Fundamentally, calibrating stochastic models to measure risks that are very long-term and illiquid must involve considerable subjectivity, and this is true irrespective of the prudential capital definition.

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² This is usually defined at a higher level than the run-off approach (because risk is being assessed over a shorter time horizon) and is typically around the 99.5 percent confidence level.

³ Other names such as the exit value approach are equally applicable and perhaps more appropriate given that capital could be defined using CTE rather than VaR under this approach. However, the VaR terminology is more globally recognized.

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However, there is perhaps one additional advantage that the VaR approach has to offer: at its core is a market-consistent valuation of liabilities. This value, in our view, is a crucial element of economic management of an insurance business, irrespective of whether it plays a part in the prudential capital definition. It is a fundamental measure of economic profitability: financial theory and recent history tell us that offering investment guarantees at prices below their market-consistent cost is unsustainable and value-destroying. In recent years, the European insurance market has learned that the hard way. Market-consistent VaR implementation can help others avoid making the same mistakes.

Having market-consistent liability valuation at the core of prudential capital helps to align product development, pricing, investment strategy, risk management and capital assessment more clearly and consistently. Incentivizing and supporting economically rigorous financial management and decision-making is, in our view, the single greatest prize of a principle-based approach to capital adequacy. We believe it is not coincidental that many of the most rigorous and successful market risk management programs have occurred in territories where market-consistent valuation has been a core part of risk capital assessment. For this reason, we believe that the market-consistent VaR approach is the right choice for prudential capital assessment.

So What is the World Doing?

The last five years' developments in global principle-based approaches to prudential capital can be considered in two categories: the development of principle-based capital regimes that have been adopted by regulators; and the

development of firms' internal economic capital frameworks. The methods used in the latter are, of course, subject to less public disclosure than the regulatory requirements. Nonetheless, many global insurance groups have been publicly transparent about their approach to economic capital assessment. The table below summarizes the prudential capital definitions used in the various regulatory and publicly disclosed major internal principle-based capital implementations (note that while a number of North American insurance groups have EC implementations underway, they have to date tended to be less public in their disclosure of their methodologies).

	Market-Consistent VaR	Run-off Cash Flow
Regulatory Capital	Denmark (2002) Netherlands (2004) South Africa (2006) Switzerland (2004) United Kingdom (2004) EU Solvency II (scheduled for 2011)	United States (C3 Phase II; ongoing PBS process) Canada (Capital for segregated funds)
Internal Economic Capital	Allianz AIG Aegon Aviva ING Munich Re Zurich Financial Services Some North American Life Groups	Some North American Life Groups Global P&C groups

Exhibit 1: Some Principle-Based Capital Implementations in Global Insurance

Perhaps the most striking feature of the above Table is that the North American regulatory regimes are going down a different path to most of the major implementations of principle-based insurance capital publicly seen or planned in the life sector in recent years. This can be partly explained by the fact that real-world run-off projections have been successfully used for many years in the North American life sector in areas such as asset-liability management—much more so than was historically the case in Europe prior to 2003.

It is interesting to note, however, that significant use of market-consistent liability valuation occurs presently in North America in the area of variable annuity (VA) valuation and hedging. Indeed, this is arguably the most sophisticated implementation of a principle-based market-consistent valuation framework anywhere in the global insurance sector. And it has led to what are unarguably the most comprehensive market risk management programs in use in the global insurance sector.

The North American VA hedging experience is a powerful example of how principle-based market-consistent ALM frameworks can provide platforms for improved and sophisticated risk and capital management. We believe that this success, the success the above regulatory regimes and global insurance groups have had in using market-consistent valuation as a core part of principle-based capital and the positive impacts this has had on the development of rigorous risk management processes merit the attention of North American regulatory policymakers.

In Summary

The assessment of insurance group capital requirements is undergoing a fundamental and global shift from prescription to principle-based approaches. We believe this shift is a crucial catalyst that will drive improvements in the financial management and reporting of market risks on insurance group balance sheets.

A principle-based approach to capital adequacy requires a quantitative definition of the required level of capital. Two distinct approaches to this definition have emerged—the run-off approach and the VaR (or exit value) approach. Both of these approaches have their relative advantages and disadvantages regarding implementation and ease of understanding. We believe both are reasonable approaches, and the implementa-

tion of either approach will produce significant benefits for insurance groups.

We believe the VaR (or exit value) approach has at least one additional “spin-off” benefit. In particular, its foundation in the market-consistent valuation of liabilities means that capital assessment can be more easily aligned with the assessment of the economic profitability of the business. This can be important in developing a coherent and consistent overall approach to financial management that applies to risk and capital assessment, product design and pricing, investment strategy and capital management.

Across the globe, most of the publicly disclosed internal economic capital implementations of major insurance groups have adopted the VaR approach (though it should be noted that a number of U.S. insurance groups currently have EC implementations underway where the methodology has not yet been publicly disclosed). Similarly, most principle-based regulatory capital implementations across the globe have used a VaR approach. The main exception to this has been in the United States and Canada, where the emerging principle-based regulatory approaches have so far eschewed the use of market-consistent liability valuation and focused solely on a run-off basis for regulatory capital assessment. We would encourage North American regulatory policymakers to further explore whether the use of market-consistent valuation and the VaR approach can offer additional insights to insurance group regulatory capital assessment. ♦

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