

**CAPITAL EFFICIENCY
FOR MULTINATIONAL INSURANCE OPERATIONS**

KAREN TAN
GROUP CAPITAL MANAGEMENT
SWISS RE
ZURICH

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ABSTRACT

Capital is becoming an increasingly important resource to manage for insurance operations. Not only are capital costs a key component for the pricing of insurance contracts, they need to be included in economic valuations. Capital also defines the major measure of corporate profitability: return on equity.

In today's insurance environment, numerous players around the globe are involved in defining capital and solvency requirements, making the rules for capital management rather complex. This paper sets out to outline the various aspects and views towards capital, and aims to provide a framework for multinational insurance operations in managing capital efficiency.

INTRODUCTION

Definition of capital

Capital as a financial concept has probably as many definitions as users. In large multinational financial institutions, the variety further increases. "Capital" can be used to define net worth, working capital (a measure of liquidity), market capitalization (which depends on the firm's share price) human capital (employees), and often, assets in general (Long Term Capital Management was famously the name of a failed hedge fund). Its definition often differs according to jurisdiction and user group.

This paper approaches capital as the net worth of a company: i.e. assets minus liabilities, as is common for insurance companies. Hence, the amount of capital is a derivation, and it depends on how assets and liabilities are valued. Valuation differs according regime: there are accounting measures (e.g. US GAAP, International Financial Reporting Standards or IFRS), statutory measures that depend on jurisdiction, and there are economic measures (e.g. Market Consistent Embedded Value). These different approaches have historically been developed to meet the needs of different user groups.

Stakeholders in capital management

Regulators, rating agencies, and creditors are users that are most concerned with insurance operations holding sufficient capital to absorb risks and fluctuations in results. Hence, the amount of capital available is often compared to required capital, typically calculated to reflect risks inherent in the company. Shareholders, on the other hand, are not only concerned with solvency of the company, but are also interested in making sufficient risk adjusted return on the capital they have invested in the company. This defines the challenge of efficient capital management: maximizing risk adjusted return on capital within the international framework of solvency requirements.

This paper will elaborate on the different views of capital a multinational insurance operation needs to consider, and briefly discuss various tools available to manage capital efficiency. Finally, in summary, the actuary's role in this environment is highlighted.

CAPITAL VIEWS

In today's insurance environment, companies have multiple views to satisfy when addressing the issue of solvency and capital efficiency. Rating agencies, regulators, creditors and internal management have each their own definition of capital adequacy.

Capital adequacy requirements

Most capital views define a required capital level, assessed using a variety of methods, and compare this against the available capital (net worth again calculated using a different valuation bases). This is often expressed as a solvency ratio computed as available capital divided by required capital.

Required capital models

Broadly speaking, there are three main categories of required capital models. These are (1) rule based simple factor models, (2) rule based risk based capital models, and (3) principles based risk based models.

(1) Rule based simple factor models

Simple factor models typically specify a small number of insurance linked indicators such as premium volume, reserves or claims where a fixed percentage factor is applied to each. These are then typically added up and the total (or maximum) determines the required capital. The indicators are mostly available via the accounts of the company, and are hence retrospective in nature.

Examples of rule based simple models include EU Solvency I requirements, as well as the existing regulatory models in certain Asian countries such as South Korea and Hong Kong. Many Asian countries are considering changing to (2) rule based risk based capital models.

(2) Rule based risk based capital (RBC) models

Typically known as RBC models, these are similar to (1) in that they apply percentages to indicators of risk. However, the level at which the percentages are specified is more detailed (e.g. for each line of business) and a more holistic set of risks (e.g. premium risks, reserve risks, asset risks, credit risks) are considered. Calculation of required capital usually involves an aggregation formula that factors in some diversification impact between the various risk classes. As for (1) these models are generally retrospective in nature, and are calculated based on the accounts of the company for the last year. RBC models are the most common solvency models in the insurance industry.

Examples of RBC models include the Standard and Poor's Capital Adequacy Model, Canada's Minimum Continuing Capital and Surplus Requirement (MCCSR) for life companies and Minimum Capital Test (MCT) for non-life companies, and RBC models used in the US, Japan, Australia and Singapore.

Some of these regimes further supplement their RBC calculations with dynamic solvency tests (DST) where the future cash flows of the firm need to be projected based on certain economic scenarios. These are usually aimed at testing the asset-liability mismatch (as RBC models do not usually dynamically link investment risks to insurance risks.) An average or maximum of these results are sometimes added on to capital requirements. Examples of these include the resilience reserves required in the UK under Solvency I and Canada's DST. The standard model versions of the (3) principle based models are often variants of this RBC + DST approach.

(3) Principles based risk based models

An increasing number of regimes in Europe are moving towards principles based capital models. Here, no rules or percentages are actually specified for calculation of an insurance company's capital requirements. Companies are rather encouraged to come up with their own measure of risk based capital requirements based on stated principles. The onus is on the company to obtain approval from their regulators to use their chosen approach. Such principles based approaches are aimed at fostering better internal risk management.

Examples of principles based models include the UK Individual Capital Assessments (ICAs), and Switzerland's Swiss Solvency Test (SST).

Developments in capital adequacy models

Across the world, activity in enhancing insurance solvency or capital adequacy models has picked up since the early 2000s. These were aggravated by the worldwide financial crisis of 2000/2001 that prompted many insurance regulators to recognize the need for risk based solvency regimes. As a result many regulators are moving away from simple factor approaches to either RBC or principles based approaches. Recent changes and current developments include the EU Solvency II project and ongoing developments in many Asian countries.

Valuation bases for available capital

As indicated earlier, the amount of capital a company has is a derivation: assets less liabilities. However, the valuation of assets and liabilities is not necessarily consistent across regimes. There are differences between local statutory (regulatory) accounts, accounts used for preparing financial statements based on different accounting standards (e.g. local GAAP depending on jurisdiction, US GAAP, and IFRS), and economic valuation methods.

Differences could stem from any item being valued, although typical differences relate to

- valuation of investments: marked to market (using traded market value or consistent values), book value, or amortized cost;
- intangibles including goodwill and deferred acquisition costs: may or may not be included;
- valuation of insurance reserves non-life: nominal amounts, or discounted amounts (and if discounted, at what interest rates), allowance for equalization reserves; and
- valuation of insurance reserves life: assumptions used for future cash flows could be those used at the time of pricing (known as "locked in") or those that are currently expected at the time of valuation, or a combination thereof.

For the purposes of determining solvency, the amount of available capital usually includes a few differences to the simple assets minus liabilities formula. Examples of these include the potential addition of hybrid or subordinated debt to derive available capital. These debt instruments typically have capital characteristics since they are able to help repayment to policyholders in times of distress, and hence they are considered capital to many regulators (subject to certain limits).

Legal requirements

With such different regimes in place across the world, a multinational insurance group needs to understand the respective requirements and restrictions relevant to each of its worldwide operations in order to manage capital efficiently. For example, a single piece of business written in a branch of a company could simultaneously be subject to a number of capital requirements: in the branch itself, in the parent company, in a sub-group of the company, and at the group

level. And these requirements need not come from regulators only, but also potentially stem from rating agencies and internal risk management.

Local requirements and restrictions

Relevant understanding for each local operation includes a sound knowledge of the legal, regulatory and fiscal requirements. Different legal forms available include listed shareholdings, fully owned subsidiaries, joint ventures with local partners (including limits on foreign ownership), branches, and representative offices. Some of these legal forms could restrict the method of conducting business. And not all options will lead to the same local regulatory capital adequacy requirements. Certain countries may also exercise other softer restrictions including currency controls or investment restrictions that in effect constraint efficient capital management.

A particular example of such restrictions is US collateral requirements for liabilities assumed from US insurers by non US reinsurers. Collateral are posted to US insurers either in the form of trust funds or via letters of credit issued by banks. Such collateral requirements represent a soft form of capital that implicitly increases the price of (re)insurance coverage. The US national regulator the National Association of Insurance Commissioners (NAIC) is currently reviewing requirements for US reinsurance collateral, with a view to reduce requirements for financially strong reinsurers.

Another example is investment restrictions in place in many countries that limit the level of investments in certain currencies or in certain asset classes (e.g. corporate bonds, equities or real estate). For groups that apply a holistic risk based capital model elsewhere in the group, such local restrictions could impede asset-liability management, and may increase their risk capital costs overall.

Group supervision

Complex multinational insurance operations often include a combination of the above legal forms in different countries. In addition, they often subject to group supervision at various levels. For example, in the European Union (EU), the Insurance Groups Directive (IGD) specifies additional capital adequacy tests that can be applicable at national level or EU level. If the insurance group also conducts banking activities via its subsidiaries, for example, then the Financial Conglomerates Directive (FCD) could additionally apply. The main purpose of such group views on capital adequacy is to prevent excessive usage of capital leverage (where debt at holding company level is injected as solvency capital). Similarly, rating agencies such as Standard and Poors (S&P) often assess the capital adequacy of operations at company levels, national levels, and group levels.

Branches

Usage of branch structures can also result in multiple capital views being relevant. It is common that local branch level capital adequacy requirements need to be fulfilled in addition to headquarter capital adequacy requirements. From the view point of the headquarter, this amounts to liquidity restrictions at the branch level. Where branch volumes are material, branch capital adequacy requirements in aggregate could supersede headquarter requirements. In addition, the fiscal treatment of profits and the existence of double tax agreements between branch and headquarter countries also needs to be considered.

In the next section of this paper where some tools available for capital management are mentioned, no distinction is made between the various levels of capital adequacy requirements that may be applicable depending on the company's geographical reach and legal structures. The actual implementation of an efficient capital management strategy, however, requires that these be actively managed.

CAPITAL MANAGEMENT TOOLS

This section proposes a selection of tools that can be applied for capital management purposes. While these are not intended to be comprehensive, they reflect some of the solutions available for efficient risk and capital management.

Risk transfer instruments

Almost all the required capital models respond to risk transfer instruments, although in slightly different ways. These instruments aim to reduce the level of risk within the company, and hence reduce the amount of capital needed. For efficient capital management, though, the key is not only to focus on reducing the risk, but in a cost efficient manner so as to strive to improve the ROE.

Risk transfer instruments range from traditional reinsurance programs to insurance linked securities where risks are transferred to the financial markets. In addition, better hedging of risks via purchases of financial derivatives, as well as a better asset-liability management all help to reduce the overall level of risk to an insurance company.

Risk diversification instruments

Except for the simple factor models described above, most other capital adequacy models include a certain level of diversification allowance reflecting that not all risks will occur at the same time. Where legally allowed and effective in reducing capital requirements, instruments such as intra-group reinsurance and also risk swaps will help improve the level of diversification in companies.

Risk steering

For capital management to be truly efficient, capital needs to be steered at all levels of the company. In practical terms, this means that the amount of capital a single piece of business is exposed to (be it from rating, regulatory or internal risk requirements), needs to be considered in pricing, so the company only accepts risks adequately priced for capital costs. This requires capital to be allocated to all business levels.

In practice, this may be challenging to implement fully, as there is often a time lag between when capital requirements are computed and when pricing is done. For retrospective RBC models, the volume of new business, the value of assets at year end and claims incurred assumed at pricing time may be radically different from what actually transpires. A management mechanism for planning and managing this difference is hence crucial for attaining capital efficiency at all levels.

Alternative capital forms

As mentioned briefly in the section on available capital above, some categories of liabilities are eligible for treatment as capital. Hybrid capital and subordinated debt are the most common forms. Different regimes typically have different limits on how much each of these can be used. For example, the rating agency Moody's breaks hybrid instruments into baskets and assigns them different "capital credits" depending on how they behave in times of distress. Being able to fund a company on a cost efficient basis using such instruments will help improve capital efficiency overall, and allow the firm access to funds from different sources.

SUMMARY

In summary, an insurance group operating in a multinational environment is typically exposed to a complex set of regulatory and legal rules and requirements. This environment is currently in the state of change and represents an opportunity and challenge for insurance professionals. Actuaries are highly prominent and are often in the driver's seat of these changes. Armed with comprehensive knowledge of valuations, solvency and pricing, actuaries are in a privileged position to steer today's insurance companies towards better capital management and improved capital efficiency.

BIOGRAPHICAL DATA

Karen Tan qualified as a fellow of the Institute of Actuaries in 2000 and has almost 10 years experience in the reinsurance industry. Working for Swiss Re, Karen was a pricing actuary in Singapore before transferring to Switzerland, specializing on medical insurance and critical illness products. Subsequently, Karen worked on developing and implementing Swiss Re's Economic Value Management framework across the Group. She is currently leading the implementation of the Swiss Solvency Test (based on internal risk models) for Swiss Re and is involved in Solvency II developments.