

## **"Using Reinsurance to Optimize Capital Structure"**

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### Summary

Over the last several years, reinsurance has become an important element of the capital structure for many insurance companies. This development is most apparent in North America and is growing in importance worldwide.

Debt and equity are the most common forms of capital available to public companies. Reinsurance is a third form of capital available only to insurance companies. While all three forms can add to a company's assets, only reinsurance reduces a company's risks and liabilities. After reviewing the advantages and disadvantages of each form of capital, Mr. Atkinson will present a framework for building an optimal capital structure, with an eye to satisfying the needs of policyholders, regulators, rating agencies, and shareholders. He will present a number of examples to illustrate the process.

## **"Usando Reaseguro para Optimizar la Estructura de Capital"**

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### Resumen

En los últimos años, el reaseguro se ha convertido a un elemento importante de la estructura de capital para muchas compañías de seguros. El desarrollo es más aparente en Norte América y está creciendo en importancia mundialmente.

La deuda y el capital son las formas de capital más común disponible a compañías públicas. El reaseguro es un tercer tipo de capital solamente disponible a compañías de seguros. Mientras que cada uno de las tres formas pueden añadir a los recursos de una compañía, solamente el reaseguro puede reducir los riesgos y los pasivos de una compañía. Después de revisar los ventajas y desventajas de cada forma de capital, el Sr. Atkinson presentará una sistema para crear una estructura de capital optimizada, con miras a satisfacer los requerimientos de los asegurados, reguladores, agencias de calificación, y accionistas. Presentará unos ejemplos para ilustrar el proceso.

## **Why Optimize Capital Structure?**

Improper capital structures can lead to the extinction of the life insurance industry! When companies are inefficiently capitalized, owners earn too small a return, capital goes elsewhere, and there is no fuel for future growth. When companies take too much risk with their capital, insolvencies become more common, public confidence in life insurance erodes, and the life insurance industry declines. Interestingly, reinsurance can help companies avoid both of these problems.

### **Overview**

First, we will examine different approaches for determining the proper level of capital for life insurance companies. Next, we will examine typical capital structures used by life insurance companies. Finally, we will explore the use of reinsurance to optimize a life insurance company's capital structure.

### **What is the Proper Level of Capital?**

There are three important forces that determine the capital held by life insurers:

- Regulators
- Rating Agencies
- Insurance Companies

We will discuss each of these in turn.

### **Regulatory Approaches**

We'll start by reviewing the minimum capital requirements of five different regulators:

- Mexico
- European Union
- United States
- Canada
- Australia

#### **Mexico**

In Mexico, minimum capital consists of a flat minimum amount for each line of business plus \$0.30 per thousand of the average amount of insurance in force. There is no credit for reinsurance. Overall, these capital requirements seem low, but may be adequate in combination with conservative reserves

#### **European Union**

In the E.U., minimum capital requirements consist of a minimum guarantee fund of 800,000 Euros plus 4% of reserves (except for unit-linked business for which the requirement is only 1% of reserves and investment-linked business which has no requirement as a percentage of reserves) plus \$3.00 per thousand of net amount at risk

(except for products of less than five years). The maximum reinsurance reserve credit is 15% of reserves. The E.U. approach is simple, but seems conservative for mortality risk and reinsurance.

### **United States: RBC (Risk-Based Capital)**

The U.S. approach involves over 30 different factors for asset default risk. These factors vary by rating and type of asset, such as government bonds, corporate bonds, and mortgages. There are more than 30 additional factors for mortality risk, morbidity risk, interest rate risk, and other risks. Full credit is granted for reinsurance. Factors are applied to many different bases and in many ways; results are summarized into four risk groups: Two of the risk groups, asset default risk and interest rate risk are considered highly correlated. The other two risk groups are treated as uncorrelated. Reflecting the partial independence of the four risk groups, the final RBC result is less than the sum of the RBC contributions from each of four risk groups.

### **Canada: MCCR (Minimum Continuing Capital and Surplus Requirement)**

The Canadian approach is more advanced than U.S. in some ways, but very similar in many ways. Overall, Canadian capital factors are more conservative. Asset/liability matching can reduce reserve and capital requirements. Full credit is given for reinsurance. Two levels of capital add extra complexity. When combined with very conservative reserves, the balance sheet results can be ultra conservative: For example, \$100 of term insurance premium can result in \$500 of initial reserve plus \$300 of initial capital requirement for a total first year cost of \$800 before claims and expenses!

### **Australia**

Australian reserves are similar to U.S. GAAP reserves, with assumptions based on best estimates for mortality, lapses, interest rates, etc. Capital requirements are determined by recalculating reserves using “PADs”—Provisions for Adverse Deviations—which result in higher mortality, lower interest rates, etc. Full credit is given for reinsurance. There are two levels of capital requirements:

1. Solvency level—if violated, regulators will take over company; PADs are smaller than for the Capital Adequacy level.
2. Capital Adequacy level—if violated, the company must submit an acceptable plan to regulators in order to continue writing new business.

### **Comparison of Regulatory Capital Requirements**

Capital requirements in Mexico and the E.U. are easy to determine. The results seem low for Mexico and high for the E.U., especially for term insurance. Little or no credit is given for reinsurance.

Capital requirements in the U.S. and Canada are difficult to calculate, involving many factors. The results are lower in the U.S. and higher in Canada, due to large PADs in Canada. Full credit is given for reinsurance.

In Australia, the calculation of capital requirements is more difficult, but the PAD approach produces reasonable results. Full credit is given for reinsurance.

### **Rating Agencies**

Strong ratings may be essential when selling insurance to businesses, to sophisticated consumers, or through sophisticated agents. As a result, rating agency capital requirements are very important to many life insurance companies.

Rating agencies often look at insurance corporations in two ways:

- How much capital does the corporation have in its insurance company for solvency purposes?
- What is the capital position of the overall corporation, including its ability to raise additional capital and its debt to capital ratio?

In the U.S., we call these two perspectives “statutory” and “GAAP”

Rating agency formulas for capital requirements are similar to U.S. RBC and Canadian MCCSR. Rating agency formulas sometimes reflect a better insight into the business, especially if non-public information is reflected. Some rating agencies supplement their static formula approach with a more dynamic capital model, to reflect actual risks more accurately.

If a company can reduce its risk, it should need less capital. For example, if a company matches asset cash flows with liability cash flows, then interest risk is reduced. If a product is designed with cash values that reflect the market value of assets backing the cash value, then risk is reduced. If mortality and lapse risk are reinsured, then risk is reduced. A dynamic capital model would take account of such risk-reduction measures and the required level of capital would be reduced.

With a dynamic capital model, companies are encouraged to reduce risk in order to reduce their need for capital. Reducing capital requirements can increase return on investment and return on equity. One U.S. company has a goal of reducing its capital requirements by 25% through prudent risk management; this should increase its ROE by several percentage points.

### **Comparisons to Competitors**

Most companies compare their capital level with competitors and work hard to stay in line with their competitors. In the U.S., most companies have statutory capital that is between 200% and 300% of the minimum required amount of risk-based capital (RBC).

Another common method of comparison is to measure capital as a percentage of assets: Most U.S. companies have capital between 5% and 10% of assets.

### **Company Formulas**

Some companies have developed their own capital formulas. These tend to be similar to capital formulas already discussed. A company's formulas might be based on goals such as:

- To remain solvent in all but the most severe and unlikely situations
- To maintain sufficient financial strength to continue writing new business under a wide range of circumstances

For example, the capital required for an asset may be the amount that will cover 95% of annual changes in market value. This is similar to "Value at Risk" (VaR), an approach used by banks to determine capital levels.

As another example, the capital required for mortality risk may be the amount needed to cover the largest mortality disaster in the last 100 year—the 1918-1919 influenza epidemic.

In general, capital is calculated to cover random fluctuations, changes in economic or market conditions, catastrophes, pricing mistakes, and legal, regulatory, and mass withdrawal (disintermediation) risks. Because many of the risks are unrelated, the total capital needed is less than the sum of the capital needed for each risk—this is the principal of diversification of risk.

### **Diversification Example**

Capital requirements are often tied to standard deviations. This example assumes that the capital needed for each risk is a multiple of its standard deviation. From elementary statistics, we know that the standard deviation for the sum of two independent risks can be calculated as the square root of the sum of the squares of the standard deviation for each risk.

Assume there are only two risks: interest risk and mortality risk:

- Capital needed for interest risk = 3 million
- Capital needed for mortality risk = 4 million

If the risks are totally independent, then the total capital needed can be calculated as the square root of the sum of the squares. In this example, total capital would equal 5 million, since 5 is the square root of  $(3^2 + 4^2)$ . This is significantly less than the sum of 3 million and 4 million.

### **Typical Capital Structures**

Life insurance capital structures commonly include equity, debt, and one or more forms of mezzanine financing such as convertible debt, preferred stock, and trust preferred

notes. “Mezzanine financing” refers to forms of capital with features that place them in between equity and debt. For example, convertible debt is much like debt but is convertible to equity.

In recent years, many life insurance companies have begun to use reinsurance to better manage their capital usage and needs. Life insurance securitization (the creation of securities that transfer risk from insurance companies to the buyers of the securities) has been done only rarely due to the ease and low cost of reinsurance solutions. In a sense, reinsurance is the most efficient form of life insurance securitization by far.

### **Equity**

Raising equity is not an option for mutual companies. However, stock companies can raise capital by issuing additional shares of stock. This is most attractive (and less dilutive to existing shareholders) when the stock price is relatively high.

Equity is the safest form of capital. Equity constitutes well over half of total capital for most companies. However, equity is the most expensive form of capital, as shareholders typically expect returns on equity of 10% to 15%.

### **Debt**

Debt is not an option or is a very limited option (through surplus notes) for mutual companies. Stock companies can issue debt within reasonable limits. A debt ratio is commonly calculated as debt divided by the company’s total capital. Too high a debt ratio can result in a rating downgrade. Most stock life insurers have debt ratios between 10% and 30% in the U.S. and between 10% and 50% in Europe.

Debt is a more dangerous form of capital—the company must make interest and principal payments on time or face insolvency—but it is often the least expensive form of capital. Shareholders often prefer the company to have a reasonable debt ratio, as prudent use of debt often increases shareholder returns.

### **Mezzanine Financing**

Mezzanine financing has features of both equity and debt. This is an area of finance that is very innovative and fast changing. Examples of mezzanine financing include convertible bonds, preferred stock, and a growing category often referred to simply as “hybrids.”

Convertible bonds pay a lower interest rate than debt. They carry a right to convert to common stock at a fixed exchange rate. The conversion privilege carries the likelihood of capital gains and compensates for the lower interest rate.

There are many variations of hybrid securities, some of which are called “trust preferred” securities. Hybrid securities might have some of the following features:

- A long maturity (often 30 years)
- The security cannot be put—i.e., the buyer cannot force the issuer to buy back the securities
- The issuer may have the option to defer the payment of interest
- The security may be convertible into common stock
- The security may pay a higher interest rate than debt, such as 75 basis points (0.75%) higher.

The ratio of debt plus mezzanine financing to total capital is an important measure. For most stock life insurance companies in the U.S., this ratio is between 15% and 40%; in Europe, it is between 10% and 55%. The average in the U.S. is approximately 25%; in Europe it is approximately 35%.

### **Using Reinsurance to Optimize Capital Structure**

Reinsurance transactions usually improve a company's capital position, even when that is not the primary purpose. Reinsurance adds to capital by increasing assets or reducing liabilities. Reinsurance also reduces the need for capital by transferring risk. The net cost of reinsurance is normally less than the cost of equity and more than the cost of debt; the cost of reinsurance often depends on the level of risk transferred to the reinsurer.

### **Why Are Some Companies Inefficiently Capitalized?**

Some companies carry significant extra capital to comply with overly conservative accounting practices, reserving practices, or minimum capital requirements. Similar capital inefficiencies typically plague all of the companies that operate in a particular market or that sell particular products. For example, in most markets, the reserve and capital requirements for term insurance are excessive in the light of historical experience.

### **Why Are Some Companies Inadequately Capitalized?**

Companies can become inadequately capitalized for a variety of reasons. Some companies have difficulty tapping capital markets when they have experienced poor or volatile financial results. Some companies have difficulty because of a lack of accounting transparency or a lack of understanding of their financial results. The financial markets can and do shun companies that seem like poor risks. A company that has experienced a major loss of capital may find it has no source of new capital at a time when it needs capital the most.

Mutual companies are precluded from raising equity and other forms of capital with equity components. Debt does not work for a mutual company because it must be counted as a liability on the balance sheet; in a stock company, the debt would be issued at the holding company level and the proceeds would be contributed to a downstream insurance company.



Companies can experience rapid, unexpected growth of their business. This can result in excessive new business strain due to overly conservative accounting practices, reserving practices, or minimum capital requirements. Without proper advance capital planning, a company may find itself short of capital.

A company may find itself with a capital structure with too large a debt ratio. This can happen for a variety of reasons, such as large financial losses, a strong, continuing preference for issuing debt over equity, or a depressed stock price that has made equity issues unattractive for a long period of time.

### **Why Can Reinsurance Help?**

Reinsurance aggregates risk and reduces overall volatility by pooling many independent risks. The leading life reinsurers aggregate more than half a trillion dollars of mortality risk. The leading reinsurers are multinational and can bring to bear more rational approaches to accounting, reserving, and minimum capital requirements. Reinsurers often bring deeper experience and a more seasoned assessment of mortality risk, allowing a less conservative, more realistic approach to pricing and reserving.

### **Benefits That Reinsurance Can Bring**

Reinsurance can allow a company to rid itself of business with overly conservative accounting practices, reserving practices, or minimum capital requirements, while still keeping a share of the profits. Reinsurance can reduce risk, the volatility of earnings, and associated capital needs. By tapping the reinsurance markets, a company can often repay debt in order to build a safer capital structure. Or, a company can continue to write large volumes of new business by reinsuring the portion that it cannot afford to keep.

### **How to Evaluate Reinsurance Arrangements**

To properly evaluate a reinsurance arrangement, you should examine how the following change from year to year over the entire lifetime of the reinsurance arrangement:

- Capital
- Capital requirements
- Earnings
- Volatility of earnings and other risks
- Taxes

In many cases, you will want to calculate the present value of the changes in these items. You will need to impute a value for the reduced level of risk and the value of more stable earnings. Discounting should be performed using your cost of capital or the rate of return demanded by owners. Another approach would be to calculate the return on investment associated with the annual changes in capital, again imputing a value for more stable earnings.

## **Capital Management**

It is common for a company to manage its capital to achieve a desired ratio, such as 250% of RBC in the U.S. or 170% of MCCR in Canada. The goal of capital management may be to meet rating agency expectations, to remain competitive, or to meet regulator or company goals for financial strength.

Most companies try to minimize their use of equity, because it is the most expensive form of capital. Equity is usually issued only when other forms of capital are not appropriate. Most companies endeavor to make full use of debt, which is often the cheapest form of capital, but not so much as to endanger the company's ratings or financial strength.

More and more life insurance companies use reinsurance to provide three simultaneous benefits: to increase capital, reduce risk and reduce the need for capital. Because of these triple benefits, many companies use reinsurance even when they have plenty of remaining debt capacity. Reinsurance is almost always preferable to equity, except when the company's stock price is high and equity is cheap.

In a few cases, abusive reinsurance arrangements have given reinsurance a bad reputation with regulators and companies alike. For example, a reinsurance agreement that passed little or no risk to the reinsurer but allowed the company to significantly increase its capital would typically be viewed as abusive. Rather than enact regulations or guidelines to prevent such abuse, some countries have simply disallowed or shunned the use of reinsurance as a capital management tool. This is unfortunate and not apt to change quickly.

Over time, countries that do not allow the proper use of reinsurance may find their life insurance companies are not optimizing their capital structure. Such companies will find themselves at a competitive disadvantage when competing internationally against companies that can and do use reinsurance effectively. For some companies, the ability to use reinsurance to better manage capital will make the difference between long-term success and long-term failure in the highly competitive world of life insurance.