

reinventing reinsurance



Using Reinsurance to Optimize Capital Structure

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Why Optimize Capital Structure?

- Because 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, no fuel for future growth
- When companies take too much risk with their capital:
 - Insolvencies become more common, public confidence in life insurers erodes, life insurance declines
- Interestingly, reinsurance can help companies avoid both of these problems



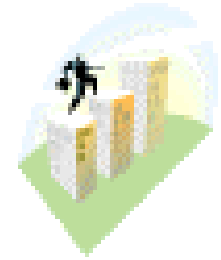
Overview



- 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



- A flat minimum amount for each line of business
- \$0.30 per thousand of the average amount of insurance in force
- No credit for reinsurance
- Overall, these capital requirements seem low, but may be adequate in combination with conservative reserves





European Union



- Minimum guarantee fund of 800,000 Euros
- 4% of reserves, except for unit-linked (1% of reserves) and investment-linked (0% of reserves)
- \$3.00 per thousand of net amount at risk, except for products of less than five years
- Maximum reinsurance reserve credit is 15% of reserves
- E.U. approach is simple, but seems conservative for mortality risk and reinsurance





United States: RBC (Risk-Based Capital)



- Over 30 different factors for asset default risk: Factors vary by rating and type of asset, such as government bonds, corporate bonds, mortgages
- Over 30 more factors for mortality risk, morbidity risk, interest rate risk, and other risks
- Full credit for reinsurance
- Factors are applied to many different bases and in many ways; results are added into four groups
- Asset default and interest rate risks are considered highly correlated. Other risks are not. Reflecting this, the final result is less than the total!





U.S. RBC Illustration



| Factor | Base |
|---------------|--|
| 0.00% | Book value of U.S. government bonds |
| 0.03% | Book value of A-rated corporate bonds |
| 30.00% | Market value of equities |
| 0.15% | Net amount at risk under \$500 million |
| 0.06% | Net amount at risk over \$25 billion |
| 0.005% | Life reserves |





Canada: MCCSR



(Minimum Continuing Capital and Surplus Requirement)

- More advanced than U.S., but in many ways similar; however, factors are more conservative
- Asset/liability matching can reduce reserve requirements and increase capital
- Full credit for reinsurance
- Two levels of capital add extra complexity
- When combined with very conservative reserves, 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 cost of \$800!





Australia



- Reserves similar to U.S. GAAP reserves, using best estimates for mortality, lapses, interest rates, etc.
- Capital requirements determined by recalculating reserves using higher mortality, lower interest rates, etc. (“PADs”—Provisions for Adverse Deviations)
- Full credit for reinsurance
- Two levels of capital requirements
 - Solvency level—if violated, regulators take over company; PADs are smaller than for next level
 - Capital Adequacy level—if violated, must submit an acceptable plan to regulators to continue writing new business





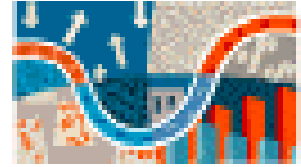
Comparison of Regulatory Capital Requirements

- Mexico and E.U.—easy to determine, but results seem low for Mexico, high for E.U., especially for term insurance; little or no credit for reinsurance
- U.S. and Canada—difficult, with many factors; results are lower in U.S., higher in Canada, due to large PADs in Canada; full credit for reinsurance
- Australia—more difficult, but PAD approach produces reasonable results; full credit 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



Two Perspectives



- 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



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





Dynamic Capital Model



- 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





Implications



- 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 their 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 level for risk-based capital (RBC)
- Another common comparison is capital as a percentage of assets: Most U.S. companies have capital between 5% and 10% of assets





Company Formulas



- Some companies, like RGA, have developed their own capital formulas
- Usually similar to other capital formulas
- Formulas are based on goals such as:
 - Remain solvent in all but the most severe and unlikely situations
 - Maintain sufficient financial strength to continue writing new business under a wide range of circumstances





Company Formulas



- For example, the capital required for an asset may be the amount that will cover 95% of annual changes in market value—similar to “Value at Risk” (VaR), which is 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 years (which is usually the 1918-1919 influenza epidemic)





Company Formulas

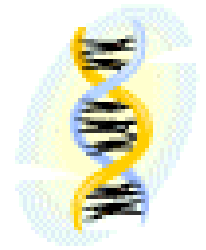


- In general, capital is calculated to cover random fluctuations, changes in economic or market conditions, catastrophes, pricing mistakes, and legal, regulatory, and mass withdrawal (disintermediation) risks
- Because many of the risks are unrelated, the total capital needed is less than the sum of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





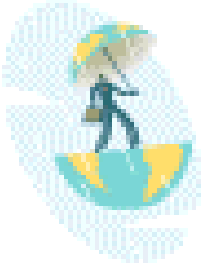
Diversification Example



- Assume there are only two risks: interest risk and mortality risk
- Capital needed for interest risk = 3,000,000
- Capital needed for mortality risk = 4,000,000
- If the risks are totally independent, then the total capital needed is equal to the square root of the sum of the squares
- $5 = \text{square root of } (3^2 + 4^2)$, so total capital needed = 5,000,000, which is much less than the sum of 3,000,000 and 4,000,000



Typical Capital Structures

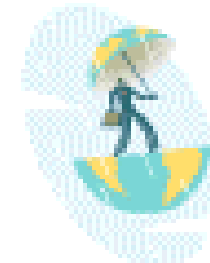


- Life insurance capital structures commonly include equity, debt, and one or more forms of mezzanine financing such as
 - Convertible debt
 - Trust preferred notes
 - ?
- In recent years, many life insurance companies have begun to use reinsurance to better manage their capital usage and needs
- Securitization has been rarely used by life insurers due to the ease and low cost of reinsurance solutions





Equity

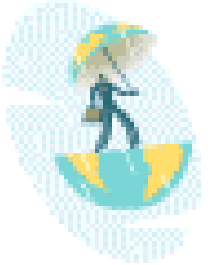


- Not an option for mutual companies
- Stock companies can issue additional shares of stock; this is attractive (and less dilutive to existing shareholders) when the stock price is relatively high
- Equity is the safest form of capital
- Equity constitutes well over half of total capital for most companies
- Equity is the most expensive form of capital—shareholders typically expect returns on their capital of 11% to 15%





Debt

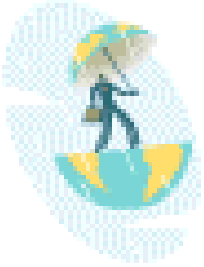


- Not an option or a very limited option (through surplus notes) for mutual companies
- Stock companies can issue debt within reasonable limits
 - Debt as a percentage of total capital has an effect on ratings—too much debt will cause a rating downgrade
 - Most life insurers limit debt to 10-25% of total capital
- Debt is a more dangerous form of capital, but it is often the least expensive





Mezzanine Financing

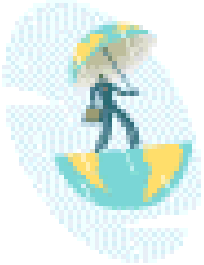


- In between equity and debt—some features of both; very innovative and fast-changing
- Convertible bonds
 - Pay a lower interest rate than debt
 - Can convert to common stock at a fixed exchange rate; likelihood of capital gains offsets lower interest
- Hybrid (aka Trust Preferred)—many variations
 - Long maturity (often 30 years); cannot be put
 - Deferrability of interest at the company's option?
 - Convertible into common stock?
 - Pay a higher interest rate than debt—75 bp?





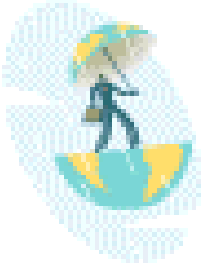
Using Reinsurance to Optimize Capital Structure



- Reinsurance transactions usually improve a company's capital position, even when that is not the primary purpose
 - Adds to capital by increasing assets or reducing liabilities
 - Reduces 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 depends mostly on the level of risk transferred to the reinsurer



Why Are Some Companies Inefficiently Capitalized?



- Some companies carry much extra capital to comply with overly conservative accounting practices, reserving practices, or minimum capital requirements
- The same capital inefficiency problems typically plague all of the companies that operate in a particular market or sell particular products
- Example: Term insurance in most markets





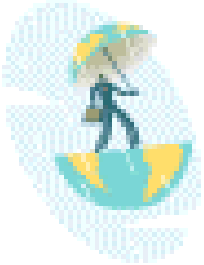
Why Are Some Companies Inadequately Capitalized?

- Difficulty or inability to tap capital markets due to poor or volatile financial results, lack of transparency, or mutual status
- Rapid, excessive growth of business
- Excessive new business strain due to overly conservative accounting practices, reserving practices, or minimum capital requirements
- Capital structure with too much debt





Why Can Reinsurance Help?



- Reinsurance aggregates risk and reduces overall volatility by the pooling of many independent risks. (The leading reinsurers assume more than half a trillion dollars of mortality risk.)
- Reinsurers are usually 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 approach





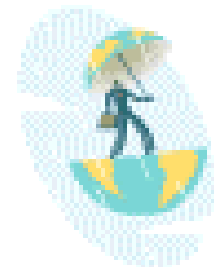
Benefits That Reinsurance Can Bring

- Offload business with overly conservative accounting practices, reserving practices, or minimum capital requirements, while keeping a share of the profits
- Reduce risk, volatility of earnings, and associated capital needs
- Repay debt to build a safer capital structure
- Continue writing large volumes of new business by reinsuring the excess





How Can Reinsurance Help?





How to Evaluate Reinsurance Arrangements

- Over the life of the reinsurance arrangement, look at the effect on:
 - Capital and capital requirements
 - Level and volatility of earnings
 - Taxes
- Calculate the present value of these items (don't forget to impute a value for more stable earnings) using your cost of capital or the rate of return demanded by owners
- Or calculate the ROI of the changes in capital, again imputing a value for stable earnings



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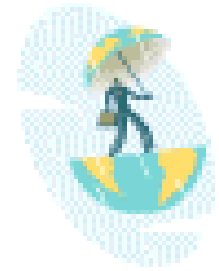


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Capital Management



- 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
 - to meet rating agency expectations,
 - to remain competitive, or
 - to meet regulator or company goals for financial strength
- Companies use several tools to manage their capital





Capital Management Tools

- Equity—requires a strong stock price when raising capital; if company has too much capital, it can buy back shares when stock price is low
- Debt—too much debt reduces financial strength and raises the cost of debt
- Reinsurance—company shares cost of new business strain and portion of future profits with reinsurer; can match needs exactly
- Financial reinsurance—provides less capital, but company shares a smaller portion of future profits with the reinsurer





Capital Management Strategies

- Minimize use of equity, because it is the most expensive form of capital—shareholders usually want returns equal to government bond interest rates plus 6% to 10%
- Make full use of debt (often the cheapest form of capital), but do not use so much that you endanger the company's ratings or financial strength
- Use reinsurance to increase capital and to reduce risk and the need for capital, except when the company's stock price is high and equity is cheap



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Muchas Gracias!

Questions?

