



# Cost of capital and its use in valuing reinsurance

In a Solvency II context, Cost of Capital (CoC) is a widely used metric for assessing reinsurance. Guy Carpenter has seen this in practice in a number of capital related transactions we have worked on and this note is based on that experience. In it we cover:

- What is cost of capital?
- How is it applied to reinsurance?
- What are the benefits and pitfalls?

## What is Cost of Capital?

In general economics and accounting use, the cost of capital is broadly the required return on a company's funds – both equity and debt. That is, it is a measure of what return the company needs in order to pay both its debt interest and provide returns to shareholders.



Cost of capital is generally expressed as a percentage, reflecting:

$$\frac{\text{Total Cost (Required Return)}}{\text{Amount of Capital Held}}$$

One will often hear about cost of equity, cost of debt or weighted (average) cost of capital (WACC).

This concept has been widely used for many years in the finance and wider business community. However, there is no single way of measuring it.

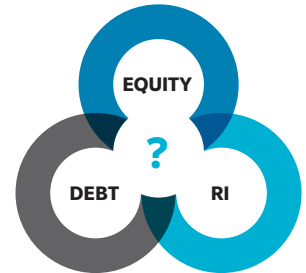


## Cost of Capital for reinsurance

Increasingly, reinsurance is seen as an important element of capital management. Reinsurance decisions are moving away from the reinsurance buyer and towards the finance teams. These teams need to find a way of comparing reinsurance in a straightforward way. Defining the cost of capital for reinsurance means that it can be compared with other capital sources.

Some care is needed in defining CoC for reinsurance: reinsurance does not provide capital directly; rather it provides relief from having to hold capital.

CoC for reinsurance is defined as something along the lines of:



$$\text{CoC for reinsurance} = \frac{\text{Cost of Reinsurance}}{\text{Capital Saved by Reinsurance}}$$

Whilst this feels intuitive, neither part of this expression is unambiguous, and this note explains why.



## Strengths and weaknesses

The overarching benefit of CoC is that by collapsing a reinsurance structure down to a single number it is possible to say whether a given reinsurance structure is “better” or “worse” than another, or against sub-debt or some other form of capital such as equity.

This simplicity is appealing. However, it also comes with dangers that may be overlooked by the unwary.



## Leverage and diversification

These are two distinct concepts that are treated together as their interaction is important in advising on the best course of action.

### Leverage

Many companies have an explicit target to maintain a Solvency II ratio significantly above 100%. This leads to a built in advantage for reinsurance over debt in that changing the required capital (denominator) has more of an impact than changing the available capital (the numerator).

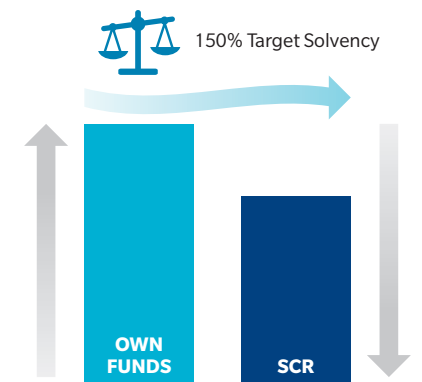
A simple example will bring this concept to life. Assume:

- Insurer has a target solvency of 150%
- Current capital requirement is £100m
- Current available capital is £120m

The current solvency ratio is 120%. The insurer can achieve 150% solvency via:

- Reducing the SCR by £20m or
- Increasing the capital by £30m.

Hence, we only need 2/3rds of the impact by using reinsurance rather than by raising capital. A common way of recognising this is to allow for this in deriving the “cost of capital” for reinsurance:

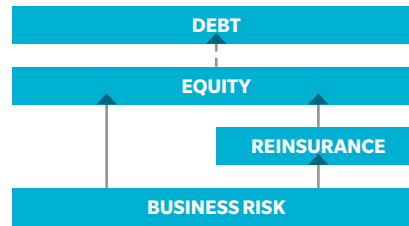


$$\text{CoC} = \frac{\text{cost of reinsurance}}{\text{targeted solvency ratio} \cdot \Delta \text{ in SCR}}$$

This allows for a fairer comparison between reinsurance and raising capital.

## Diversification

Offsetting this advantage for reinsurance is the impact of diversification. The required capital allows for the fact that not everything will go wrong at once so the overall capital required is less than the sum of its parts. What this means is that reducing the overall SCR by £20m as above may require changing the insurance risk element by £25m or £35m, depending on how diversified the business is.



The diversification also reflects that whilst capital is available to cover a multitude of sins, reinsurance only covers certain ones. Hence reducing catastrophe exposure does nothing to a company's market risk: capital would respond and protect policyholders from both.

## Risk transfer

Often cost of capital for alternative solutions is assessed under the assumptions that the insurer "meets plan". But this misses the fact that reinsurance, unlike other forms of capital, has asymmetric payoffs. That is, the economic cost of the reinsurance depends on the underlying experience: in bad scenarios reinsurance pays out; in good scenarios there is no more cost in general. In contrast, the cost of debt, say, is usually fixed.

Best practice is to carry out a full probabilistic analysis (e.g. in MetaRisk) but often showing a simple scenario analysis such as the following suffices to make the point that comparing cost on the assumption of meeting plan can lead to inefficient decisions:

Scenario	Cost of reinsurance capital	Cost of debt capital
Good	11%	8%
Plan	9%	8%
Bad	-2%	8%
Average	6%	8%

In this case reinsurance comes out cheaper on average. But even if this were not the case, reinsurance may have more value.

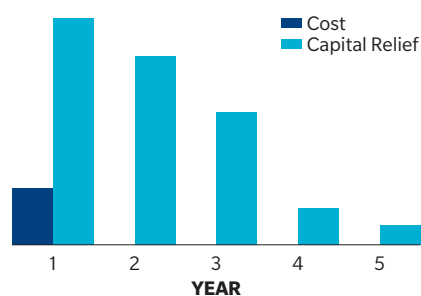
It is a truism that debt capital is cheaper than equity capital because the debt holders are exposed to less risk than equity holders. The same should be true of debt vs reinsurance. That is, often the value of the risk transfer of reinsurance is ignored.

Put another way, reinsurance protects shareholders; debt does not. So shareholders should be willing to pay more for reinsurance than debt, so a straight comparison is inappropriate.

## Lifetime Cost of Capital

The cost of equity/debt is usually defined according to the annual cost (dividend/coupon). It is easy to fall into the trap of measuring reinsurance in the same way. In return for "up front" payments while the contract is in force, reinsurance reduces the capital requirement for the full run off of the reserve. To give a comparable CoC, the reinsurance payment needs to be spread across all future years in which the capital is reduced.

This seems like a huge undertaking, but in fact this projection of capital benefit is broadly the same problem companies face when they calculate their risk margins under Solvency II. This means that we can piggy back on the thinking that actuaries have done in this area. In particular we can make use of a standard simplification that actuaries use to derive a risk margin:



**SCR impact in first year × duration of ceded liabilities**

## Flexibility

Reinsurance can be structured in many ways, so can be tailored to needs. Debt and equity are much more blunt instruments. This aspect is lost in the CoC.

On the flip side, reinsurance tends to be shorter in duration than other capital sources which therefore bring more certainty to the table.

## Who to contact?

**In case of any questions or comments  
please contact your local Guy Carpenter  
representative, or**

**Andrew Cox**

*Managing Director, Strategic Advisory*

andrew.p.cox@guycarp.com

+44 (0) 20 7357 5165

### **Disclaimer**

Guy Carpenter & Company, LLC provides this report for general information only. The information contained herein is based on sources we believe reliable, but we do not guarantee its accuracy, and it should be understood to be general insurance/reinsurance information only. Guy Carpenter & Company, LLC makes no representations or warranties, express or implied. The information is not intended to be taken as advice with respect to any individual situation and cannot be relied upon as such. Please consult your insurance/reinsurance advisors with respect to individual coverage issues. Statements concerning tax, accounting, legal or regulatory matters should be understood to be general observations based solely on our experience as reinsurance brokers and risk consultants, and may not be relied upon as tax, accounting, legal or regulatory advice, which we are not authorized to provide. All such matters should be reviewed with your own qualified advisors in these areas. Readers are cautioned not to place undue reliance on any historical, current or forward-looking statements. Guy Carpenter & Company, LLC undertakes no obligation to update or revise publicly any historical, current or forward-looking statements, whether as a result of new information, research, future events or otherwise. This document or any portion of the information it contains may not be copied or reproduced in any form without the permission of Guy Carpenter & Company, LLC, except that clients of Guy Carpenter & Company, LLC need not obtain such permission when using this report for their internal purposes. The trademarks and service marks contained herein are the property of their respective owners.