

14. The purpose of capital and the impact of regulation

I now want to take a step back and consider why insurance companies – or other financial institutions – might hold capital, and the impact of regulation on the issues Stuart has discussed

15. What are the goals of capital requirements

Insurers can not be risk-free – unless capital is infinite

And the level of acceptable risk is ‘political’, not actuarial – there is nothing magic about 99.5% over one year - hence so is the level of capital

Within a company, capital allocation can be used to manage risk in a broad sense and drive decisions e.g. risk and capital allocation, pricing, hedging and performance measurement

From the shareholders’ perspective, they will be concerned about the frictional costs of holding excess capital – but they will also be concerned with the frictional costs of raising (or returning) capital and hence prefer a measure leading to stable capital through-the-cycle.

Andrew Smith seminal 1996 paper “How Actuaries can use financial economics” raised the concept of a comfort zone either side of a target level of capital within which shareholders would neither raise nor return capital.

But listed UK insurers maintaining a stable capital base have over the last 5 years come under pressure to return capital (in 2005-7), raise capital (post October 2008), return it (earlier this year) and now the focus again may be on raising capital.

Insurers would therefore prefer a coherent way to hold capital:

- Over and above the regulatory minimum
- Through the cycle
- And be able to communicate this to stakeholders

16. Competing regulatory objectives

In practice, regulation also faces directly competing objectives.

The very concept of regulation and capital management that is stable across regimes and “through the cycle” presupposes economic cycles – or in actuarial terms, mean-reversion – exist and can be identified.

Regime shifts however can also occur – e.g. Bank of England independence in 1997 had a material and persistent effect at the long-end of the GBP curve, or events like the financial crisis of 2008 that change beliefs. Telling the two apart is of course only really possible after the event – when it is too late.

Stabilising overall capital resources can be incompatible with a stable risk measure – in practice regulators have tended to massage the capital requirements in time of stress but without changing the formal objective – for example the relaxations to the UK resilience rule in 2001-3.

Flexibility in this regard can be helpful in terms of crisis but unhelpful over the longer-term

Andrew Haldane from the Bank of England referred in an October 2011 speech on Bank Regulation to the “time inconsistency” problem – “if debtors recognise that risks in contracts will not be enforced, they will no longer have incentives to price risk and exercise discipline themselves”. And he dates the start of this time inconsistency not to the run up to the credit crunch or to the “big bank” in the 1980s but to changes made 150 years ago.

Interestingly, the same Andrew Haldane was quoted in the Financial Times last week advocating relaxing capital requirements against loans to SMEs to help the economy. His overall argument is that capital requirements should be “dynamic and real-economy focused - at present, they are calibrated to the risk to a bank. In future, they need to reflect returns to society.”

Similarly regulators have the twin objectives of

- encouraging long-term decision making – and not overreacting to short-term price signals, versus
- the need for proper risk incentives and timely regulatory intervention – there is a common view that the Basle rules for banks fell into latter trap.

Avoiding pro-cyclicality can also easily tip over into contagion – for example should regulations at present be encouraging insurers to sell Italian and French government bonds, or to buy them?

17. Traditional vs. modern insurance regulation

Insurance regulation is changing from a traditional solvency I world – especially as practised in most of the rest of Europe, to “modern” market-value and risk-based valuation, as per Solvency II

Traditional insurance regulation has been about the long-term ability of insurers to meet claims as they fall due – which sounds eminently reasonable but then begs the question of how you properly assess this at a point-of-time to ensure timely regulatory intervention.

Solvency II answers this question by assessing the ability of an insurer to withstand a one-in-200- year extreme event, and have sufficient funds, after selling its assets at distressed prices to invest in “risk-free” assets, which will inevitably be trading at elevated prices, sufficient to defease liabilities.

Asset-based discounting, implicit margins, actuarial judgement and assumptions are replaced by exogenous risk-free rates, explicit capital, data and market prices. And annual or even triennial valuations replaced by daily solvency monitoring.

The inevitable effect is to reduce the risk of individual insolvencies but increase systemic risk and pro-cyclicality.

18. Modern regulation is more pro-cyclical

By pro-cyclicality we mean the risk that regulation exacerbates or even causes market cycles.

A simple example here is calibrating the costs of options and guarantees to market implied prices.

As markets fall, implied volatilities (and hence the market implied risk of further falls) increase, so the cost of guarantees increases – forcing insurers to raise capital or, more likely, reduce risk. This may result in insurers selling equities – causing further market falls – and a vicious cycle results.

19. Regime dependence – Point in Time vs. Through the Cycle

One live regulatory discussion is whether capital requirements should be

Point in Time – reflecting today’s market conditions and best available data
Or:

Through the cycle – stable across an economic cycle

We now consider a useful framework to look at these options

20. Edge of the world framework

In this simple diagram, the green square is the “centre” i.e. where we are at time 0 – e.g. current equity market levels.

The red circle is our view of the “edge of the world” i.e. our capital stress test level of the same variable – e.g. our view of a 99.5% stress of equity markets.

This capital is supposed to be sufficient to absorb severe losses over the next year – so how do we react if, instead, a moderate loss occurs.

We distinguish four cases:

1. Edge unmoved – in that case the risk capital fully absorbs the loss to our net-asset value and there is no need for the insurer to raise additional capital. This is a “through the cycle” view of the edge of the world.
2. Edge moves but less than the centre – partial loss absorption
3. The edge moves as far as the centre – insurer needs to raise capital to cover the actual loss, but no more. This is a “through the cycle” stress applied to our new starting point.
4. The edge moves more than the centre – this is the pro-cyclicality example we referred to earlier

2 and 4 are examples of “point in time” views – reacting to current market conditions.

21. Information content of adverse event

The “correct” theoretical response depends on what information you believe results from the loss experienced over the last time period,

1. Our view of the edge of the world is independent of current market level
2. Is consistent with mean reversion – and would be countercyclical
3. The loss has no impact on our view of future losses – other than changing the starting point
4. Here we assume the risk of a market fall increases the risk of a further fall

However, the practical response may be decided more pragmatically depending on the desired outcome.

22. Examples

To give some practical examples:

1. Interest rate down-stresses may already be close to 0% rates, or we may take a fixed event (post 2008 credit stresses) as our edge of the world.
2. Equity markets might be assumed to mean revert.
3. Expense assumptions may be a fixed stress applied to current levels.
4. A loss event may change our perception of risk – for example the QIS4 credit stress tests looked inadequate post the credit crunch

The evidence from equity markets suggests a greater risk of severe falls following a large fall – and this would certainly be the case if we calibrated our stress to market implied volatilities.

23. Solvency II

We now take a look at the current status of Solvency II and where it stands on the various issues we have raised

24. Solvency II – competing objectives

As mentioned earlier, regulatory objectives often compete – and there is a contradiction at the very heart of Solvency II.

The basis of Solvency II is a prospective risk-sensitive requirement – which implies a point-in-time approach.

However, the very next paragraph requires regulators to avoid the inevitable pro-cyclical effects as this is applied consistently to a €7 trillion industry.

Note that the wording assumes that regulators know which price movements are temporary – which in practice is only knowable ex-post, when it is too late.

An excellent recent thought piece from Barrie and Hibbert referred to this fundamental tension in the framework as “Solvency II Schizophrenia”

25. To be able to earn long-term market risk premiums

There are increasing concerns at a global level that regulatory changes – such as solvency II – will reduce the ability of insurers and pension funds to be long-term investors, with adverse implications for both their stakeholders, but also for wider society.

For example, I refer you to recent papers from the World Economic Forum and Committee on the Global Financial System, and this argument has also been used as a basis for much of the recent lobbying on Solvency II.

For insurers to be able to earn long-term risk premiums they will need to be able to withstand losses from fluctuations in these premiums without being forced to sell assets at distressed prices.

This will require a combination of:

- Holding sufficient buffer capital to withstand market value fluctuations – Italian government bonds are the classic example here, they may be capital free under the standard model but a lot of buffer would be needed to withstand market moves
- Hedges – for example equity put options – are a form of contingent capital since they increase significantly in value under both actual and assumed market falls
- Diversification of different risk assets – note that actual diversification is important as well as that recognised by the capital requirements
- Passing losses on to policyholders e.g. unit linked or participating business
- Or offsetting losses:
 - either by reducing capital requirements as losses occur – our “mean reversion” approach 2 from the “edge of the world”, or
 - or by absorbing the impact in technical provisions e.g. the matching premium

26. Issues and counter-cyclical mitigants

What is the current status of Solvency II?

In general terms, Solvency II has two key mitigants to pro-cyclicality:

- the ability for regulators to extend the recovery period to make good breaches of the SCR “in the event of an exceptional fall in capital markets”. But this does not apply to breaches of the MCR and hence may not be effective in very stressed markets
- The Standard Model has been calibrated on a “through the cycle” basis to historic rather than current data. However it is not clear insurers are allowed to apply this in their Internal Models, where there is a requirement to test consistency with the value of technical provisions (which will be market calibrated)

More generally, around Europe, under Solvency I there is typically a “magic asset class” that insurers regard as a good long-dated match for long-term insurance liabilities.

For example, for French or Portugal, it is equities whereas for UK and Spanish insurers it is credit. In Italy it might be Italian government bonds, in Scandinavia, where there is a dearth of long-term bonds, infrastructure and property and in Germany, it is actually making a deliberate duration mismatch.

Under the purest form of Solvency II these assets would typically have been under threat, so much of the lobbying and current discussions around Solvency II relates to these points.

E.g. the symmetrical adjustment mechanism for equities, matching premium for credit, macro-economic extrapolation for rates and the countercyclical premium.

As a result Solvency II is moving further away from its market consistent starting point.

Interestingly, the draft Level II text shows that regulators are keen to avoid contagion – and the risk of insurers “chasing the premium” and being incentivised to invest in certain assets.

The solution – for example for the counter-cyclical premium – seems to be to move away from pre-defined formulaic approaches in favour of regulatory discretion. The downside of this approach is that insurers may not be able to rely on regulatory flexibility and may be forced to sell assets in advance of clarity.

27. Equities symmetrical adjustment mechanism

The only explicitly formulaic counter-cyclical tool under Solvency II is the symmetrical adjustment mechanism for equities (“SAM”).

As envisaged at the time of QIS5, the current level of the equity market (based on the MSCI World index) would be compared to a three-year average level.

And the equity stress would be reduced or increased accordingly – essentially the fixed 39% stress is applied to the average rather than current market level. This is close to “full” loss absorption in our “Edge of the world” framework.

However, Article 106(3) in the Directive explicitly requires that the symmetric adjustment mechanism is limited to +/- 10% - i.e. the resulting equity stress must lie between 29% and 49%.

And as we can see from the graph, this cap or floor has in practice bitten two-thirds of the time over the last 5 years.

28. Is it effective? Yes with no cap/floor

Is the symmetrical adjustment mechanism (“SAM”) effective?

One way to measure this is to look at the stressed level of equities – the current market less the stress – as this is the level of equities against which capital must be held.

The blue line is pre-SAM, i.e. the market index less 39%.

The green line shows the effect of the uncapped SAM. This is actually negatively correlated with the index: -44% for changes in index level.

So the uncapped SAM is very effective – insurers wouldn’t have been forced sellers of equities in the second half of 2008 for example.

One might even argue the SAM is too effective – driving through the rear-view mirror – and interestingly the latest Level 2 draft text reduces the level – and hence effectiveness - of the SAM by 50%.

29. Is it effective? Cap/floor limits significantly

But with the cap in place, the correlation rises to strongly positive (+55%)

And more importantly, in times of absolute stress – e.g. Q4 2008-Q1 2009 – the floor quickly bites.

Yes the stress is reduced from 39% to 29% - and this would have made new investment in equity relatively more attractive than competing asset classes

But once the 29% floor is reached, any further falls in equities have a one-for-one impact on capital – in our edge of the world framework we are “neutral” and no better off than if there were no SAM.

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