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EEV and MCEV Standards

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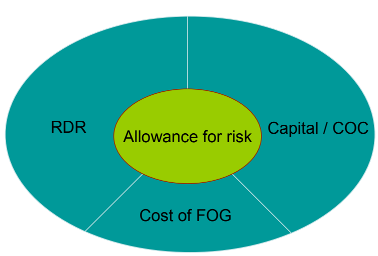
6 November 2006

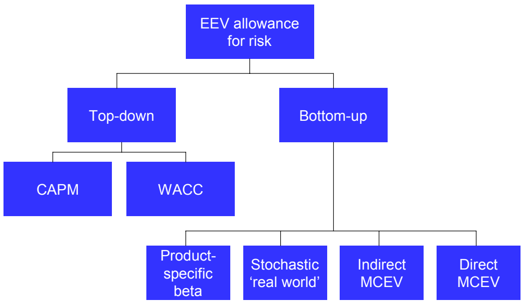
Agenda

- Where are we today?
- What do (or should) we mean by MCEV?
- Are there 'right' approaches and assumptions?
- How should we present the results?
- Where next?

EEV Principle 3 requires allowance for the aggregate risks in the covered business



A number of approaches have been used to allow for risk



Recent EEV announcements have favoured the bottom-up market-consistent approach

The market's requirements are clear

Bear Stearns
- The EEV principles are noble in the scale of their ambition, but the recommendations are not sufficiently prescriptive to achieve true comparability, in our opinion
- Critically, EEV has not resulted in a consistent and rigorous way of determining discount rates that clearly and explicitly takes into account the

Morgan Stanley
- The comparability of different disclosures under EEV is going to be significantly more limited than we would have hoped.

HSBC
- Does not address the issue of consistent and comparable valuations
- The EEV Principles embrace market-consistency, but the methodologies that many companies will be adopting are not market-consistent.

Citigroup Smith Barney
- Trust with the general investor will not be re-established until all companies adopt a market-consistent approach – we suspect there will be a real benefit for companies which go this way early

There should be a consistent approach using MCEV

- Many companies have chosen to adopt an MCEV approach to EEV – we think this will continue
- One of the key attractions of MCEV is that it is a "mark to market" approach
  - Makes it more comparable between companies
  - Reduces the subjectivity in results
  - Reduces the ability of management to "manage" the results
- This means that users of MCEV are less likely to haircut the results than with other approaches to EEV – if they understand what has been done

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- Where are we today?
- **What do (or should) we mean by MCEV?**
- What are the right approaches and assumptions?
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What do we mean by "Market Consistent" ?

- The amount for which an asset could be exchanged, or a liability settled, between knowledgeable, willing parties in an arm's length transaction **(IFRS Insurance Project Phase II).**

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Should it be at theoretical foundation of MCEV?

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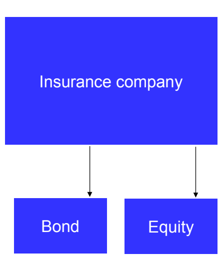
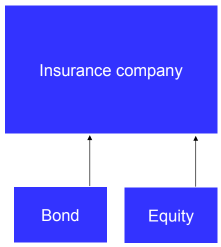
Causes more confusion than just about any other statement!

What is the market price of an asset?



- Bond and equity give holders right to receive cash flows from the insurance company
- Cash flows are not (and can not) be affected by who holds the bonds/equities
- All bonds/equities issued by a company have the same value, regardless who holds them
- But *controlling* ownership of the company would affect cash flows – value would depend upon ownership

What is the market value of a liability?



- Bond and equity give holders obligation to make cash flows to the insurance company
- Cash flows are not (and can not) be affected by who holds the bonds/equities (except for credit risk)
- All bonds/equities issued by the company have the same value, regardless who holds them (except for credit risk)
- But *transferring* ownership of the liabilities would affect cash flows – value would depend upon ownership

What do we mean by “Market Consistent” ?

- The price at which the right to receive, or obligation to make, cash flows to or from an insurance company could be traded, between knowledgeable, willing parties in an arm’s length transaction
- In practical terms, a valuation of these rights and obligations using:
  - arbitrage free pricing techniques
  - calibrated to relevant market prices
  - reflecting the companies own demographic experience and operation structure

A reminder about risk neutrality

$$V=\sum P(X)\cdot Z(X)\cdot H(X)$$

$$V=\sum Q(X)\cdot H(X)$$

- There are no risk neutral scenarios, just scenarios
- In each scenario, bonuses etc should be set as they would be in that scenario in real life
- In a certainty equivalent valuation they should reflect the certainty equivalent scenario

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In calculating MCEV, there are still a few areas of genuine disagreement…

- Choice of risk-free rate
- Whether and how to allow for a liquidity premium
- How to treat illiquid or non-existent markets
- How to allow for non-market risk

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…and many other areas where companies are not consistent with each other

- Expenses
- Quantum and cost of capital
- Valuation of debt
- Counterparty credit risk
- Sensitivities
- Analysis of movement
- Disclosure

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There are a wide range of approaches to the risk-free rate and to liquidity premia

Market practice in published market-consistent EEVs to date		
Company	Risk-free rate in MCEV model	Liquidity premium for fixed A / L matching
AXA	Govt. bonds	No
Fortis	Swaps	No
Munich Re	Swaps	No
Old Mutual	Not disclosed	Not disclosed
Friends Provident	Govt. bonds	No
Irish Life	Govt. bonds	Not disclosed
Resolution	Govt. bonds + 10bp	No
SJPC	Not disclosed	Not applicable
Prudential	Not disclosed	Yes – undisclosed amount

What is the appropriate risk free rate?

SWAPS

- Liquid market
- Regular trades at many durations
- Underpins traded options market
- Comparable markets across countries
- RFR implied by CDS market

BUT:

- Small level of credit risk (higher than AAA)
- LIBOR/LIBMID spread

GILTS

- Stronger credit promise than swaps (in UK)
- Used as basis for realistic balance sheet calculations

BUT:

- Market not deep and liquid
- "Repo special" distortions
- Creditworthiness varies by country
- Market option prices are based upon swap rates

A swap-based approach would give greater comparability

The argument for capitalising a liquidity premium

- Some assets in the market are less liquid than others
- These assets yield a higher return – a "liquidity premium"
- Some insurance liabilities (particularly immediate annuities) are felt to be predictable
- So life insurance companies have less need for liquidity than average investors
- … and can invest in less liquid assets
- This allows them to capture the liquidity premium
- And so to assume a higher risk-free rate

…but

- It is debatable whether annuity cash flows are sufficiently predictable that they could be perfectly matched with an illiquid asset
- Or whether a truly risk free illiquid replicating portfolio can be built
- Predictable cash flows may not be sufficient to permit use of a liquidity premium
- Corporate bond prices should reflect the liquidity needs of the main holders of corporate bonds
- The use of a liquidity premium in pricing or valuation is alien to other industries and most other European insurance groups

A limited liquidity premium probably exists

- Research shows that a small liquidity premium exists
  - Probably 10-30 bp above Gilts
  - Not statistically different from swaps
- The extent to which it is a 'free' return is unproven
- There is no evidence it applies just to annuities or any other product alone
- No-one but UK insurance companies use it in pricing or valuation

A small liquidity premium may be acceptable in theory. Whether this can be established in practice is unclear – but if a swap based risk free rate is used the issue goes away

Companies should be consistent with the markets that exist

- Where markets exist, valuations should be consistent with them
  - Full risk free and credit risky interest rate curves
  - Twenty year plus swaptions market volatilities
  - Five to ten year equity and credit derivative market volatilities
- Where markets do not exist, a sensible extrapolation approach is needed
  - Consistent with data that does exist
  - Consistent with economic theory
  - Fully disclosed
- Valuation approaches should be in line with broad market practice – no home growns!

The allowance for non-market risk is developing

Increased granularity

Top-down WACC
- AEGON
- Allianz
- AVIVA
- ING
- L&G

(No disclosed adjustments to the WACC)

Bottom-up plus CoC and addition to RDR
- AXA (0bp)
- Fortis (50bp)
- Munich Re (100bp)
- Old Mutual (0bp)
- Prudential (50bp)
- Swiss Re (250bp)
- Winterthur (300bp CoC)
- Irish Life (210 bp)

Bottom up & granular risk allowance
- Friends Provident
- Mediolanum
- Resolution
- RAS

- Market-consistent techniques increased the granularity of the allowance for market risk
- We are seeing the same trend in non-market risk

End 2005 EEV disclosures are not consistent with respect to the effect of non-market risk on EEV

Aviva	The market assessed risk factor [beta] captures the market view of the effect of all types of risk on our business, including operational and other non-economic risk.
Prudential	Financial theory cannot be used to determine the appropriate component of beta for non-diversifiable non-market risks where there is no observable risk premium associated with it that is akin to the equity risk premium.
Friends Provident	Best estimate assumptions may fail to represent the full impact on shareholder value where the impact of fluctuations in experience is asymmetric.

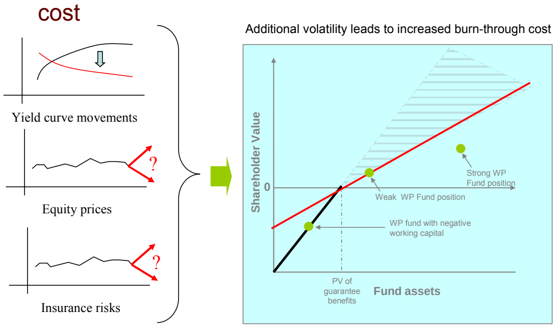
Financial theory: the market does not directly price diversifiable risk in the required return

	Coupon	Volatility	Price today	Return
Risk free investment	5%	0%	100.0	5.0%
Single risky investment	5%	20%	84.8	23.9%
Portfolio of two risky investments	5%	14%	92.4	13.7%
Portfolio of ten risky investments	5%	6%	98.5	6.6%
Portfolio of 1000 risky investments	5%	0.6%	99.8	5.02%

However, diversifiable risk may have an effect on the valuation in other ways

- What is a “best estimate”?
  - “An assumption that represents the expected outcome from the range of possible outcomes for future experience of that assumption” (Glossary)
  - “On average, experience should be ‘better’ than projected as much as it is ‘worse’ than expected” (Basis for Conclusions paragraph 85)
  - The best estimate should allow for asymmetries and rare events
- Valuations should allow for impact of diversifiable risk on embedded options
- Some ‘diversifiable’ risks may not be fully diversifiable
- Frictional costs of capital reflect diversifiable risk

Non-market risk can lead to greater burn-through cost



There are many areas where companies are not consistent with each other

- Expenses
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The frictional cost of capital approach is actually no different from a traditional EV

- VIF has leveraged equity risk
- Assets backing capital invested in risk free bonds
- Tax rate of 20%
- Duration of 5 years (ish)
- 100 of capital

MCEV

VIF	Capital
Required RDR = 9%	Required RDR = 5%
RDR=9%	RDR=5%
VIF=100	VOC=95
	COC=5

The frictional cost of capital approach is actually no different from a traditional EV

Traditional EV: VIF	Traditional EV: Capital	MCEV: VIF	MCEV: Capital
Required RDR = 9%	Required RDR = 5%	Required RDR = 9%	Required RDR = 5%
RDR=7%	RDR=7%	RDR=9%	RDR=5%
VIF=110	VOC=85	VIF=100	VOC=95
	COC=15		COC=5

What is the required quantum of capital?

- The capital actually required to run the company (on a going concern basis)
- Minimum based upon regulatory requirements
  - Greater of Pillar 1 and ICA in the UK
- Ideally include any additional capital management feel they require
- But only calculate cost of capital in in-force business
- Quantum should be disclosed

How should debt be valued?

- All debt valued at market value
- No allowance for debt tax shields…
- Unless clearly part of the covered business
- Disclose what is done

$$\text{WACC} = E/V\cdot(r_f+\beta\cdot(r_m-r_f)) + D/V\cdot r_d\cdot(1-t)$$

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Tax shield

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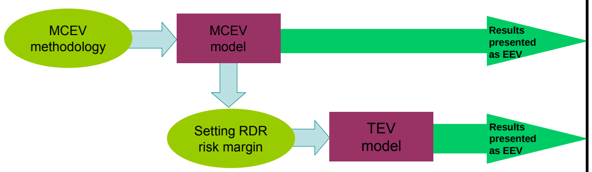
We recommend the direct approach to calculating MCEV



The different models give results which may differ:

- By product line
- By new business value
- By risk sensitivity
- Over time

The 'unwind' should not be at the risk free rate

There are three approaches to unwinding the VIF

- Unwind at risk free rate
- Unwind at implied risk discount rate
- Project the expected earnings

What should we disclose?

- In-force
  - Breakdown by Net worth, VIF, TVOG, CoC
  - Disclose quantum of capital
- New business
  - After CoC and TVOG
- Earnings
  - No separation of economic experience variances and assumptions
- Sensitivities
  - EEV broadly right (MCEV version)
  - Add volatilities

The MD&A

- Implied risk discount rates
- TVOG breakdown
- Mis-match risk
- Attribution of earnings

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We believe the time has come for a standard approach to MCEV

- Explicitly addressing market consistent valuation
- Covering the required approach to:
  - Valuation
  - Assumption setting
  - Analysis of movement
  - Presentation
  - Sensitivities
- Reflecting the requirements of analysts and other users of MCEV

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