The Actuarial Profession
making financial sense of the future

Developments under European and Market-Consistent Embedded Values

Paul Collins, Aviva plc
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Agenda

- History of EV reporting
- Recent developments and current approaches
- Focus on key issues
- Conclusions and discussion

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- **History of EV reporting**
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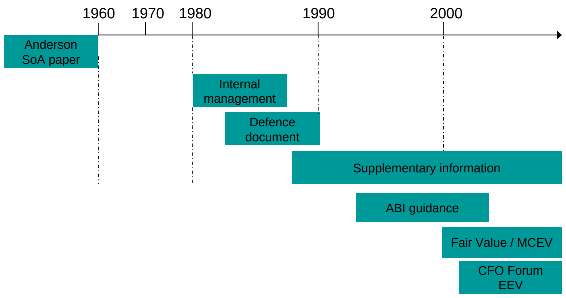
Historical development of embedded value



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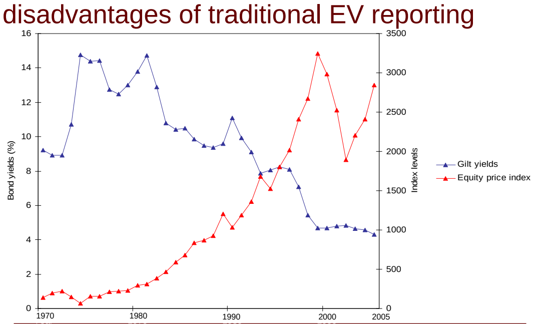
Investment market “shocks” highlighted the disadvantages of traditional EV reporting



Sources: long gilt yields, IMF (2004,2005); Equity price index, FTSE all-share index

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Industry response – CFO Forum Principles

CFO Forum launched the EEV Principles in May 2004 to address the main criticisms of embedded value reporting:

- Explicit valuation of the “time value” of options and guarantees
- Increased focus on approach to allowance for risk
- Cost of capital based on economic rather than regulatory capital
- “Look through” to service and holding company expenses
- Minimum disclosure standards

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EEV principles – summary

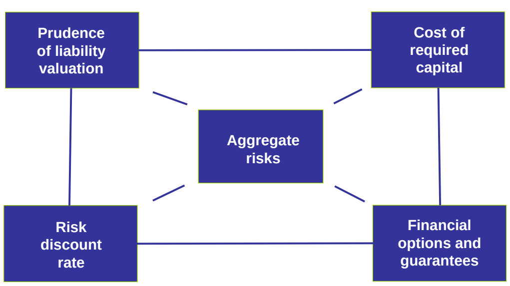
One common set of 12 principles covering:

- 1. What is EEV
- 2. Business coverage
- 3. Definitions
- 4. Free surplus
- 5. Required capital and cost of capital
- 6. Value of inforce covered business
- 7. Financial options and guarantees
- 8. New business and renewals
- 9. Assumptions
- 10. Economic assumptions
- 11. Participating business
- 12. Disclosures

Key (impact on Aviva):

- No change
- Small change, as previously substantially compliant
- Introduced changes to previous methodology

Allowance for risk in EEV calculations



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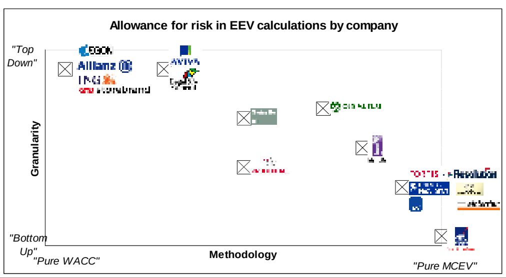
Recent developments

- Life insurance companies have started to publish results under the EEV Principles
- Institute of Actuaries' EV working party has published a paper on "Current developments in embedded value reporting" (February 2005)
- CFO Forum has responded to analyst comments by publishing Additional Guidance on EEV Disclosures (October 2005)

Current EV methodologies

Companies have adopted a wide range of approaches*



* CNP has adopted an MCEV approach for savings business, and a WACC approach for non-savings business

Comparison of WACC vs. MCEV

WACC / Top Down	MCEV / Bottom Up
▪ Holistic view of all risks (market-based)	▪ Explicitly calibrated to market risk (but some insurance liabilities are longer-term than the market!)
▪ Includes allowance for non-market risk?	▪ Separate allowance for non-market risk?
▪ "Non granular" – calculated at BU / Group level (difficult to allocate risk to products)	▪ "Granular" – calculated at product level (build up to BUs / Group)
▪ Single RDR – easy to explain	▪ Multiple RDRs – more accurate but harder to explain?

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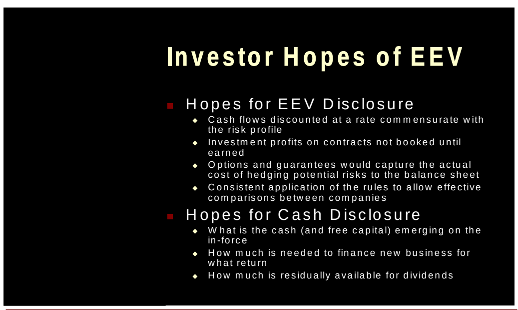
An external view of supplementary reporting



Source: Andrew Crean, Infoline EEV conference, 9 November 2005

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A number of different approaches are being used under the EEV banner

Issue	Practices to date
Calculation approach	Top-down WACC; or bottom-up product specific beta; or bottom-up market-consistent
Risk-free rate	Market yields or views of own economic department
Option valuation approach	Real world or market-consistent
Allowance for non-market risk	Best estimate plus CoC or additional allowances in RDR/option valuation/CoC
Valuation of debt	Marked-to-market or amortised cost
Quantum of capital	Regulatory and/or rating agency and/or economic capital
Cost per unit capital	Frictional costs or difference between RDR and NER
Pension scheme deficit	IAS 19 basis or PV future funding costs
Holding company expenses	To capitalise or not to capitalise

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A number of different approaches are being used within the 'market-consistent' banner

- Approach to market-consistent modelling
- Change in risk premia over time
- Sensitivities
- Analysis of movement
- Risk-free rate and liquidity premium
- Calibration of options
- Allowance for non-market risk

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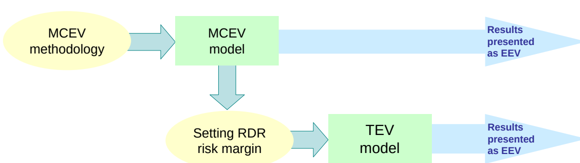
There are differences in how the models are used and results presented



The different models give results which may differ:

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

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There are differences in the change of RDR margin[1] between end 2004 and end 2005

Market-consistent publications

Company	Change in RDR margin
AXA	Varies by product & IF/NB
Old Mutual	No change
Swiss Re	No change
Friends Provident	Varies by product & IF/NB
Irish Life	Small aggregate change
Resolution[2]	Varies by product
SJPC	No change

Top-down WACC publications

Company	Change in RDR margin
Allianz	No change
Aviva	No change
ING	No change[3]
L&G	No change

[3] Additional repatriation risk margin introduced for developing regions

[1] RDR margin is defined as the risk discount rate less the risk-free rate
[2] Change from 30 June 2005 to 31 December 2005.

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AXA and Friends Provident RDR margins have changed from end 2004 to end 2005

Portfolio	AXA UK RDR margin (%)	
	2004	2005
UK value of in force	1.10	1.66
UK new business value	2.24	2.46

Product	Friends Provident UK RDR margin (%)	
	2004	2005
UK With Profits	11.8	10.1
UK annuities	7.8	6.4
UK unit linked and protection	2.0	2.1
UK new business value	2.0	2.4

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There are differences in the approach to calculate sensitivities

ILLUSTRATIVE

Sensitivity	**Traditional approach**	**Market-consistent approach**
Base EEV Impact of:	**1,000**	**1,000**
1% increase in RDRs	(50)	N/A? (50)?
1% increase in equity/property expected returns	45	0
100 increase in capital requirements	(20)-(40)	(5)-(25)
5% reduction in annuitant mortality	(20)	(30)

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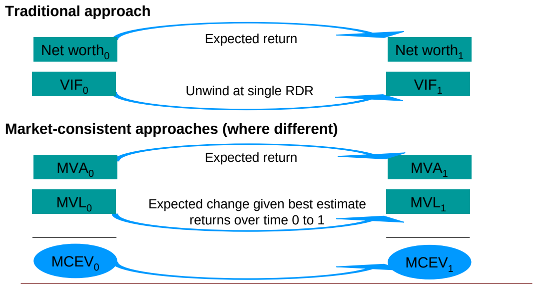
There are differences in the analysis of movement approach



Note: under the market-consistent approach above, the overall expected return on MCEV can still be split into expected return on net worth and expected return on VIF.

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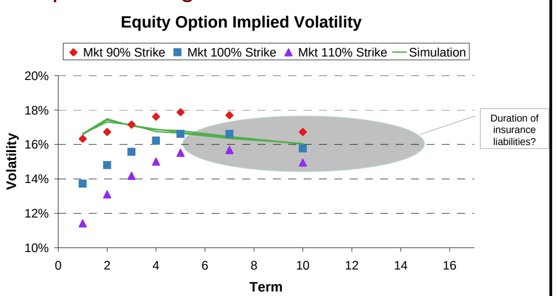
There are differences in the choice of risk-free rate and whether to capitalise an annuity liquidity premium

Market practice in published market-consistent EEVs to date		
Company	Risk-free rate in MCEV model	Liquidity premium for annuities
AXA	Govt. bonds	No
Fortis	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 [1]	Not disclosed	Yes – undisclosed amount

1. Prudential did not use the market-consistent approach to allow for risk within the EEV. However within the June 2005 EEV presentation, Prudential disclosed the relative value of a separately calculated MCEV for annuity business, which capitalised an "illiquidity premium" of an undisclosed level.

There may be differences in the calibration of options and guarantees



Non-market risk is a rapidly developing area in actuarial valuations

- Investors can diversify away uncertainty for taking non-market risk
- Definition of best estimate assumptions
  - "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)
  - How to allow for asymmetries and rare events?
  - How to allow for entity-wide assumptions?
- Which frictional costs to allow for?
- What about the correlation of diversifiable risks and market risks?
- Are additional allowances for non-market risk required?
- Where should any additional allowances be made?

There are differences in the approach to allow for non-market risk

Top-down WACC	Bottom-up plus CoC and addition to RDR	Bottom up & granular risk allowance
AEGON	AXA (0bp)	Friends Provident
Allianz	Fortis (50bp)	Resolution
AVIVA	Old Mutual (0bp)	RAS
ING	Prudential (50bp)	
L&G	Swiss Re (250bp)	
(No disclosed adjustments to the WACC)	Irish Life (210 bp)	
	SJPC (80bp)	

- Market-consistent techniques increase the granularity of the allowance for market risk. We are seeing the same trend in non-market risk.
- The trend towards granularity is broader than EEV reporting
  - Pricing
  - Risk management
  - ICA / RBS / Solvency II
  - Economic capital

Increased granularity - but what about increased clarity?

Friends Provident and Prudential have provided clear disclosure about what they have done and why

Issue	Friends Provident 12 October 2005	Prudential 13 December 2005
Best estimate definition	"Best estimate assumptions may fail to represent full impact on shareholder value where adverse experience has a higher impact on shareholder value than favourable experience. We have identified such asymmetries within the burn-through cost and operational risk"	"Defined as the mean of the distribution of all possible outcomes"
General allowance for non-market risks	"Allowance is made through appropriate best estimates and frictional costs"	"No allowance is required. The majority of non-market risks are considered to be diversifiable"
Frictional costs	"Consist of … taxation and investment expenses incurred on locked-in shareholder capital."	No mention in disclosure
Additional allowances for non-market risk	"Burn-through cost calculations allow for asymmetries arising from non-market risks… including lapses, annuitant longevity and operational risk in the With Profits Fund." "We have set up a £50m provision for operational risks in the shareholder fund. We have calculated this provision by comparing the mean impact of variations in operational risk, as modelled in our economic capital calculations, with the existing allowance for operational risk in specific accounting provisions and embedded value projection assumptions. This provision … is equivalent to a 0.4% increase in RDR for UK business … impacting both embedded value and the contribution from new business."	"Finance theory cannot be used to determine the appropriate component of beta for non-diversifiable non-market risks since there is no observable risk premium associated with it that is akin to the equity risk premium. Recognising this, a pragmatic approach has been used. A constant margin of 50bp has been added to the risk margin."

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Conclusions

The CFO Forum's EEV Principles have significantly improved embedded value reporting, but a number of challenges remain:

- Different methodologies – the WACC / MCEV debate
- Different applications of each methodology
- Disclosure – impact of CFO Forum Additional Guidance
- Convergence of EV / IFRS / Solvency reporting?
- CFO Forum's / Actuarial Profession's role in future EV developments?

Discussion

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