Strategy Briefing 2005
Embedded and new business valuation

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Agenda

- Valuation techniques
- Key assumptions underlying embedded value / value of new business (VNB)
- The case for change
- Market consistent valuations
- Summary

Valuation techniques
Embedded value / value of new business: background

- Traditional embedded value (EV) techniques and new business values have been used for many years as one approach to valuing life businesses
- EV techniques are well understood and have in recent years been extended to non-life businesses
- However it can be difficult to meaningfully compare traditional EV / value of new business (VNB) results across companies as:
  - the allowance for risk in the discount rate is not always clear and explicitly related to the business risks
  - in many cases there is a lack of transparency on how investment guarantees and embedded options are being valued
  - the selection of appropriate new business multiples requires judgement
  - disclosures can vary between companies
- ‘Market consistent valuations’ aim to provide additional insight on some of these issues

Key assumptions underlying embedded value / VNB
Risk discount rates

The table below illustrates the range of discount rates used in 2004 published illustrative values

Company	Equity return (pre-tax)	Risk discount rate	Margin
AXA APH			
– A&NZ	10.0%	11.0%	1.0%
– Hong Kong	10.5%	11.5%	1.0%
Peers [1]			
Aegon	8.0%	8.0%	0.0%
Allianz	7.3%	6.9%	(0.4)%
AMP Life (Australia)	9.4%	8.4%	(1.0)%
Aviva	7.6%	7.3%	(0.3)%
AXA SA	7.4%	6.7%	(0.7)%
Fortis	6.8%	6.8%	0.0%
ING	8.8%	7.8%	(1.0)%
Legal & General	7.1%	7.0%	(0.1)%
Prudential	7.2%	7.8%	0.6%

[1] This is an aggregate rate that is an EV or PVFP weighted average of the country/region rates

Source: Goldman Sachs JBWere Research

- Both the margin over the equity return and the level of the equity return are important in understanding the allowance for risk built into value results
- The higher the margin and the greater the equity return, the greater the allowance for risk
- However, this allowance is not necessarily an accurate reflection of the risks in the business and needs to be 'normalised' by the investor
- Disclosed information may mean it is difficult to 'normalise' results

Key assumptions underlying embedded value / VNB
Risk discount rates

- The table below illustrates the approximate impact on the value of in-force and VNB using a range of equity returns and risk discount rates
- Importantly, the risk discount rate can have a large impact on VNB for some products. As VNB includes significant first year acquisition expenses and cash profits are deferred this increases the impact of lower risk discount rates
- For example, using gross equity returns of 9% and a discount rate of 8%, the A/NZ VNB increases by approximately 48% from $77m to $114m

Australia and New Zealand

Value of inforce (A$m)

Equity return (%)	Risk discount rate (%) 8.0	9.0	10.0	11.0
8.0	2,972	2,811	2,659	2,516
9.0	3,043	2,877	2,719	2,574
10.0	3,111	2,942	2,782	2,637

Value of new business (A$m)

Equity return (%)	Risk discount rate (%) 8.0	9.0	10.0	11.0
8.0	109	95	81	68
9.0	114	99	84	72
10.0	116	102	89	77

Hong Kong

Value of inforce (A$m)

Equity return (%)	Risk discount rate (%) 8.5	9.5	10.5	11.5
8.5	2,126	1,986	1,846	1,705
9.5	2,162	2,029	1,873	1,742
10.5	2,193	2,064	1,911	1,781

Value of new business (A$m)

Equity return (%)	Risk discount rate (%) 8.5	9.5	10.5	11.5
8.5	122	113	104	95
9.5	125	116	106	98
10.5	127	119	109	101

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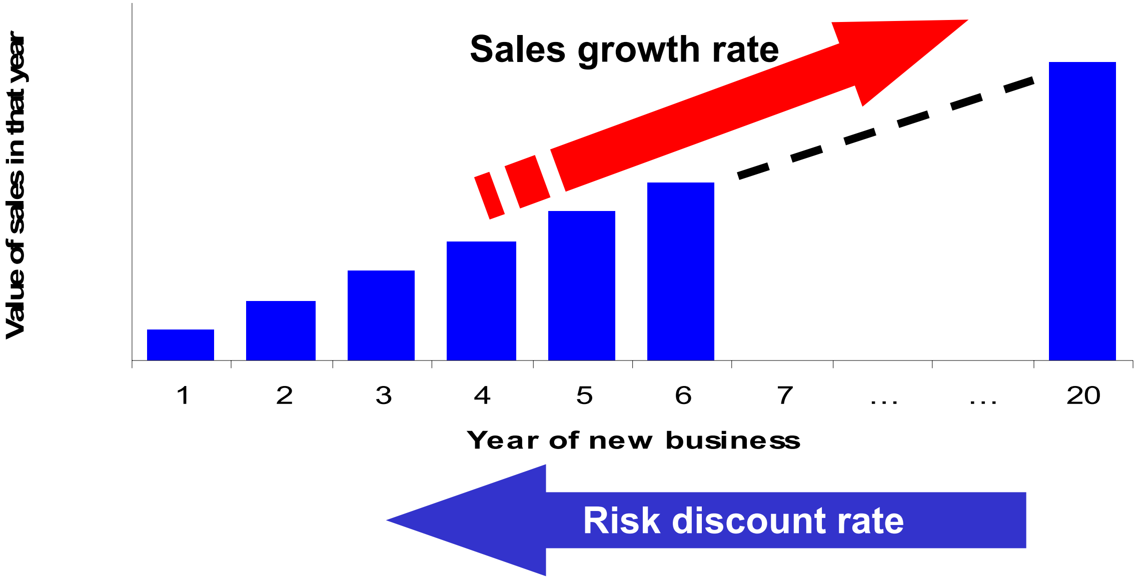
Key assumptions underlying value of new business

Theoretical calculation of a multiple



Sales growth	Risk discount rate	Multiple
5%	9%	14
10%	11%	18
15%	13%	24
20%	15%	32

- An appropriate VNB multiple should normally be a function of expected sales growth, risk, margin and market characteristics
- Example covers the present value of 20 years new business, assumes sales growth is consistent with the assumed market growth and that there is no margin squeeze

The case for change

- There are a number of issues with deterministic embedded value approaches:

EVs typically make an implicit rather than explicit allowance for certain risks	Risk is typically reflected through the use of a risk discount rate. Its determination requires judgement as it is hard to translate all risks in the business into a single discount rate. The ways in which different risks are allowed for in the choice of a single discount rate are not transparent. This makes it difficult to meaningfully compare companies
No explicit allowance for the cost of investment guarantees	Using one single investment scenario may lead to embedded options being ascribed zero value. This limitation has been exposed by negative stock market returns from 2001 - 2003 and falling interest rates
Value can be increased through investing in more volatile assets	Traditional EVs place an increased value on corporate bonds and equities, over government securities. The increased risks of these assets are not appropriately reflected

- Market consistent valuations aim to provide additional insight on some of these issues

Market consistent valuations
Overcoming the deterministic EV problems

- Market consistent valuations aim to value future cash flows on a consistent basis to the current market valuation of similar cash flows
  - Liabilities with fixed and certain magnitude and timing are valued as fixed interest securities
  - Investment guarantees are valued using option pricing techniques
- This potentially overcomes some of the problems with current deterministic approaches as:
  - market risk is explicitly allowed for in both asset and liability cashflows, not via an implicit allowance in the risk discount rate
  - investment guarantees are explicitly valued using option pricing techniques, or more complex stochastic investment models that allow for stock market and interest rate volatility
  - investment earnings are projected forward such that the present value of the cash flows equates to current market values. Consequently, reported values cannot be increased or reduced through changes to the current asset mix
- However MCV's at present have other shortcomings that need to be understood. Theory and market practice are expected to develop over coming years

Market consistent valuations
Potential shortcomings

- Whilst market consistent valuations make a more explicit allowance for market risk and investment guarantees, difficulties interpreting results and comparing companies remain
  - How are operational and agency risks reflected in the results?
  - Is the risk of variation from assumptions in relation to future experience (eg. mortality, lapse etc.) appropriately allowed for?
  - What allowance is made for the cost of capital?
  - What are the characteristics of the market and stochastic models used to value investment guarantees and embedded options and do they vary by company?
  - What impact does the methodology have on an appropriate value of new business multiple?
- In our view, these questions require careful consideration and it will take some time before market consistent approaches are fully understood and accepted by the industry and the market

Market consistent valuations
AXA APH approach

- Over the last three years, in conjunction with AXA SA, we have developed MCV techniques, using the models we have developed to assess economic capital required to cover investment market volatility
- The low level of investment guarantees in the A/NZ business and dominance of financial protection (rather than investment products) in Hong Kong has meant disclosures of MCV's are not an imperative for us
- We have some concerns that MCV techniques are not yet fully understood by the industry or the market, particularly with regard to whether there is appropriate allowance for operational risk and 'agency' costs

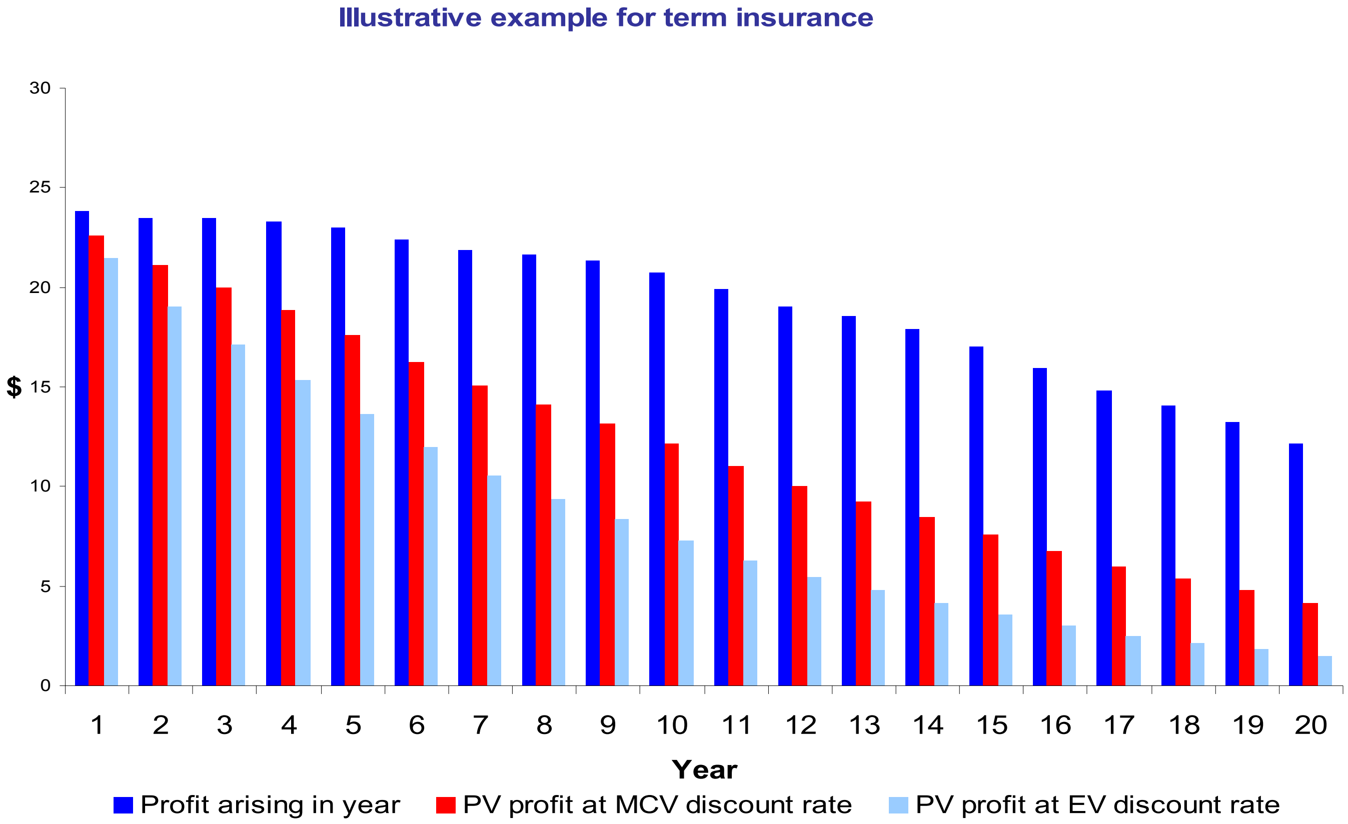
Market consistent valuations
AXA APH approach

- During 2005 we are further developing market consistent valuation models using these to complement traditional EV / VNB
- Our methodology is based on ‘risk neutral cashflows’ discounted at risk free rates
- Explicit allowance will be made for investment options and guarantees using stochastic models that reflect observed investment volatility. Anticipated behaviour with regard to lapse and future bonuses is also modelled
- In most other respects, the assumptions are identical to those used in traditional EV / VNB
- No decision yet made on when to publish MCV

Market consistent valuations
Australia & New Zealand - indicative impact before 'agency costs'

Product	2004 inforce value	Impact of MCV	Comment
Term/trauma/income protection	1,227	↑	Product cashflows have no market related risk and are valued at a lower discount rate
Long term risk	161	Minimal	The traditional EV risk discount rate is consistent with the cost of the guarantees and profit volatility from investment returns
Annuities	144	↓	The traditional EV risk discount rate understates the risk of the deliberate asset-liability mismatch (eg. modest level of equity backing)
Investment products	1,105	Minimal	Impact depends on asset mix, level of expenses and profitability
Total A/NZ	**2,637**	↑	

Market consistent valuations
Australia & New Zealand - term insurance



- Under MCV, projected cashflows (after allowing for regulatory capital) are discounted at a lower rate than under traditional EVs
- At a lower discount rate, the present value of future profits is higher, especially the profits arising in later years
- The lower level of discounting reflects the ability of the investor to remove the mortality risk through diversification

Market consistent valuations
Hong Kong - indicative impact before ‘agency costs’

Product	2004 inforce value	Impact of MCV	Comment
A$m			
Financial protection	1,578	↑	- For participating business, the traditional EV risk discount rate overstates the costs of the guarantees - For pure risk policies/riders, product cashflows have no market-related risk and are valued at a lower discount rate - For unit-linked business, impact depends upon asset mix, level of expenses and profitability
Wealth management	175	↓	- For DA fund, the traditional EV risk discount rate understates the costs of the 5% pa guarantee - For other funds, impact depends upon asset mix, level of expenses and profitability
Group medical and GI	28	↑	Product cashflows have no market-related risk and are valued at a lower discount rate
Total HK	1,781	↑	

Market consistent valuations
Hong Kong - NL series

- The "headline" NL investment guarantee underlying the guaranteed cash values (GCVs) is 4.25% pa (similar to the current yield on 10 year US bonds)
- Given conservative margins for mortality and expenses, a return of 4.25% pa results in the 1.00% investment margin still being achieved
- These policies were sold primarily to provide life insurance, so unlike guaranteed investment products, high levels of surrenders are unlikely to occur in unfavourable investment conditions
- The Active Dividend Management (ADM) strategy ensures that short-term fluctuations in the investment return are passed to policyholders in the medium term (typically 3-5 years), by adjusting the discretionary crediting rate
- There is only a cost to the shareholder in economic scenarios where shortfalls can never be recovered, ie. where average returns over the lifetime of the portfolio are below 4.25% pa
- Whilst we have experienced years with a return below 4.25%, we estimate there are very few scenarios with an average return below 4.25% pa over many years
- On this basis, we expect the market consistent cost of the guarantee to be lower than the cost implied by the current risk discount rate

Market consistent valuations
Value of new business - indicative impact before 'agency costs'

- The impact on the value of new business is likely to be somewhat greater than the impact on embedded value
  - as the value of new business includes up-front expenses and commission followed by a stream of future profits, the impact of lower discount rates produces a larger percentage uplift in value
  - investment guarantees are not so prevalent in new business, particularly in Hong Kong
- For investment products, the value of new business might reduce in situations where management fees are closely linked to equity returns

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Market consistent valuations
Indicative impact

	2004 value	Impact of MCV	Comment
Value of inforce A/NZ Hong Kong South East Asia	4,453	↑	
Group net worth	1,275	-	No change, included at market value
Group debt	(1,420)	-	No change, already included at a market consistent value (the face value)
Capitalised corporate expenses	(312)	↓	Will become more negative. Cashflows have no market related risk and so should be valued at lower discount rate
Total		↑	**At the AXA APH level, the overall discount rate is expected to fall, leading to an increase in value**

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Market consistent valuations
Summary

- Market consistent valuations can provide useful additional information compared to current EV techniques
- Allowance for market risk represents a step forward, valuing
  - expected future cash flows on the same basis that the market currently values similar cash flows
  - liabilities whose magnitude and timing are certain as fixed interest securities
  - investment guarantees using option pricing techniques
- Methodology shortcomings remain, notably with regard to the treatment of operational risk and 'agency costs'. We are considering these in more detail over 2005
- On a 'risk neutral' basis, allowing for investment guarantees (and before agency costs), we would expect the AXA APH value of inforce to increase relative to our existing deterministic value of inforce, and the value of new business would also increase

Q&A

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