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Tax in Unit Pricing

Chris Baron – Tillinghast
George McCutcheon – Financial Risk Solutions

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A Practical Guide to Tax in Unit Pricing

George McCutcheon – Financial Risk Solutions

Outline

- Treating Customers Fairly
- Tax philosophy
- Implementation of tax philosophy
- Life company taxation
- Complications
- Tax approaches
- Conclusions

Treating Customers Fairly

- Customer expectation
  - Life company doesn't make tax profits from unit fund
- Conclusion – Tax philosophy
  - Tax unit fund as if it were stand-alone life company

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Implementation of tax philosophy

How is a life company taxed?

- A unit fund is taxed on its income and gains
- What tax types categorisation is required?
  - Income – Franked/Unfranked
  - Realised gains
  - Deemed disposals
  - Unrealised gains
  - Expenses

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Practical issues

- Tax calculations required daily
- Need for Systematic Solution
- Fully integrated with fund valuations
- Ensures consistency and fairness of results

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What are the complications?

- Assessable Period – Current year / Since inception?
- Different types of tax assets - CGT or LR
- Change in asset type between LR and CGT
- Indexation for CGT assets
- Deemed disposals – Spreading / No spreading?
- Different tax accrual rates for various tax types
- Changes in tax rates for tax type
- Tax losses

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What are the various tax approaches?

Tax provisions

- Single tax provision over all tax types
- Separate tax provision for each tax type
  - Four tax types?
  - Three tax types? – Deemed disposals apportioned between realised and unrealised gains?
  - Can losses from one tax type be set against gains of another tax type?

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Conclusions on tax approaches?

- Single tax provision – Not tenable
  - Realised losses not offsettable against income
  - Need to distinguish between realised and unrealised
- Separate tax provision for tax types is required (but realised losses offsettable against unrealised gains)
- Deemed disposals as a separate tax type – Not tenable
  - Argument is that discounted tax rate validates approach
  - Refuted by scenario of gains in earlier years followed by losses

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Practical implementation for tax types

- On-going Accrual Method
  - Tax Charge is [Tax Rate] * [Change in Taxable Amount for Valuation Period]
- Closing Accrual Method
  - Tax Charge is [Tax Rate] * [Current Cumulative Taxable Amount]
- [Closing Tax Provision]=[Opening Tax Provision] +[Tax Charge]-[Tax Paid]

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Practical Implementation

- On-going accrual method is used for income, realised gains – based on [tax rate] at investment return date
- Closing accrual method is used for unrealised gains – based on current [tax rate]

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Tax losses

- Can tax charges for valuation period be negative?
- Tax losses approach 1
  - Tax charge for valuation period must be non-negative
  - Carry forward tax losses
- Tax losses approach 2
  - Allow negative tax charges subject to conditions
  - Offset realised losses against YTD gains
- Place value on tax losses c/f
- Contingent tax losses e.g. BV<MV<IBV scenario

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Conclusions on tax losses

- Non-negative tax charges approach is not tenable
  - Pattern of gains early in Year followed by smaller losses should in equity result in full relief of losses
- Value on tax losses c/f
  - Value = [Tax Loss Proportion] * [Unrealised Gains Tax Rate] * [Unrealised Tax Losses c/f]
- [Tax Loss Proportion] is fund specific, depends on fund pricing basis and depends on amount of [Tax Losses c/f] as % of fund value
- Great care required when placing value on tax losses

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Frequency of tax deductions

Best Practice

- Deductions applied at tax type level
- Incidence of deductions follows corporation tax rules

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Practical implementation issues

- Allow for complexity of life office taxation
- Need to differentiate by tax type
- Need to allow for changes in tax rates
  - On-going accrual method for income, realised gains
  - Closing accrual method for unrealised gains
- Need functionality for tax losses
- Tax calculations fully integrated with fund valuations
- Corporate tax calculations based on same software

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Tax – The Elephant in the Too Difficult Pile? An Analysis of the Turgid But Crucially Important World of Tax in Unit Pricing

Chris Baron – Tillinghast

"Is there anything wrong with our current approach?"

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Our conclusions are . . .

The answer is likely to be **YES** because there is a:

Lack of consistency in the treatment of tax in unit pricing between companies

Lack of sophistication in the approach taken to unrealised gains and losses

Lack of fairness between generations of unit linked policyholders

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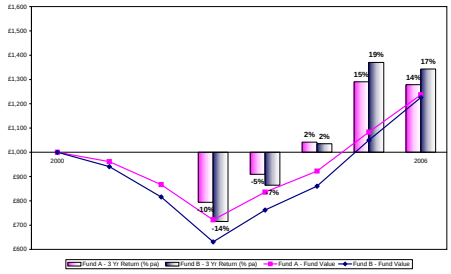
Let's start with a simple example!

Take two hypothetical FTSE-100 tracker funds A & B



Source: Tillinghast analysis of Bloomberg data

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So what are the fund managers doing?

- Both are, in fact, tracking the FTSE perfectly!
- The funds are, however, treating deferred tax very differently.

FUND A

Credit for tax assets given at 20% of face value of any losses.

FUND B

No credit given for any tax assets until gains available in the fund to offset them.

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Is there a tax lottery in unit pricing?

- Consider two policyholders investing in A & B in 2003
- Both would probably expect the same return from the funds . . .

	Return over 3 years
Fund A	+ 50%
Fund B	+ 66%

- . . . but one of them would be disappointed (relatively)!

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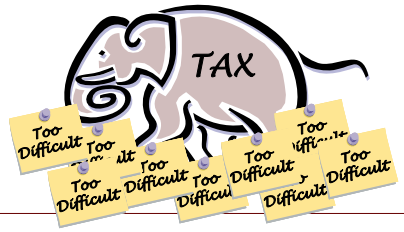
So is this really TCF?

- Both funds will argue that their approach is fair;
- Is there another approach that could be fairer?
- Is this the . . .



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So what is the "standard" way of allowing for tax in unit pricing?

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A typical approach to tax in unit pricing

- An overarching principle of “fairness”;
- Often expressed as a need to consider:
  - The actual tax incurred;
  - The standalone entity basis;
  - Credit for tax losses.

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A typical approach to tax in unit pricing

- In practice this is often implemented as follows:
  - Deduct tax on investment income at 20%;
  - Deduct tax on net realised chargeable gains at 20%;
  - Provision for net unrealised chargeable gains at a lower rate (say 18%);
  - Net realised or unrealised losses carried forward for relief against future gains.

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How typical is this approach?

Company	Taxable Income	RCG	UCG	Realised / Unrealised Losses
Abbey Life	20%	20%	18%	18%
AXA Sun Life	20%	20%	15% - 17.5%	Offset current CG, otherwise no credit
Friends Provident	20%	20%	20%	Imply offset current CG otherwise no credit
Legal & General	20%	20%	16% / 20%	20%
Norwich Union	20%	17.5% - 20%		13% - 19.5%
Prudential	20%	20%	18.5%	Offset current CG, otherwise no credit
Scottish Widows	20%	20%	18%	Offset current CG, otherwise no credit
Standard Life	20%	20%	20%	No comment
St James's Place	20%	20%	19.5%	Offset current CG, otherwise no credit
Zurich Assurance	20%	20%	18.2%	No comment

Rates taken from the 2006 FSA Returns

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So does this approach meet the stated principle of fairness?

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A (very) simple unit fund!

- Anne invests £1,000 at time t_0;
- Invests in a single equity through a unit linked bond;
- She is the only investor in the fund!
- At time t_1 her investment has risen in value;
- She now wants to disinvest.

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A (very) simple unit fund!

- Ben wants to invest at time t_1;
- He agrees, in principle, to buy Anne's units;
- The insurance company suggests that the price is reduced by 18% of the unrealised gain;
- Ben is confused!
- Chris, the actuary at the insurance company tries to explain . . .

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"Tax in complicated, you probably won't understand but . . ."

- Tax on UK equity gains is particularly complex:
  - Tax is only paid when gains are realised;
  - Taxable gains benefit from indexation relief;
  - Losses do not benefit from indexation relief;
  - Realised losses only offset against realised taxable gains.
- So at any time future tax payable is informed by:
  - Market Value;
  - Book Value;
  - Indexed Book Value.

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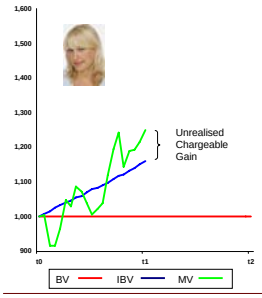
Anne's unrealised gain



The current state:

- Asset bought a time t^0;
- Held until time t^1;
- MV > IBV > BV.

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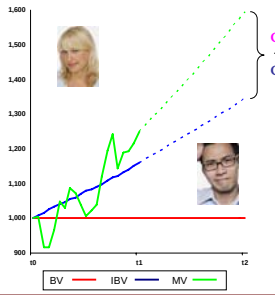
Anne and Ben's realised gain



Projecting into the future:

- Assume asset sold at t^2;
- Best estimate assumptions for equity growth and indexation;
- Realised chargeable gain at t^2 is $G_A + G_B$;

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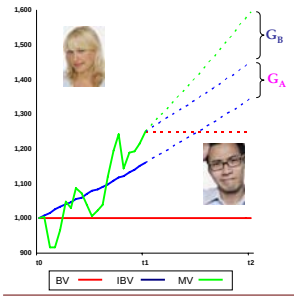
Anne and Ben's realised gain



Splitting the gain:

- Compare the tax payable on the existing asset and that payable on the same asset but invested at time t^1.
- G_B is the chargeable gain that would arise on this same asset invested at time t^1.

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Ben is now even more confused!

- Content with the principle . . .
- . . . but the asset values can go down as well as up;
- Is the 18% really a fair split?
- Ben agrees with Anne to ignore the insurance company;
- They will split the tax when Ben sells the asset;
- They try to understand what might happen when he does . . .

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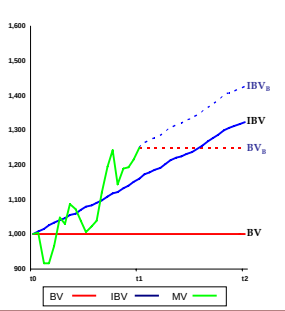
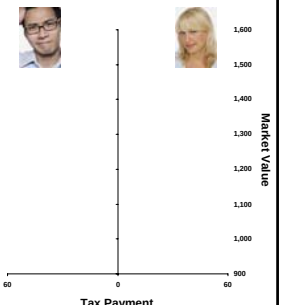
What might Anne have to pay?





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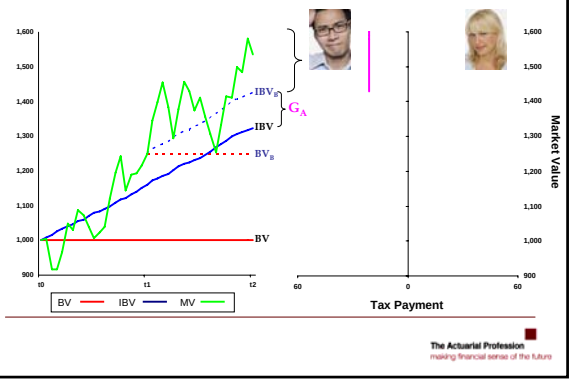
If returns are very good?



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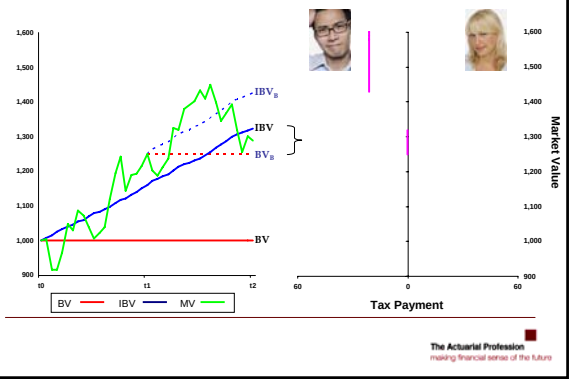
If returns are very flat?



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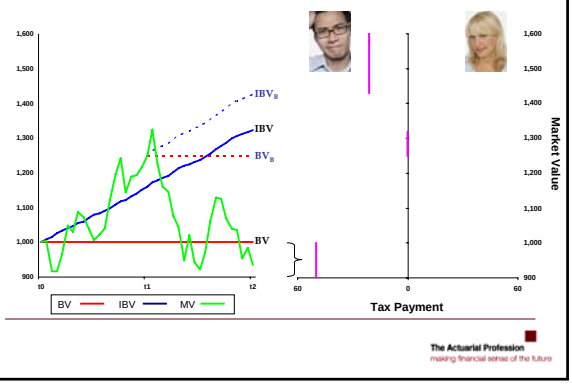
If returns are very poor?



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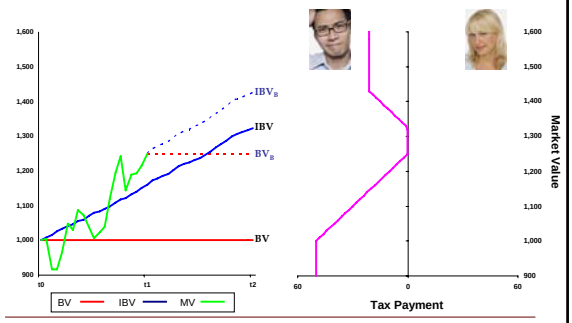
. . . and at all points in between?



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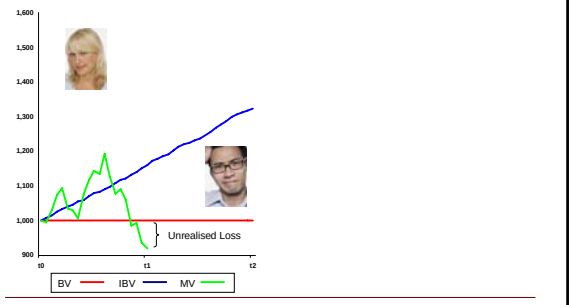
What if Anne had an unrealised loss?



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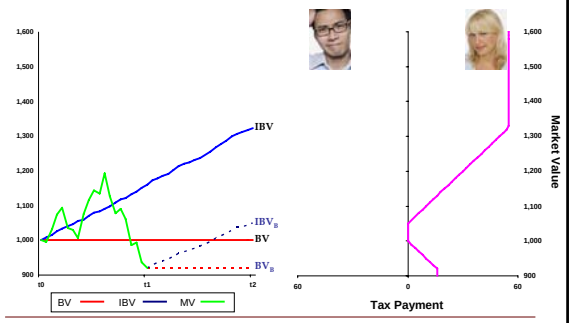
Ben must pay Anne for the tax asset



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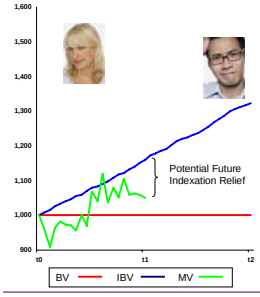
What if Anne is in “No Man’s Land”?



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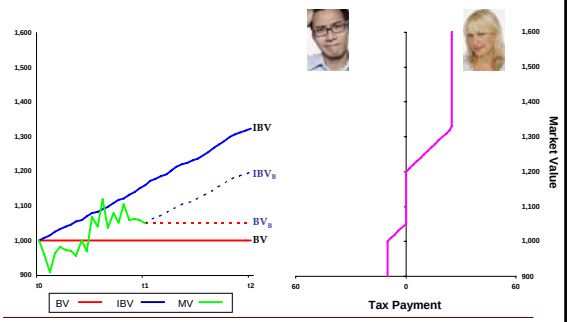
There are still potential tax payments!



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Ben is happy now . . .

- Ben and Anne are satisfied that this is fair;

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But Chris the actuary is not happy!

- Does this mean his deferred tax provisions are wrong?
- Chris must be able to adjust the fund values when units are bought and sold.

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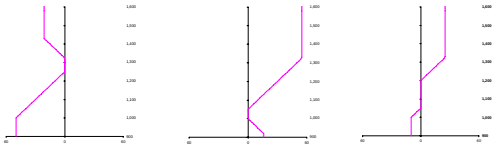
How can we place a value on the tax?



- A deterministic approach is not appropriate;
- Risk-neutral market-consistent stochastic models can be used.

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We need to bear in mind . . .

- There is not a simple term to the sale of any asset:
  - Need to allow for a pattern of asset turnover
- The tax losses need to be valued:
  - Project the fund;
  - Losses offset against gains on other assets if possible;
  - Model new assets in the future;
  - Offset losses on current assets against future gains on these new assets;
  - Make assumptions about fund growth or contraction.

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So what is the impact of stochastic modelling on our simple examples?

The market-consistent value of the tax adjustment has been calculated on the following basis:

- 1000 market-consistent risk neutral scenarios;
- Scenarios calibrated to market data as at 30 June 2007;
- Future indexation relief based on implied market inflation;
- Assets turnover evenly over 4 years;
- "Fund" assumed in equilibrium (i.e. no expansion or contraction).

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So what is the impact of stochastic modelling on our simple examples?

	Starting position £	Unrealised gains / (loss)	Traditional A to B payment @ 18%	Stochastic A to B payment	Implied tax rate
Unrealised gain	MV = 1,250 IBV = 1,160 BV = 1,000	£90	£16.20	£13.50	15.0%
"No man's land"	MV = 1,050 IBV = 1,160 BV = 1,000	£0	£0.00	(£5.20)	n/a
Unrealised loss	MV = 920 IBV = 1,160 BV = 1,000	(£80)	(£14.40) or £0.00	(£12.90)	16.1%

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Sensitivities to the assumptions

	Unrealised gains / (loss)	Base A to B payment	100% Turnover	10% Fund expansion	+1% Inflation
Unrealised gain	£90	£13.50	£16.00	£14.80	£12.50
"No man's land"	£0	(£5.20)	(£4.20)	(£5.70)	(£4.70)
Unrealised loss	(£80)	(£12.90)	(£13.50)	(£14.10)	(£11.40)

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How practical is this approach?

- Consider an example internal unit fund;
- Total MV at 30 June 2007 of £10m;
- 30 separate UK equity assets in a range of states.

State	Number of assets	Unrealised gain / (loss) (£k)	Traditional deferred tax @ 18% (£k)
Unrealised gain	18	956	172
"No man's land"	2	0	0
Unrealised loss	10	(250)	(45)
Total	**30**	**706**	**127**

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How does the stochastic methodology compare?

Basis of calculation	Deferred tax liability (£k)	Equivalent tax rate on net unrealised gains (%)
Traditional methodology	127	18.0%
Stochastic methodology		
— Single scenario	93	13.1%
— Multiple scenarios	94	13.4%
— Single scenario, 100% turnover	111	15.7%
— Single scenario, 10% fund expansion	102	14.4%

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Improved sensitivity to market movements

Basis of calculation	Net unrealised gain / (loss) (£k)	Traditional DTL @ 18% (1)	Stochastic DTL (£k)	Tax rate (%)	Difference as % of unit price (%)
Base MV	706	127	93	13.1%	0.34%
Market value +10%	1,599	288	229	14.3%	0.54%
Market value -10%	(204)	0	(25)	12.3%	0.28%
Market value -20%	(1,066)	0	(116)	10.9%	1.45%

(1) Unrealised losses not offset against unrealised gains are carried forward for future relief

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In summary our stochastic analysis . . .

- Provides greater insight into the taxation of unit funds;
- Demonstrates the current overstatement of deferred tax liabilities on unrealised gains;
- Provides a robust methodology for valuing tax losses;
- Shows that stochastic methodologies are practical and may show the way forward for the industry.

Can the industry continue to use traditional methodology to allow for tax in unit pricing and claim to be TCF?

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Our conclusions are . . .

Lack of consistency in the treatment of tax in unit pricing between companies

Lack of sophistication in the approach taken to unrealised gains and losses

Lack of fairness between generations of unit linked policyholders

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