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# Pension Security and Guaranty

Presentation to OECD and ABRAPP

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## First – a choice game

- Choose between receiving
- A) €100 with certainty
- B) €200 / €0 on the flip of a coin
- And now paying
- C) €100 with certainty
- D) €200 / €0 on the flip of a coin
- Most choose A and D
- Reversal of attitude



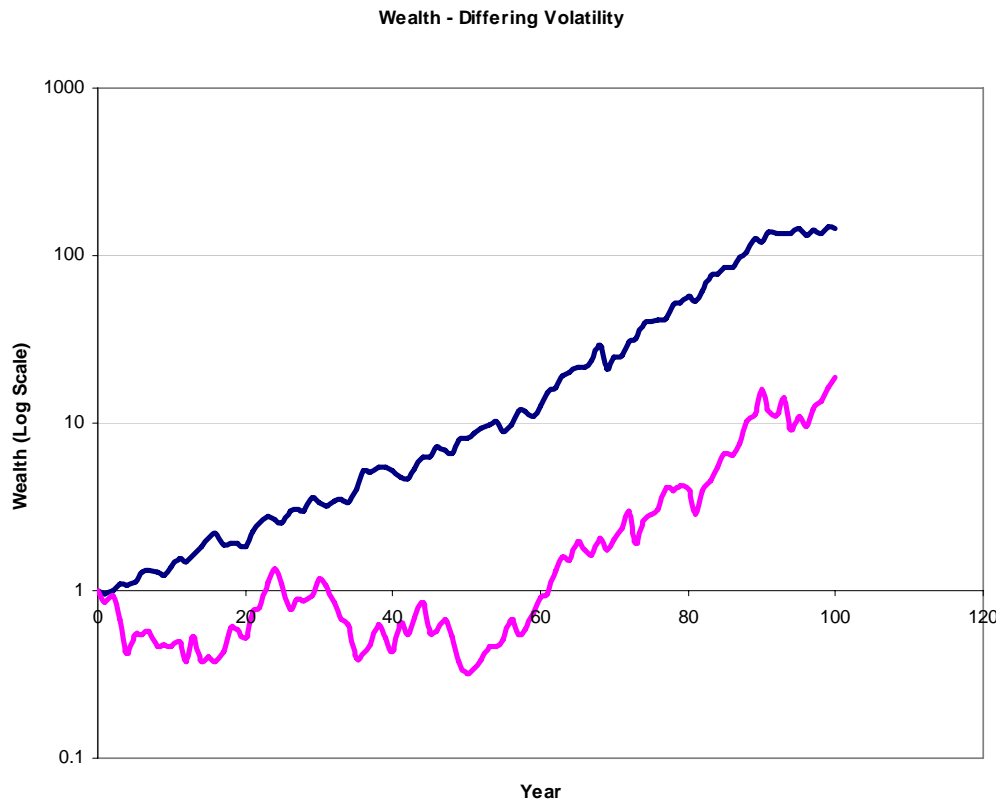
# Risk and Value

- The game illustrates the differing role of uncertainty for assets and liabilities.
- For our asset uncertainty reduces current and future value.
- This does not require “risk aversion”
- It is a property of repeated games
- It is sometimes known as the certainty equivalent premium (CEP)



# Two bonds – CEP Illustration

A bond with normal returns – an arithmetic mean of 5% and volatility of 10%  
Another with normal returns – an arithmetic mean of 5% and volatility of 20%



Geometric Mean =  
Arithmetic Mean – 0.5\*Variance

10% volatility = 0.5%  $\Rightarrow$  4.5%

20% volatility = 2.0%  $\Rightarrow$  3.0%

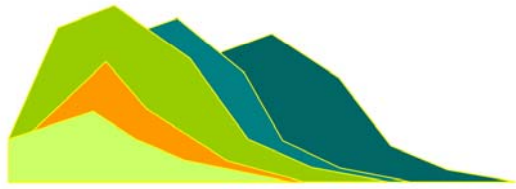
Property of repeated games

Non-Linear – Be deeply sceptical  
of linear risk-return relationships



## Volatility

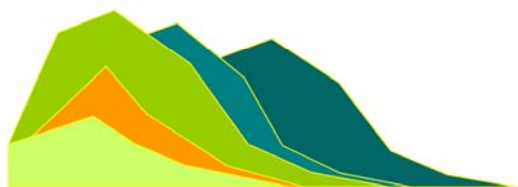
- But option prices increase with increasing volatility of the underlying
- This price increase is compensating the holder of the underlying for the reduced geometric return from the underlying.
- Volatility is at best an incomplete measure of risk
- It is symmetric
- Asymmetry of investment returns also matters greatly
- Negatively skewed returns require a high mean return to compensate
- The relation between an asset and a liability is that of a rigid rotation, multiplication by -1
- Not only does the location of the returns distribution change, the signs of all odd moments reverse.



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# But with a liability

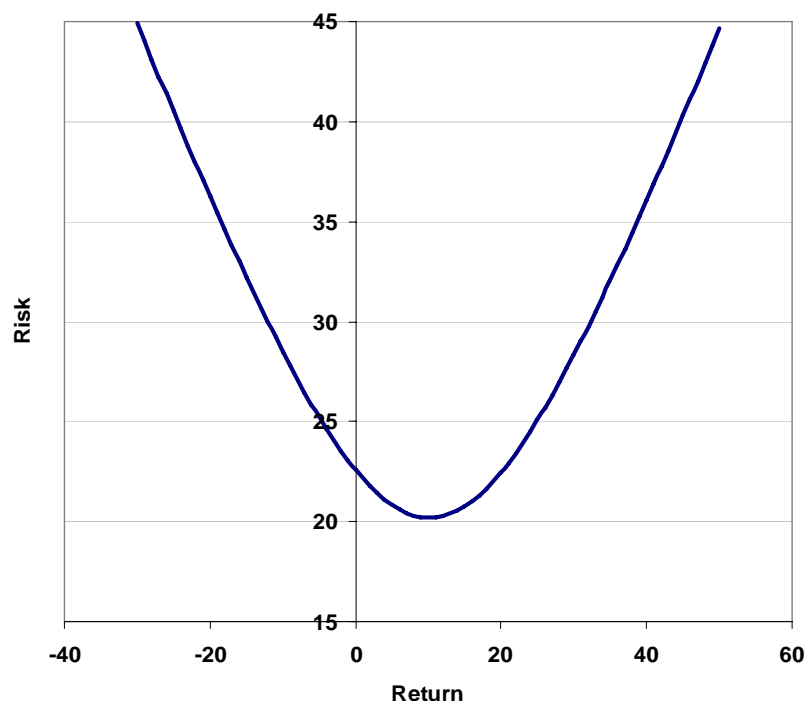
- Volatility is our friend
- That which hurts our asset helps our liability
- Liabilities – the long term aspect is good not bad
- Equity is preferable to short term bank loans
- A consequence – the more certain a liability is, the greater its current cost
- Present value accounting
- The value relevance of a current market price
- Information content of market price for a consumption asset is high
- But the information content of a capital asset may be very low indeed
- Path dependence induced by market price based rules
- The funding ratio – statistical properties are unpleasant



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## Path Dependency and Funding Ratio

### Volatility Function



By requiring intermediate buy/sell activity we incur volatility cost in addition to transaction expense.

Funding ratio = assets / liabilities

logNormal Assets / logNormal Liabilities

Cauchy – variance is not well defined  
so risk management is not feasible

Intermediate adjustment is strictly costly



# DB is better than DC

- Because of risk sharing
- That uncertainty which harms the pensioner helps the sponsor
- Risk sharing can also exist among pensioner members
- Annual linear accrual to members but investments grow exponentially
- Annual contributions smooth investment volatility
- Annuity provision – no future market dependency
- Lower volatility = Lower cost
- Government Incentives to reduce future State dependency
- Another Risk Sharing



# Incentives – E.E.T.

- Tax exemption on contributions
- For sponsor contributions– deferred pay – no difference with current pay – no incentive
- For employee – savings – drives investment and economic growth
- **Tax incentives on accrual are the most important element**
- Risk sharing allows the sponsor to absorb biometric and inflation risks
- While lowering their provision costs but still
- Achieving better outcomes than can be provided by the individual by self provision
- Taxation of post-retirement pension income can result in inter-temporal fiscal neutrality – risk sharing with Government



# Corporate schemes

- As long as the sponsor is solvent, pensions will be paid
- By explicit law, if advisable
- Problems only arise with insolvency of sponsor
- This creates an orphan scheme with long term liabilities
- Facing uncertainty, for which extra capital provision, beyond full (100%) funding, is advisable.



# Pension Risk Management

- The risk of a corporate pension scheme is:
- The product of the insolvency likelihood and the consequence of insolvency, the post insolvency deficit.
- Insolvency must occur first
- We can mitigate insolvency likelihood or scheme funding
- Scheme funding, capital adequacy is second order here operating on the consequence
- But for a bank or insurer capital adequacy operates on the insolvency likelihood, lowering it
- Increasing scheme funding above 100% liabilities actually increases the likelihood of sponsor insolvency.



# 100% Funding

- This is now a common regulatory requirement
- But it really isn't a good idea
- Consider a scheme paying €5 every year for 120 years
- For simplicity no investment income
- If interest rates are 3%, the present value of the cash-flows is €167
- When 15%, the present value of the same cash-flows is €38
- If the scheme is 80% funded, it takes 26.7 years for the fund to run out of cash with rates at 3%, but just 6.1 years with rates at 15%
- Scheme funding and “make good” rules should reflect the sensitivity of the meaning of a deficit to interest rates



# Pension Guaranty Insurance

- For schemes structured **without** recourse to their sponsor, capital adequacy along insurance lines is an appropriate regime
- For many corporate schemes insolvency is remote or may never occur
- And to require all to over-fund against such post-insolvency risks is economically inefficient
- Insurance is the obvious solution – risk pooling
- This is cross-sectional and inter-temporal diversity
- When long term, another aspect of insurance is evident
- “Whole of Corporate Life”
- **This is now Risk Finance rather than Credit Insurance**



# Benefits and Deductibles

- It is usual with pension benefit guaranty schemes to pay only partial benefits to members
- It is often argued that this is a deductible
- In insurance theory this resolves the moral hazard problem, when insurer and beneficiary specific, and these are the same.
- But the beneficiary member here is not the insured
- This reduction serves only to mitigate the exposures of the pension guarantor
- Few companies or their managements wish to become insolvent
- There is no theoretical obstruction to guaranty of full benefits entitlement



# Insurance as Risk Finance

- A whole of corporate life policy results in an asset for the pension scheme and a liability in the accounts of the sponsor.
- The liability for future premiums payable makes evident the fact that this is corporate finance – of the post insolvency crystallised risk
- This is not a natural activity for government
- But it is for the private sector



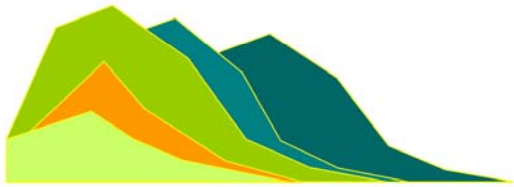
# Insurance Premiums

- Most guaranty schemes have risk based premiums
- Risk based premiums are superior for assuring the integrity of the guarantor / insurer
- Combination of current deficit and insolvency likelihoods
- But the deficit is a difference statistic
- The best current estimate of liabilities minus current value of assets
- This is inherently unstable and therefore costly
- Better is a long term fixed premium based upon liabilities as they exist from time to time.



# A Compensation Fund

- Is not an insurer, and has some perverse aspects
- If unfunded and mutual
- In this form it is a reverse tontine – there is an incentive not to be the last to die
- If funded, it can smooth contributions which lowers costs, but
- who supplies the funding and who owns the excess capital of the fund?
- This uncertainty raises the costs



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# Asset Solutions

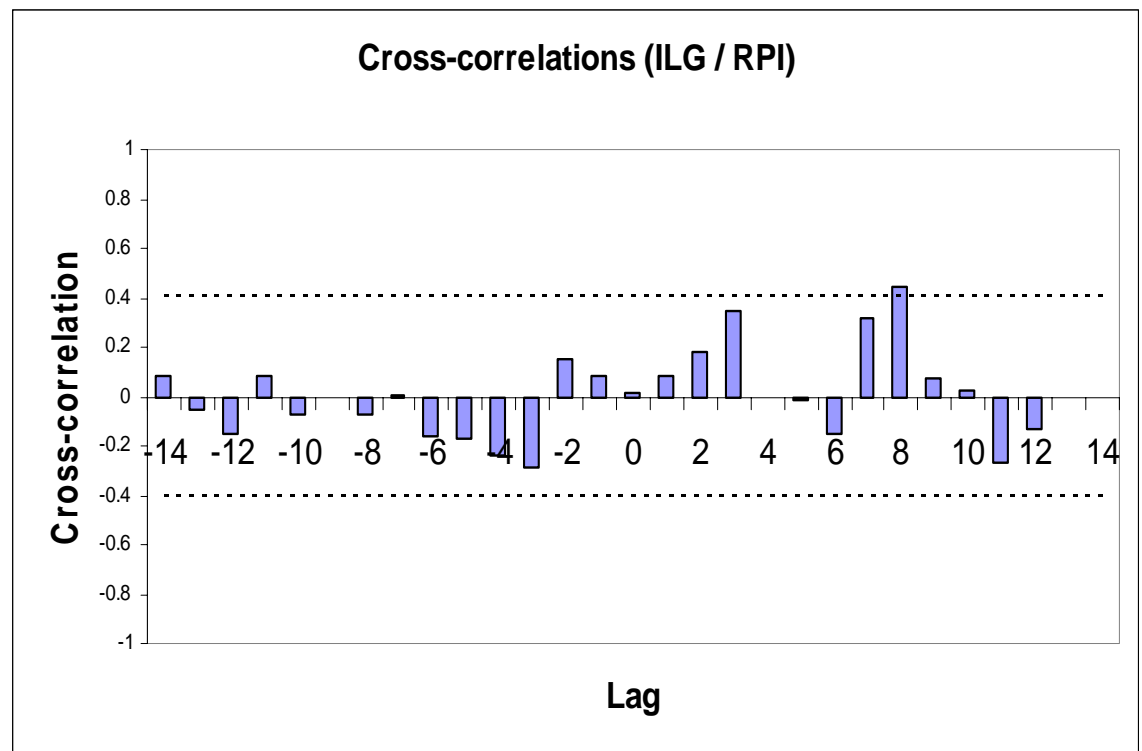
Rely predominantly on de-risking the fund – which is costly

An illustration – hedging inflation risk by purchasing UK index-linked securities to hedge inflation

ILG (15+) total return index returns and Retail price index

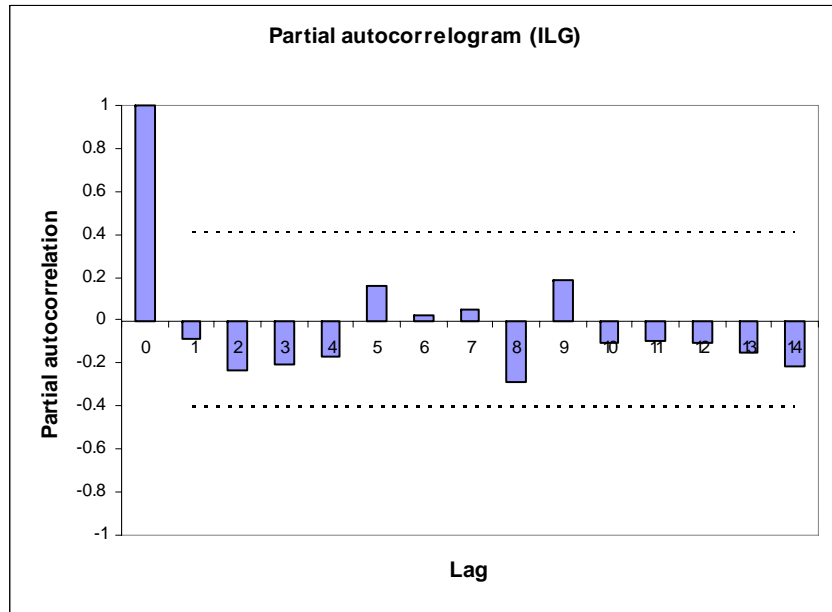
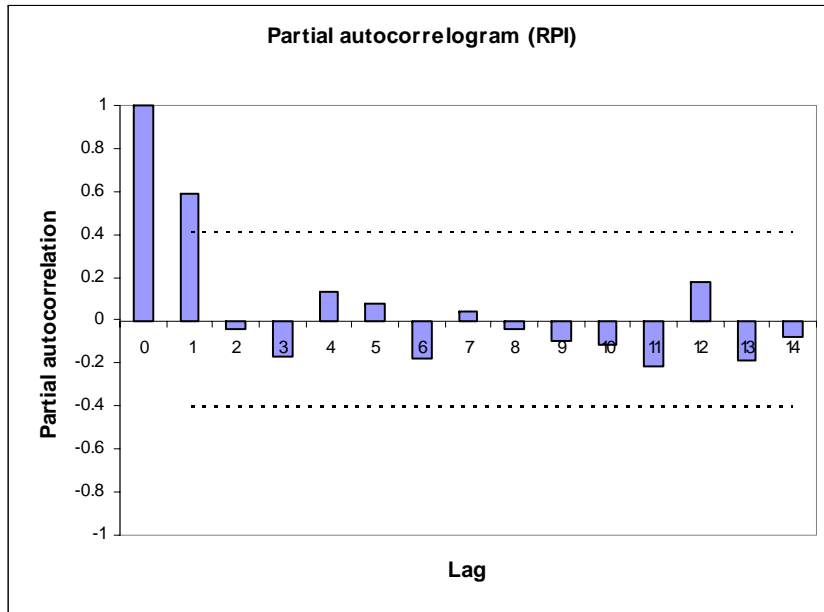
The result is volatility in deficits

But holding a single ILG certainly pays inflation plus to maturity





# ILG and RPI - LDI



Fundamentally different dynamics

**Derivatives ?**



# Derivatives - Swaps

- Exchange one cash flow for another
- Receive the future cash flow
- But pay the short-term Libor rate
- This is paying the long term liquidity premium
- And introduces a short term dependency into a long term institution
- And that we learned for sure this past year is a mistake
- Capital markets cannot make explicit promises of future cash-flows
- That requires an institutional structure
- And the quality of the institution as counterparty is paramount.
- And requires institutional regulation



## Fixed Term Insurance and Contingencies

- We might insure a scheme for a fixed term
- We might deliver contingent assets such as letters of credit to the scheme
- But this merely defers the problem for the majority
- At expiry, renewal may be unavailable or unaffordable
- Physical assets may also be explicitly pledged
- But that Head Office building or the factory will be empty with the insolvency of the sponsor
- And its value highly uncertain



# Bulk Annuitisation

- This is closure of the scheme.
- No new pensions are created
- No future new risk sharing enters the scheme
- Existing risk is crystallised on commercial terms
- And provision for future uncertainty made
- It is the counsel of despair
- Suicide for the scheme



# Investment Policy under Insurance

- Insurance of a pension scheme makes an interesting asset for the fund
- Its value is inverse to the state of health of the scheme and sponsor smoothing fund performance and lowering costs
- This frees the fund to pursue long-term investment goals removing the tyranny of concerns with the present value
- And that lowers cost to the sponsor and aids economic productivity and growth



# Insurance Design

- One of the major funded pension problems is that of annuitisation – the conversion of assets into the pension income.
- It is well known in DC schemes where the market values of the savings pool and the price of annuities at retirement are significant sources of risk and uncertainty.
- Well designed guaranty insurance will involve the provision of the pension annuity rather than a cash amount to enable market purchase
- This benefit arises from the lack of dependence upon annuity market prices and saves the cost of that uncertainty



# Incentives

- The incentives of a guaranty insurer and a corporate sponsor are well-aligned and unique
- Prior to insolvency, when a company is in distress, the insurer has the option to consider investment in the company to rescue it, or simply to sit back and suffer the loss of the scheme deficit.
- This option is valuable to the insurer
- This is not the same as a compensation fund operating as creditor of the insolvent firm
- There the costs of insolvency and liquidation have already been incurred



# Incentives

- The interests of employee and sponsor company coincide in the ongoing value of the employment
- A company treating pensioners in payment well has signalling value to existing employees
- But for former employees, early leavers, or deferred pensioners there is no longer a coincidence of interest or incentive
- This class may be deeply problematic for companies in declining industries and those where technology has lowered the labour force.
- There is a clear case for preservation of these pension benefits
- There is also a clear case for transferability to a new scheme
- And perhaps a case for creating a State sponsored DB scheme to which this class may transfer.



# Member incentives

- If we deliver total certainty with respect to post-retirement pension incomes, we run the risk of members becoming complacent
- And failing to make any additional provision for life's vicissitudes
- Some uncertainty helps to encourage saving
- The key here is to ensure that the insurance guaranty removes only the uncertainty associated with sponsor failure rather than the amount of pension
- For most members, the presence of the guaranty ensures that uncertainty with respect to retirement income declines with age



# Policy Recommendations

- Compulsory Insurance of Pension Schemes
- Let us not forget that members are often contributors and we protect them in other savings contexts.
- Tax deductibility of contributions for sponsor companies and members
- Tax exemption for investment accruals
- This is the dominant source of risking sharing benefits.
- This should be private sector rather than state sponsored
- Private sector provision of public goods is well known



# Design

- A private sector competitive market may offer comprehensive pension insurance
- In many countries the domestic DB pension market may be too small or too concentrated for efficient insurance coverage
- But this is easily resolved by international provision
- In addition more complex structures such as private-public partnership provision are feasible
- That might for example have the usual design, build and operate under license format of infrastructure projects.



# Finally

- Let us not be fixated by concerns of risk
- Not all uncertainty is inimical
- Reducing risk is resource costly
- The long term differs from the sequence of the short terms
- Remember that any animal which tried to eliminate uncertainty from its environment would find this consumes so much of its resources
- That it would be unable to feed itself or reproduce
- And there lies extinction



# Contacts

- Questions
- By email: [Con.Keating@BrightonRockGroup.co.uk](mailto:Con.Keating@BrightonRockGroup.co.uk)
- There are a number of papers and articles covering this subject on our website:

[www.BrightonRockGroup.co.uk](http://www.BrightonRockGroup.co.uk)