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Pensions:
A Corporate Finance Perspective

Presentation by Zvi Bodie at the Seminar on Pension Finance and Economics

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Economics of pensions

The primary function of pension plans is to provide retirement income insurance to employees. Occupational pensions are the second pillar in a 3-pillar structure:

1. Mandatory state sponsored old age income insurance
2. Occupational pensions
3. Personal retirement saving

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Corporate pension finance

- A company's defined-benefit pension liability is a form of debt held by the employees.
- Unless their pensions are guaranteed by a third party, employees are exposed to the credit risk of the plan sponsor.
- Funding of the pension plan reduces employee exposure to this credit risk. The pension assets serve as collateral for the pension liabilities.
- The company's economic pension liability is its vested benefit obligation (VBO), not the projected benefit obligation (PBO).
- If it is free of default risk, the market value of the VBO should be measured as the cost of a replicating portfolio of default-free fixed-income securities.
- Tax rules create incentives to provide pensions and to fund them.

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Comparison of corporate pension paradigms

	Traditional Paradigm	New Paradigm
Analytical perspective:	Pension plan viewed as a stand-alone entity with focus on future flows	Pension plan viewed as an integral part of sponsoring firm with focus on market value of assets and liabilities
Nature of pension liability:	PBO	VBO/ABO
Valuation framework:	Actuarial smoothing and assumed discount rates	No arbitrage between equity and fixed income when properly adjusting for risk
Measure of risk:	Probability of shortfall	Cost of insuring against a shortfall
Investment policy for plan sponsor:	Passive investment in equities can lower *ex ante* cost of benefits. Optimal asset mix is "diversified."	Immunization minimizes *ex ante* cost of benefits

Current pension policy issues

- DB plans in the US and UK are in decline and are being replaced by DC plans and self-directed retirement accounts. As a result, responsibility for managing risk is transferred to individuals who are ill-equipped to handle it. What institutional structure is best for dealing with retirement income risk?
- The current funding deficits are being treated as resulting from an unpredictable "perfect storm." Plan sponsors and beneficiaries are portrayed as needing relief from an unavoidable crisis.
- Should the government provide pension insurance?

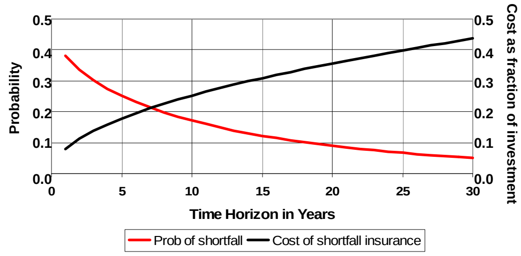
The problem of accounting bias

A company's pension expenses are currently computed using methods that anticipate a positive equity risk premium and dampen the volatility of equity returns. Thus, companies whose plans invest in equities overstate their earnings and understate the volatility of earnings and net worth. Companies that invest in fixed income instruments are punished by higher reported costs without visible benefits from risk reduction.

The illusory arbitrage opportunity created by generally accepted accounting practices constitutes a major barrier to the adoption of sound pension funding and asset allocation strategies.

The fallacy of time diversification

Probability of shortfall vs. cost of shortfall insurance



Rational pension policy analysis

Calls for a synthesis of principles of actuarial science and financial economics

- ***The diversification principle***: pooling and spreading of mortality risk lowers costs and improves welfare.
- ***The replication principle***: today's cost of a future pension benefit is the market price of a portfolio strategy that replicates the promised payoffs under all contingencies.
- ***The Law of One Price and the no-arbitrage principle:*** A dollar is worth a dollar whether invested in stocks or in bonds. The fair-market risk-adjusted rate of return on all assets equals the risk-free rate.

Corporation's optimal pension policy

- For a healthy company, the optimal pension policy is to fully fund and immunize its defined-benefit liabilities with a fixed-income portfolio.
- Any other policy increases the risks borne either by the employees or by the shareholders of the corporation. For the employees it is inefficient to bear the default risk of the firm. For shareholders, investing the pension assets in equities will at best leave the value of the firm unchanged while increasing its total risk.
- For a distressed company, pension underfunding and investing in equities may increase the value of shareholders' equity at the expense of the firm's employees and guarantors.

The tax arbitrage argument

- If a firm issues bonds to fund its pension liability and invests the proceeds in bonds issued by other firms, it pays the after-tax interest rate and earns the before-tax rate.
- It therefore should fund to the fullest extent possible and invest 100% in bonds.
- But any reduction in aggregate tax revenue collected by government will surely be offset by increases in other taxes.

False alarm about macro consequences

- If all firms adopted an immunization policy, the result would be a shift from the current system of equity cross-holdings to a system of bond cross-holdings.
- The new system would be more transparent and offer fewer perverse incentives to plan sponsors facing bankruptcy.
- To avoid shocks, transition to new system should be carefully monitored.

Likely future trends

- Aging populations, living longer and healthier.
- Phased retirement is becoming the norm.
- Greater transparency in financial reporting: fair value accounting.
- Shift of responsibility for providing pensions from non-financial firms to financial intermediaries.
- Cost of financial contracting continuing to decline due to advances in telecommunications, information processing, and financial science.

Barriers to rational policy

- Behavioral realities
  - Paradox of choice
  - Fallacies and biased heuristics
- Transaction costs
  - Costs and benefits of customization
- Agency costs: Whom to trust?
  - Pro equity bias - Are the professionals fools or knaves?
- Institutional and political constraints
  - Public attitudes towards social insurance
  - Entrenched interest groups

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Financial engineering and pension reform

- Design, production, and pricing of a new "user-friendly" menu of choices
  - Standard packages with options available at extra cost
  - Escalating annuities
  - Bundled LTC and life annuity contracts
  - Home-equity conversion contracts
- Government can provide new types of "building block" securities
  - TIPS
  - Per-capita consumption bonds
  - Mortality bonds
- International total-return swaps

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