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making financial sense of the future

The Corporate Finance View - Pensions and effective ERM
Gwion Moore – Head of Investment Strategy, M&A Services UK



Introduction

- Discussion on the impact of pension risk management on the corporate capital structure
- Address the interaction of risks within the pension scheme and risks to the corporate sponsor
- Pension risk management decisions can effect the cost of capital for the corporate sponsor
 - Increasing the cost of equity and debt
 - Effecting the optimal level of leverage for the sponsor
- Pensions risk management should be considered in terms of the firmwide risk profile of the sponsor
 - Risk taking in the pension scheme can crowd out risk taking by the sponsor

Introduction

- Discussion on how pension risk impact the decision to fund the deficit
- Pension liabilities are often seen as a form of cheap debt
- However the impact of pension risk on the corporate can mean that pension liabilities can be more dangerous than corporate debts
- Funding the pension liabilities from corporate debt can be net beneficial to the corporate balance sheet if combined with appropriate risk management strategies

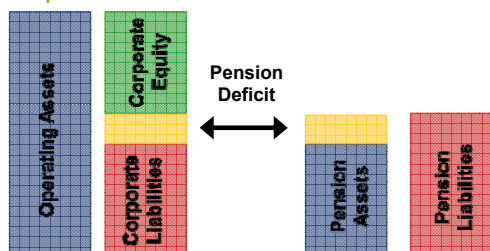
The pension scheme and the sponsor

Pension and the Corporate

- Pension funds impact corporate cashflow and balance sheet
- Cashflows
 - Cash contributions to fund deficits
 - Contribution holidays to prevent trapped surplus
 - Cash contributions compete with dividends, capital expenditure etc
- Balance Sheet
 - Pension deficits treated as debt by ratings agencies
 - Lower credit rating increases the cost of debt
 - At default the deficit is taken on by the PPF
- I will focus on the impact of pension risk rather the deficit for companies far from default

Corporate Balance Sheet and Pension

A simplified model



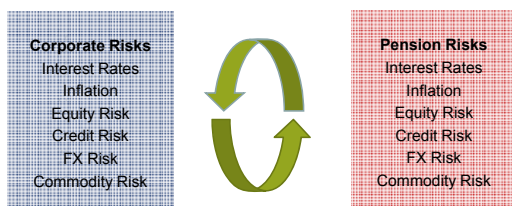
Corporate equity and pension volatility

Pension volatility creates corporate equity volatility

- The corporate sponsor uses its balance sheet to support its pension scheme by committing equity against both the pension deficit and the volatility of the deficit
- The pension deficit is paid for directly from the company's equity, and volatility from the pension scheme leads to volatility in the company's equity
- Risks in the pension scheme that are correlated with risk from sponsors business will have a greater effect

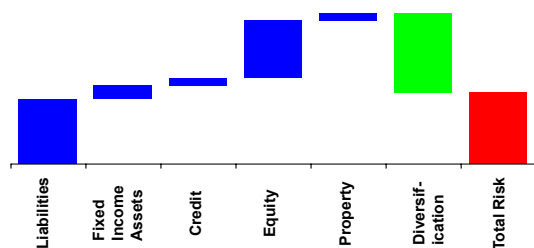
Risks to the Sponsor and Pension Scheme

Typically the corporate sponsor and the pension scheme are exposed to similar categories of market risk



Pension Risks

Annual Value-at-Risk for a typical pension scheme



S&P moves towards ERM

- Ratings agency S&P is considering including assessment of enterprise risk management in its ratings metrics
- In its Request for comment: Enterprise Risk Management Analysis for Credit Ratings of Nonfinancial Companies, S&P proposed including an analysis that would evaluate companies on the basis of their ability to measure and manage a variety of operational and financial risks
- Companies risk management would be rated "poor", "average", "good" or "excellent"
- The analysis would be incorporated into the overall credit rating framework.

Risk and the cost of capital

Cost of Capital

The cost of raising funds for new investments

- A company may wish to raise capital for a variety of reasons: fund acquisitions, capital expenditure etc
- The cost of capital provide a minimum return threshold for new investments
- There are two broad approaches to raising new capital:
 - Issuing new debt
 - Issuing new equity
- Lowering the cost of capital can increase firm value

Weighted Average Cost of Capital

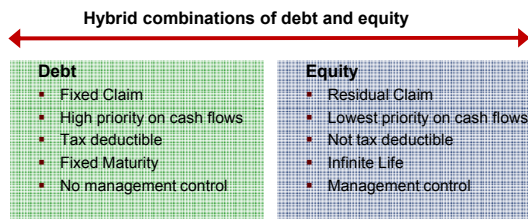
Lowering the cost of capital can increase firm value

- Firm value is future cashflows discounted at the weighted average cost of capital

$$WACC = \frac{Debt}{Debt + Equity} \times \text{Cost of Debt} + \frac{Equity}{Debt + Equity} \times \text{Cost of Equity}$$

- Lowering the cost of capital can increase firm value

Spectrum of Financing Options



Cost of Equity

Risk in the pension scheme can increase the cost of equity

- A company seeking to raise new capital in the equity markets must offer an attractive rate of expected return to investors
- The higher the risk of the company's equity the higher the required rate of return
- If the company's profits and performance are well diversified to the rest of the equity market, the company will be able to offer a rate equivalent or indeed below market returns and still remain competitive
- Equity investments within the pension scheme can increase the volatility of equity and so the cost of equity

Cost of Equity – the theory

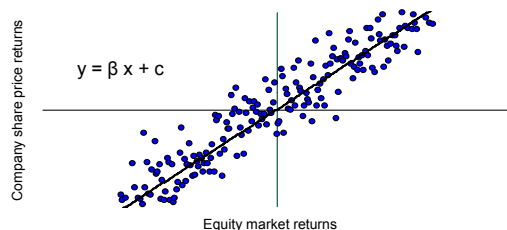
The higher the company's β the higher the cost of equity

- Within the classical CAPM framework this relationship is expressed in terms of the 'beta' or β of a company's share price to the equity market:

$$\text{Cost of Equity} = \beta_{\text{levered}} \times \text{Equity Market Risk Premium} + \text{Risk Free Rate}$$

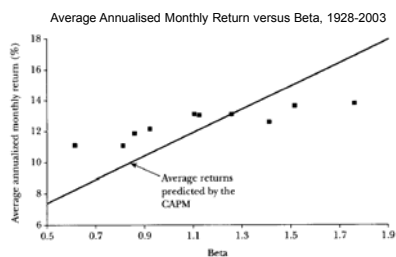
- The higher the β the higher the cost of equity for the company

Equity Beta – the theory



Capital Asset Pricing Model

CAPM model poorly supported by evidence



Capital Asset Pricing Model: Theory and Evidence, Fama and French, 2004

Limits of CAPM

CAPM model miss calculates the cost of equity

- "The problems are serious enough to invalidate most applications of the CAPM" (Fama & French 2004)
 - The cost of equity is too high for high beta stocks and too low for low beta stock
 - The implication is that pensions equity risk is not as costly to the WACC as implied by theory

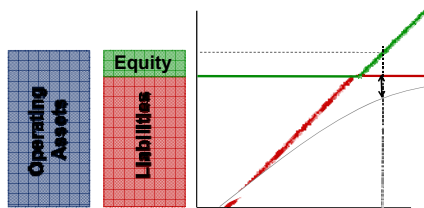
Cost of Debt

A debt investor is like a seller of a put option on a company

- The cost of debt for a company will reflect:
 - the risk free rate of interest
 - the risk premium for the maturity of the debt
 - a credit spread representing the risk of default.
- The exposure of the debt investor is like that of a seller of a put option on the company
 - The investor is exposed to the full downside risk of its investment, while their upside is limited.
- To compensate for the risk of default on the investment the debt investor requires a premium in the form of a credit spread.
 - The greater the downside risk to earnings, the greater the cost of the option and the higher the credit spread required.

Merton model of credit spreads

Increased leverage and increased volatility lead to larger credit spreads and a higher cost of debt



Equity investors are long a call and debt investors short a put

Modigliani-Miller Theorem

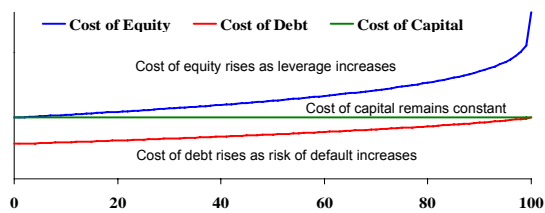
The irrelevancy of capital structure

- The debt/equity mix is irrelevant to the value of a firm
 - In the absence of taxes, bankruptcy and transaction costs
 - Assuming efficient markets and symmetric information
- Assumptions are highly unrealistic
 - What matters is what happens when assumptions are relaxed

Modigliani-Miller Theorem

The irrelevancy of capital structure

- Financing options do not effect the underlying cashflows of the investment

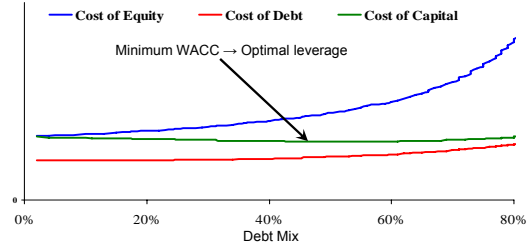


Irrelevancy of Capital Structure



Optimal level of leverage

In practice the corporate risk profile determines the optimal capital structure



Risks from the pension scheme

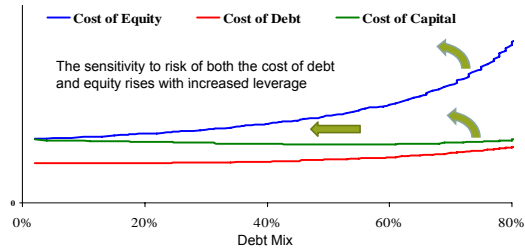
Pension risk and cost of capital

Pension risk can increase the cost of capital, particularly when corporate leverage is high

- All pension risk increases the cost of debt
 - Increased pension risk increases the corporate equity volatility increasing the value of the put option
 - Pension risks that are correlated to corporate earnings have a larger impact
- Pension risk correlated to the equity market increases the cost of equity
- The impact is greatest when the leverage is high

Pension Risk and WACC

Pension risk decreases the optimal level of leverage



Conclusions from Theory

Pension risk can increase the cost of capital, particularly when corporate leverage is high

- Pension risk can increase the cost of capital
- The impact is greatest when the leverage is highest
- Pension risk can increase the effective leverage of the sponsor
- Managing risk from the pension scheme could:
 - Lower the cost of capital increasing the value of the sponsor
 - Lower the effective level of leverage of the sponsor, freeing up debt capacity

The myth of cheap pension debt

To fund or not to fund

- Pension liabilities are obligations of the Company.
- The decision to fund, is therefore, simply whether to cash collateralise these obligations before payment falls due:
 - At one extreme, no explicit cash contributions are made by the Company until the point that pension payments fall due, with considerable cashflow risk at point of payment.
 - At the other extreme, current and future pension liabilities may be completely collateralised
- In practice the underlying economics of this decision have been overridden by regulatory and tax considerations.

German corporate pension liabilities

- German corporates have started to fund their pension liabilities even though there is no tax benefit
 - German corporate pension schemes offer the most extreme example of the impact of tax incentives of funding policy
- Tax relief is given at the point of accrual not funding
 - Pension liabilities were seen as a form of cheap debt
 - For a long time most German corporate pension schemes were very underfunded
 - The increased attention of the capital markets on pension debt, combined with the adoption of IAS accounting has lead to a change in perspective
 - By the end of 2006, more than 60% of the DAX companies had already set up a Contractual Trust Arrangement vehicle in order to fund their direct pension commitments

Corporate Debt or Pension Debt

Pension debt can be more costly than the either the AA accounting discount rate or the marginal cost of debt implies

- Corporates often to assess the cost of pension debt in-terms of the AA corporate discount rate prescribed by IAS19, or in-terms of the marginal cost of debt
- This is incorrect as pension debt has many undesirable risk characteristics
 - Risk from the pension scheme can raise the cost of capital
- It is unlikely that a corporate would choose to issue inflation/longevity linked debt from its corporate balance sheet
- Funding pension deficits from corporate debt combined with effective risk management can be net beneficial to the firm
