The Actuarial Profession
making financial sense of the future

Liquidity and Investment Strategy
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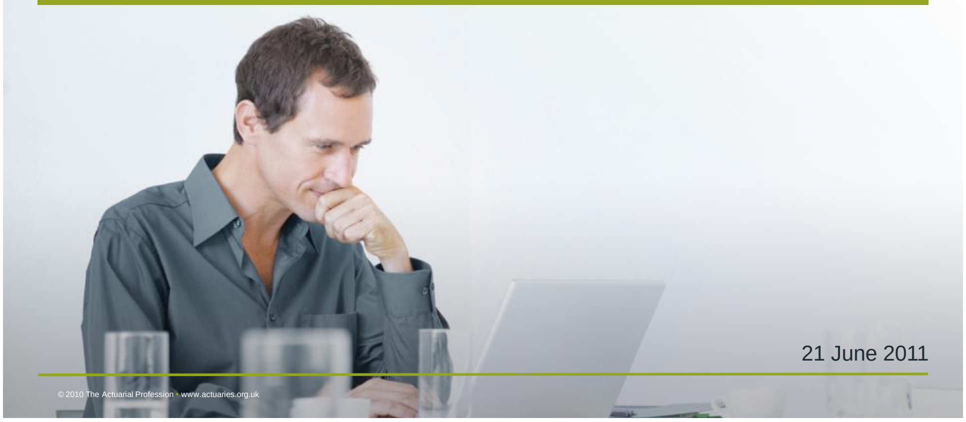
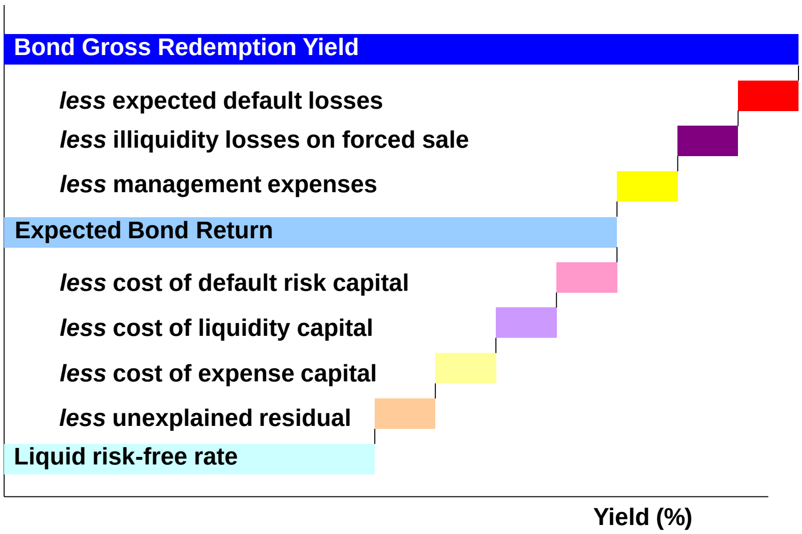


21 June 2011

Liquidity and Investment Strategy

- Why liquidity matters in investment
- Quantifying illiquidity costs
- The reward for illiquidity
- Why finance theory has to change to take liquidity into account

Elements of Corporate Bond Yields: Illustrative



Direct Liquidity: Triggers for Liquidity Shocks

Policy Drivers

Catastrophe insurance payout
Loss of confidence /adverse publicity
No MVA dates
Embedded options moneyness
New product launches / churn
Optional additional premium

Market Drivers

Delta hedging
Other guarantee hedging
Hedge rollover
Group fungibility limits
Derivative physical delivery
Collateral posting on derivatives

Credit Drivers

Downgrades effect on
- Investment risk appetite
- Collateral quality
- Tracking an index
Accelerated settlement / collateral liquidation through counterparty failures

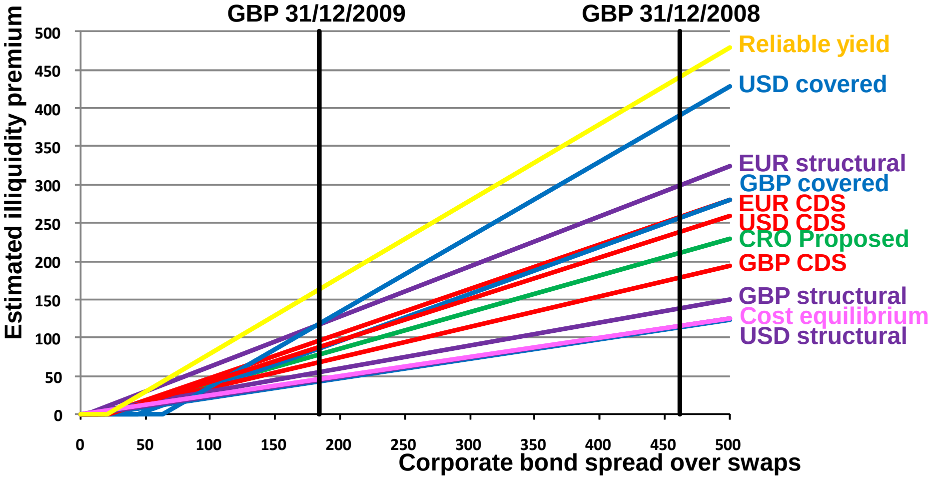
Financing Drivers

Debt coupons / principal
Merger / acquisition finance
Collateral payments on securitisation

No Perfect Tool to Estimate Illiquidity Premiums

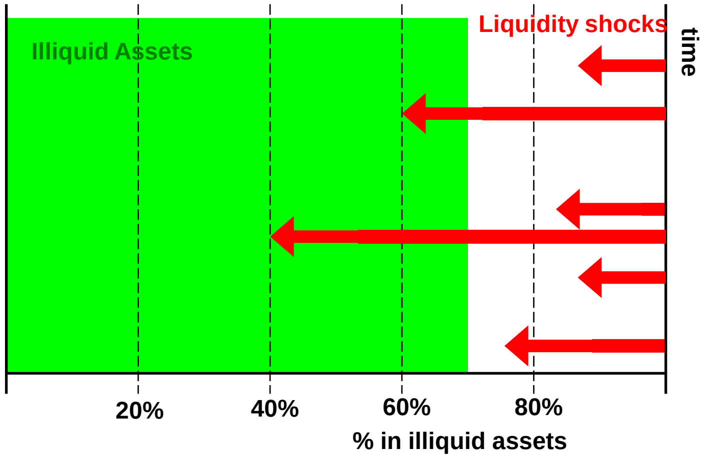
Method	Description	Chief Limitations
Cross sectional regression	Regress bond spreads against measures of credit risk and illiquidity	Relies on credit ratings and accounting ratios to be measures of credit risk (and not illiquidity risk). Requires vast data.
Illiquidity cost equilibrium	Equilibrium investment choices relates spreads to historic default and illiquidity costs, allowing for illiquidity cost nonlinearity.	Need description of representative investor illiquidity cost function. Assumes investor rationality.
Asset swap spreads	Bank sells an illiquid asset to a long term investor and swaps back total return for LIBOR + illiquidity premium	Infrequent trades. Also reflects credit risk of joint bank / collateral failure.
Covered bond	Yield on government guaranteed corporate bonds compared to government issued bonds.	Few bonds exist in most currencies, and these bonds are often quite liquid so attract a low illiquidity premium.
Reliable yield	Bond spread minus “prudent” (ie 2x) historic defaults	Premium for uncertainty in defaults counted as illiquidity premium.
Structural model	Bond spread less theoretical value of put option to default	Illiquidity premium counts missing elements in option pricing model (transaction costs, jumps, stochastic, volatility)
CDS basis	Bond spread minus CDS spread	Illiquidity premium estimate includes counterparty credit risk on CDS and ignores illiquidity priced into CDS itself.

Different Illiquidity Premium Estimation Methods Linear Regression against Yield Spreads



Source: CRO forum risk free calibration / Deloitte calculations.

Equilibrium Construction:
Why marginal > average illiquidity cost



Illiquidity Optimisation Model