



SPT's Cost of Capital – A Presentation for Ofgem

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Insight in Economics™



- Ofgem's initial range for the cost of capital
- NERA analysis of key factors affecting the cost of equity at RIIO-T1
- NERA analysis of historic betas
- Cost of equity – Preliminary analysis
- Impact of capex programme on SPT's cost of equity
- Impact of Dividend Policy on Cost of Equity
- Cost of debt
 - Debt indexation
 - Recent utilities issues
- Appendix: Various further supporting evidence



Ofgem's Initial Range for the Cost of Capital

Initial assessment of Ofgem's real cost of equity range



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Ofgem's Initial Range for the Real Cost of Equity

	Low	High
Gearing	N/A	N/A
Risk free rate	1.4	2.0
ERP	4.0	5.5
Asset Beta (number)	N/A	N/A
Equity Beta (number)	0.65	0.95
Cost of Equity (post-tax)	4.0	7.2

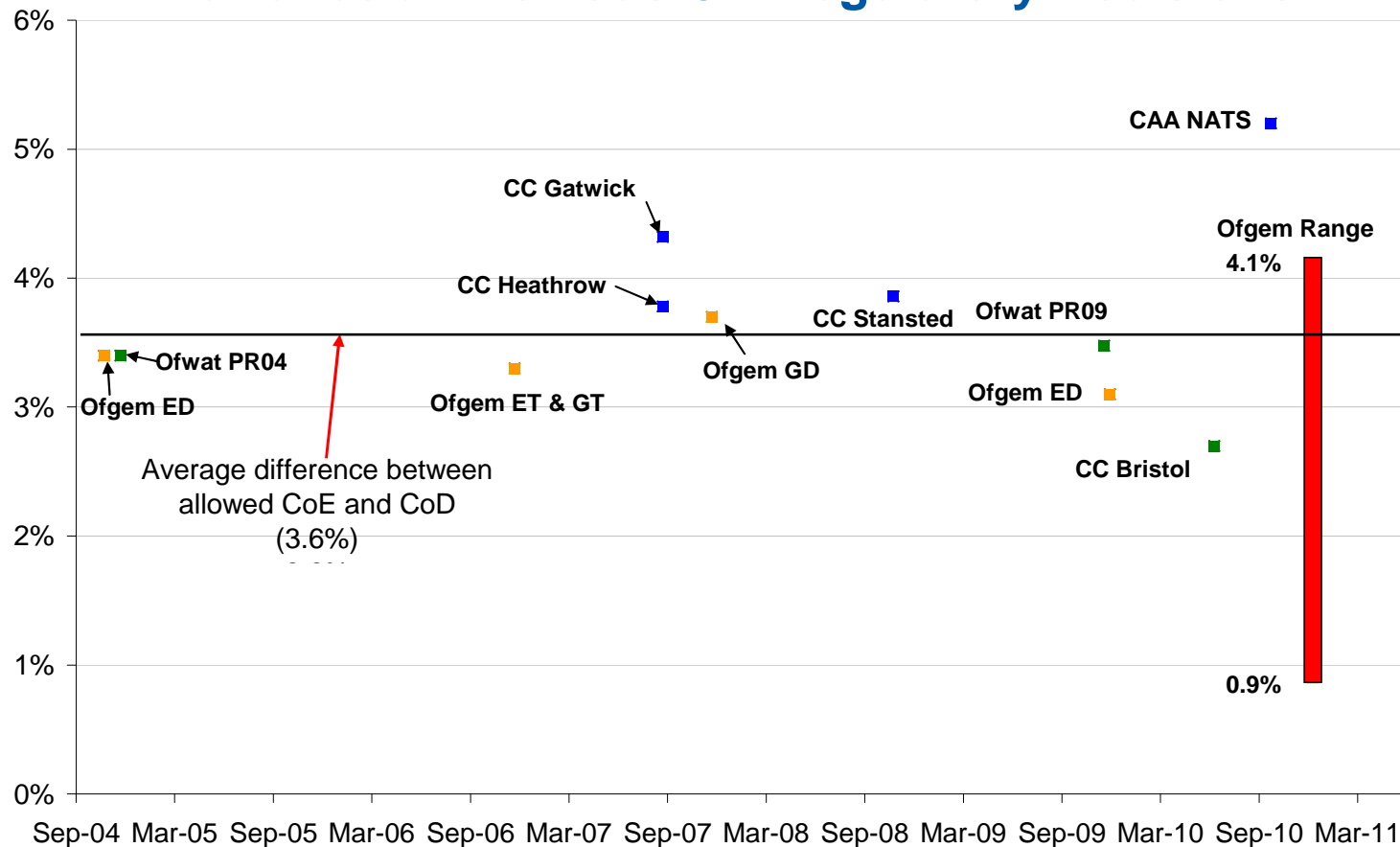
- Ofgem's low-end of 4.0% cost of equity is implausible
 - Significantly lower than other regulatory decisions worldwide
 - Only slightly higher than recent Cost of Debt data
 - Ofgem combines low-ends of parameters without regard to internal consistency
- Ofgem's CoE is without reference to gearing, which is meaningless
 - Equity beta low (but difficult to judge as no reference to gearing is made)
- No consideration of forward looking risks (even at the high end)
 - Ofgem assert that financial markets will return to "normal" for RIIO-T1 but provide no evidence
- No cross-checks with wider market evidence (DGM, Market to Asset Ratios, etc.)
 - E.g. if CoE = 4.0%, then UK utilities would historically have traded at much greater premiums

Ofgem's allowed CoE and CoD shows a difference of 0.9-4.1%, which is out of line compared with previous UK decisions



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Difference Between CoE and CoD Allowance at Previous UK Regulatory Decisions



Source: Various regulatory decisions and NERA calculation

- Only top end of Ofgem's range consistent with precedent
 - Low-end below all UK regulatory decisions since 2004
 - Even mid-point of range below all regulatory decision since 2004
- But range is based on CoD allowance of 3.1%, which does not allow for transaction and pre-funding costs
- Other regulators (including the CC) have allowed 0.1-0.5% for transaction and pre-funding costs
- Recognising these costs decreases Ofgem's range by 0.1-0.5% (mid-point 0.3%) to 3.7-0.6% (based on mid-point)

Ofgem's WACC needs to attract capital in an environment of competing investment alternatives



Average European Regulatory CoE Allowances for New Investment (2008-2010)

Year	No. of decisions	RFR (real)	Equity Beta (60% gearing)	MRP	Uplifts	CoE (post-tax real, 60% gearing)		
						Min	Max	Average
2008	15	2.2%	0.91	4.2%	1.2%	3.4%	14.1%	7.3%
2009	12	2.3%	0.82	4.5%	0.9%	4.9%	10.0%	6.8%
2010	9	2.1%	0.99	4.6%	0.9%	4.2%	14.1%	7.5%

Source: various regulatory decisions (see Appendix for individual decisions); allowed regulatory WACC uplift allocated to equity (uplift CoE = allowed uplift / (1-gearing)); we use mid-points where regulators stated ranges for allowed uplifts

- Ofgem's WACC range (4.0-7.2%) mostly below rates allowed in other European jurisdictions
 - Average returns allowed in range of 6.8-7.5% *despite many European networks being (significantly) state owned*
 - Many European energy network investments offer equity returns above Ofgem's top end (7.2%)
 - See Appendix for details
- In the US allowed returns are c.8.5% (real; c.50% gearing) before adders for investment incentives; and around 10.0% (real; c.50% gearing) after allowed adders (see slide 44, 56)
 - UK network operators are also present in the US (e.g. Iberdrola and NG)

Ofgem's current CoE range (4.0-7.2%) looks insufficient to attract capital into new required investment

Ofgem propose a cost of debt based on indexation using 10Y trailing averages (current result shows 3.1% real)



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- Ofgem's method of 10Y trailing averages increases risk for companies with large funding requirements (e.g. SPT)
 - 10Y trailing averages only react with significant lag to changes in spot rates
 - Spot rates may increase above 10Y trailing averages over the coming years, as quantitative easing is expected to unwind, interbank credit risk to increase, etc.
 - Ofgem's approach may be appropriate for companies with 'steady state' RAV, but not for companies with strongly increasing RAV
- Ofgem does not explain its method to derive real yields
 - What is Ofgem's implicit inflation assumption?
 - Does Ofgem use ILG yields plus a credit spread? This would introduce bias as ILG yields are biased downwards, due to inelastic demand from institutional investors
- Ofgem dismisses a debt 'weighting approach', on the basis of complexity
 - Complexity should not be the only reason to dismiss a method
 - Where companies face large funding requirements a weighting approach would lead to greater protection
- Ofgem does not allow for transaction and pre-funding costs

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Key Factors affecting the Cost of Equity at RIIO-T1

Data from option prices show that investors perceive greater downside risk in equity prices



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Option Implied Percentiles for FTSE 100 in 6 Months Time



Source: Bank of England and NERA calculation; Data cut-off date 31-Dec-10; for an explanation of the derivation of option implied index value probability density functions, see Bank of England: “Notes on the Bank of England Option-Implied PDFs” and “Recent developments in extracting information from options markets”

- Downside risk is higher over period than upside risk
 - However, CAPM assumes symmetric distribution of risk/return
 - To account for higher expected downside risk, CAPM-WACC determination above mid-point of plausible range

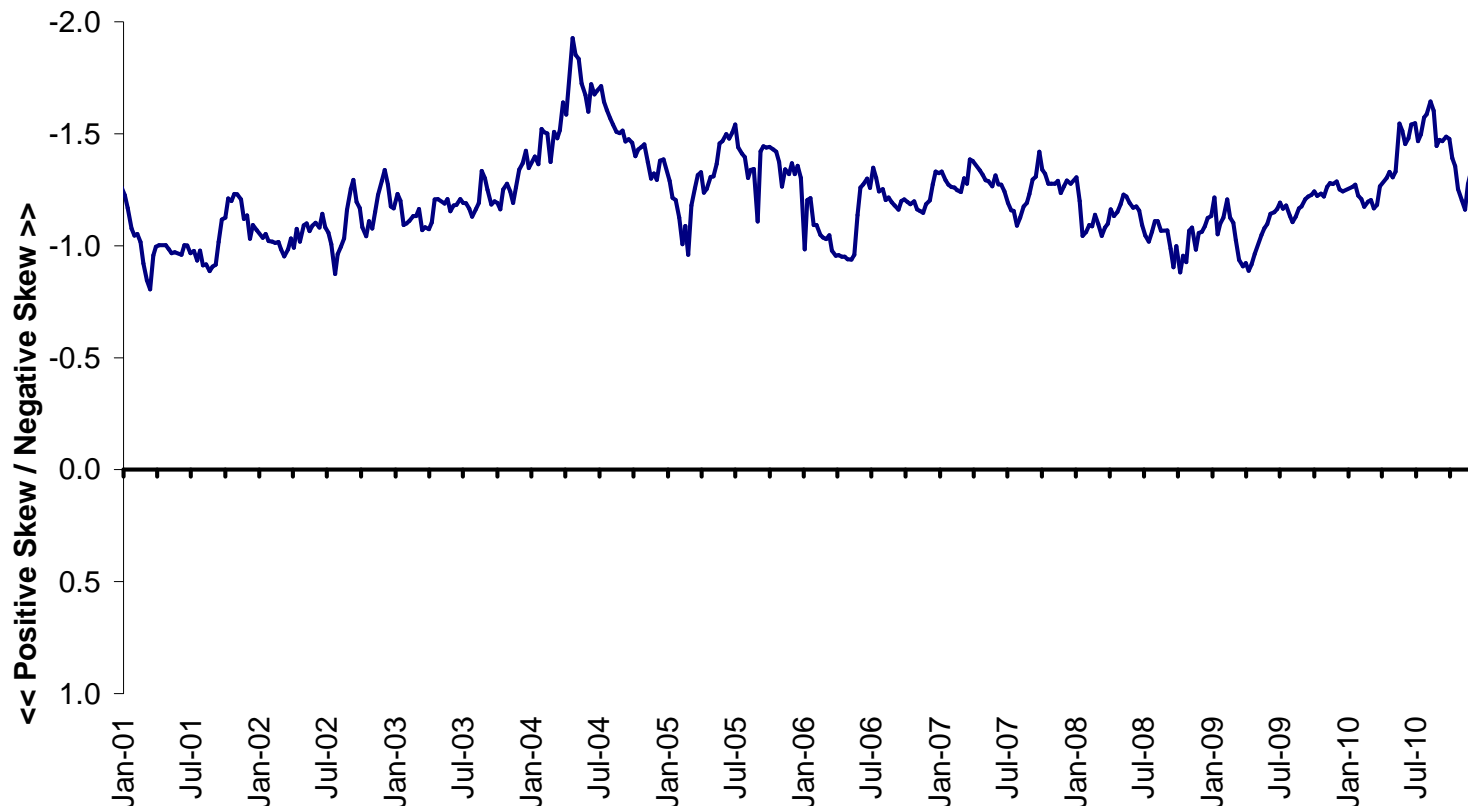
- This is evidence for why allowed returns should be set at a premium to the WACC in order to offset downside skewness

Further market evidence shows returns are negatively skewed which is likely to lead to a downwardly bias in CAPM-CoE



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Option Implied Skewness of FTSE 100 Returns in 6 Months Time



- Further evidence from option contracts shows that expected returns are negatively skewed
- However, CAPM assumes zero skew in market returns
- Extensions of CAPM which account for skewness in returns show higher CoE for negative skew

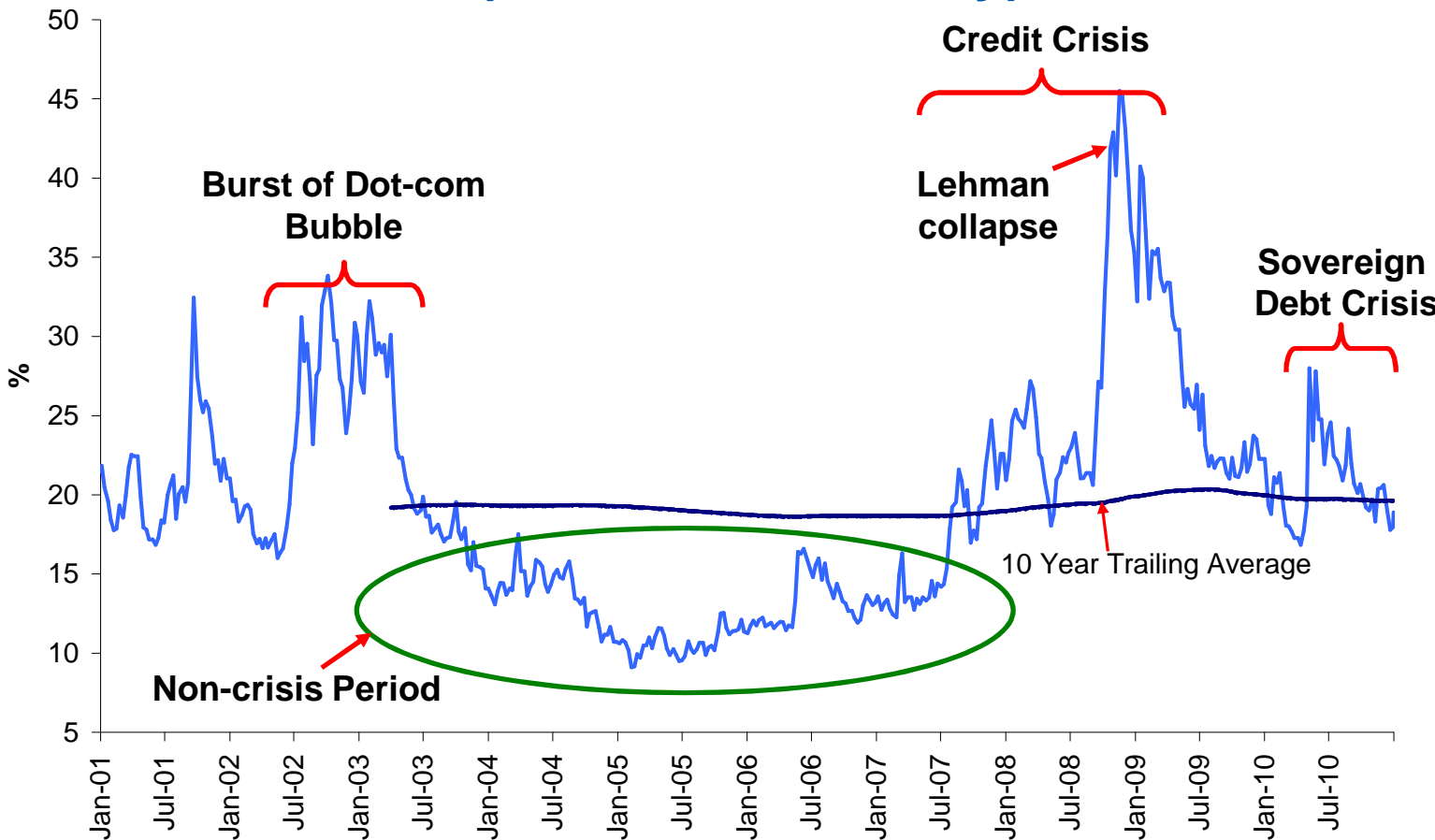
Source: Bank of England and NERA calculation; a negatively skewed distribution is one for which large negative deviations from the mean are more likely than large positive deviations; for an explanation of the derivation of option implied market returns skewness, see Bank of England: “Notes on the Bank of England Option-Implied PDFs” and “Recent developments in extracting information from options markets”

Expected market volatility is higher than “normal” level over 2003 to 2008 period



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FTSE 100 Implied Volatility (6 Months Maturity)



- Ofgem states that current spot levels are back to 10 year trailing averages
- Therefore, Ofgem assumes long term “normal” market conditions for RIIO-T1
- But last 10 years have seen three major crises with exceptionally high volatility
- Expected market volatility higher in current period relative to non-crisis periods (2003-2008)

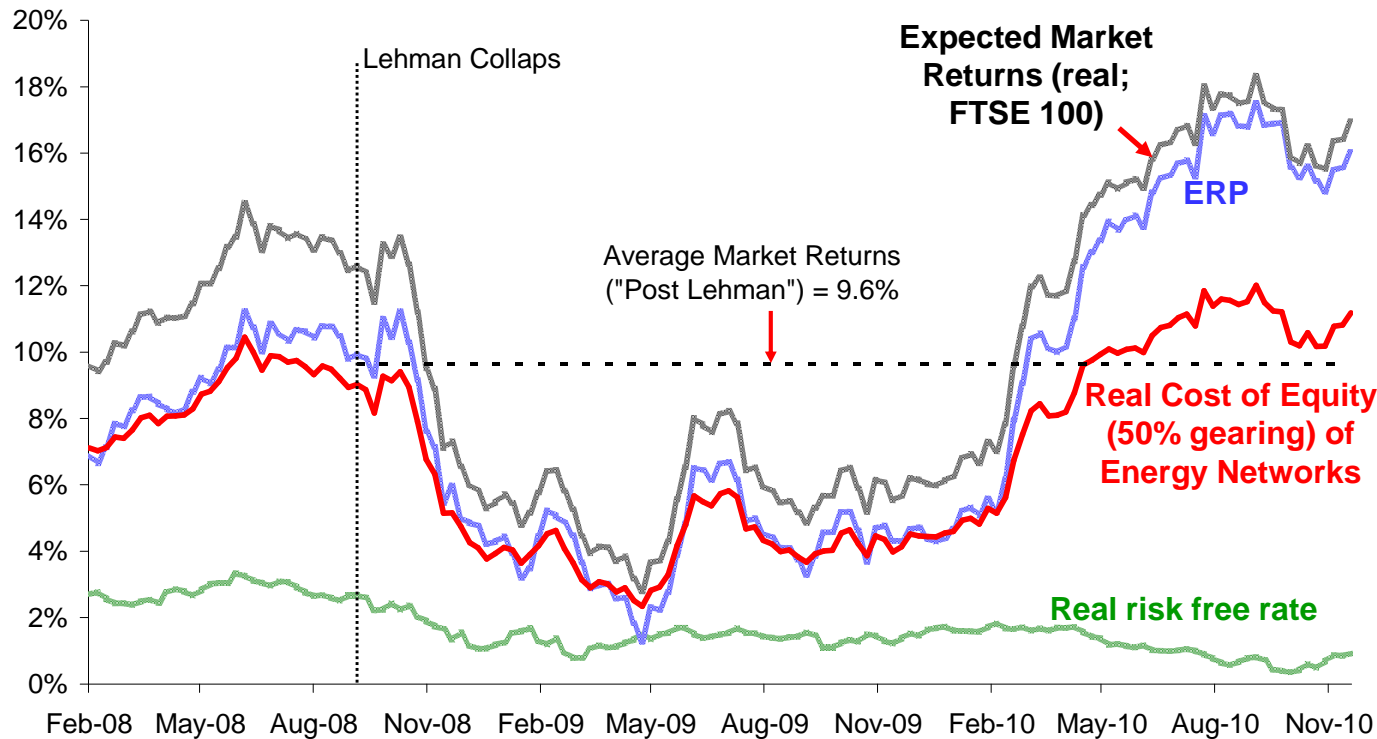
Source: Bank of England; Data cut-off date 31-Dec-10

Our analysis shows expected real market returns since Lehman above long-run averages



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Expected Market Returns (FTSE 100) and Cost of Equity (50% gearing) of Energy Networks



Source: Bloomberg, Consensus Forecast and NERA analysis; DGM based on weekly updates of analyst forecasts; expected real market returns calculated as the market cap weighted average of FTSE 100 companies' prospective dividend yield and real long-term analysts' earnings growth forecast. Note: implied asset beta underlying cost of equity equal to 0.32 (average asset beta for energy network over last 2 years); real risk free rate based on deflated nominal 10 year maturity government bond yields; inflation forecasts based on Consensus Economics.

- We use DGM evidence on expected market returns and CoE for energy networks since Lehman
- Expected real market returns averaged 9.6% since Lehman
 - Historic real market returns for UK market based on arithmetic averages: 7.2% (Source: Dimson Marsh and Staunton 2010)
- Real cost of equity for UK energy networks averaged 6.7% (50% gearing) since Lehman
 - CoE increases to 8.0% at 60% gearing, see slide 42
- *Note all figures based on averages since Lehman (Sep-08); current figures are higher than averages since Lehman*

City analysts forecast ERP at 8% over the last 2 years, significantly above its historic long-run level



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Global Investment Strategy

UK Equity Risk Premium



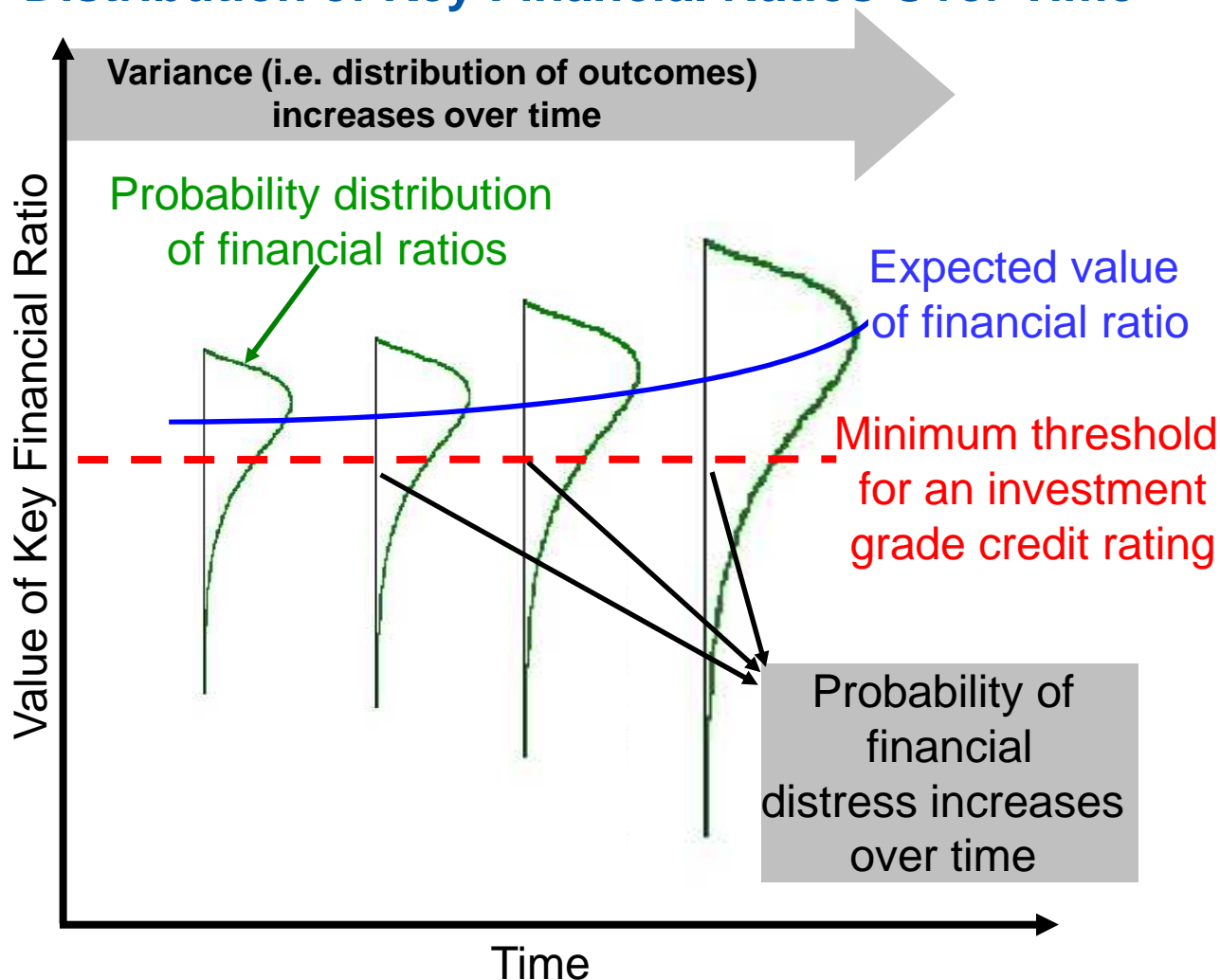
Source: UBS UBS Investment Research; Data cut-off date Dec-10

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Impact of RIIO on Required Returns

Ofgem's RIIO proposals lengthen the review period from 5 to 8 years

Distribution of Key Financial Ratios Over Time



NERA illustration; qualitative illustration only; figure not derived through quantitative modelling

- A longer review period exposes SPT to higher cumulative risk (absence risk mitigants)
- This is exacerbated at current times of high uncertainty
- Possible mitigants to counter higher risk exposure
 - Margin in WACC to compensate increased risk
 - Reducing financial risk (leverage) to alleviate higher market risk
- Increases the need for financeability testing

Longer review period exposes SPT to increased risk of higher future risk free rates



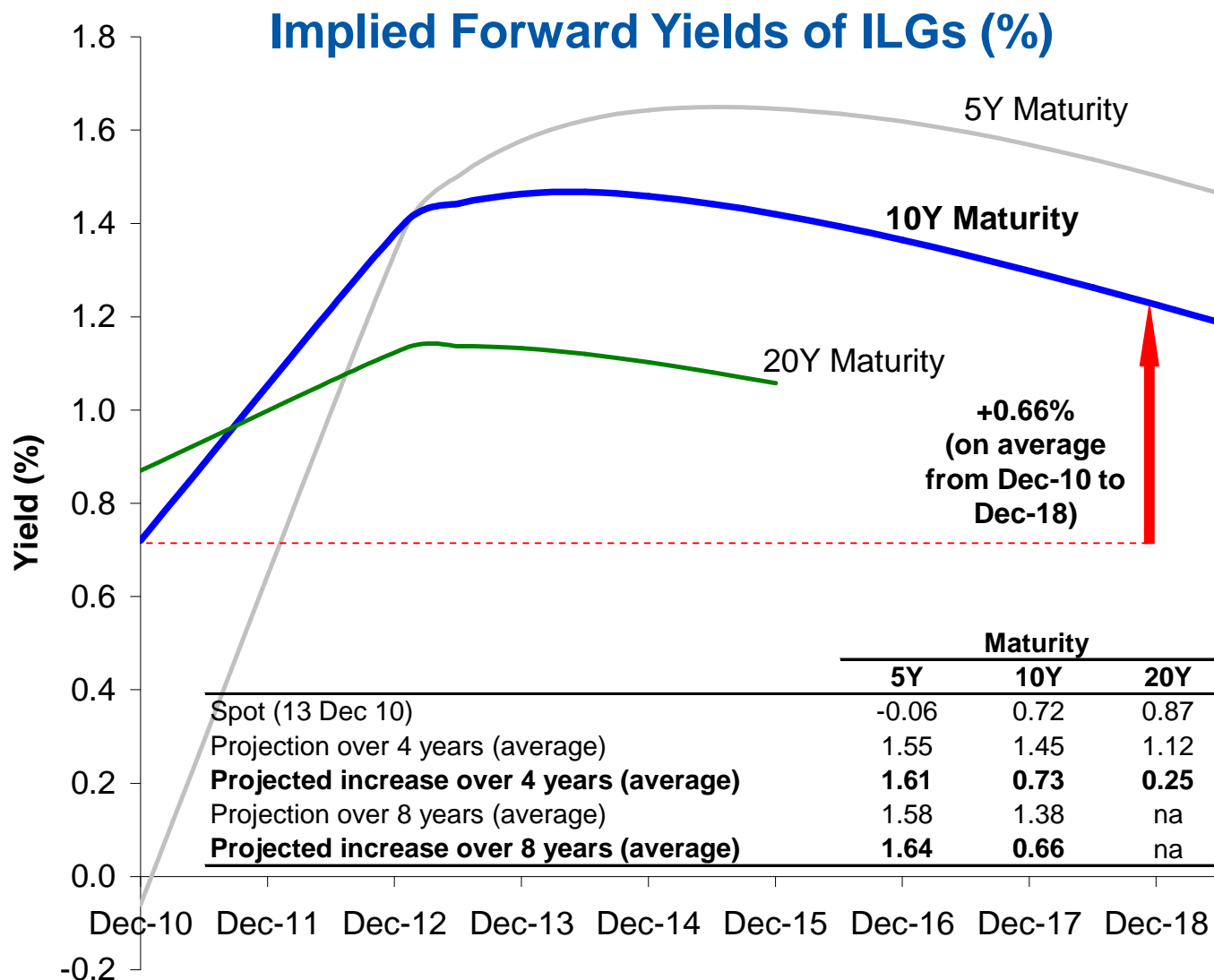
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- Government bond yields are at historical lows and are affected by monetary policy intervention (quantitative easing)
 - E.g. Europe Economics (Dec, 2010) states “...current yields may be biased downwards by around 100 basis points due to Quantitative Easing”
 - Impact of QE may unwind over the regulatory period, leading to an increase in real yields
- Bank of England expects inflation to stay above target, making an increase in the Bank Rate more likely (currently at its historical low of 0.5%)
 - “Inflation is likely to stay above the 2% target throughout 2011, given the forthcoming rise in VAT and continuing increases in import prices.” **Bank of England, Inflation Report, Nov-10**
- UK regulated entities have no possibility to seek an adjustment to the cost of equity during the regulatory period of 8 years
- **A projected increase in the risk free rate needs to be recognised in determining the risk free rate**

Based on implied forward rates real yields of 10 year maturity are expected to increase by 0.7% (on average) over the coming 8 year period



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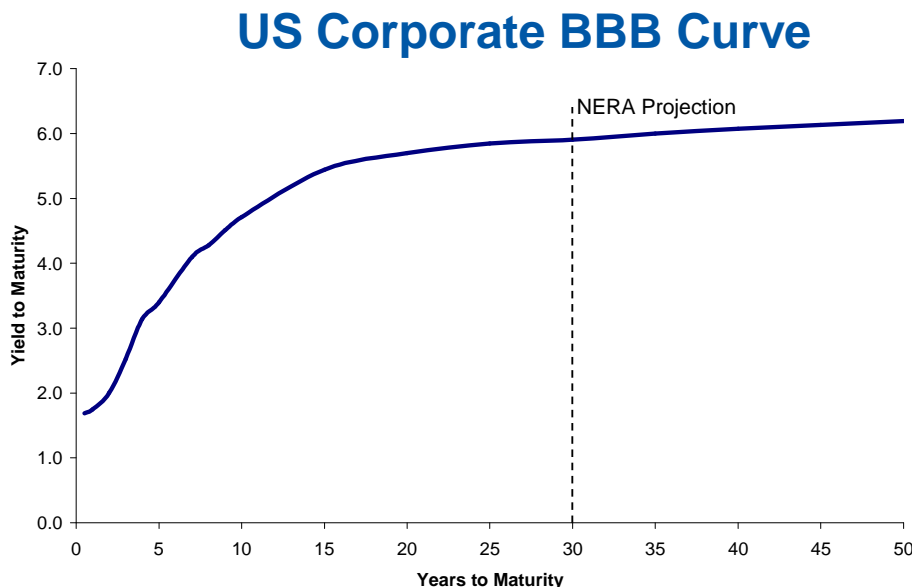
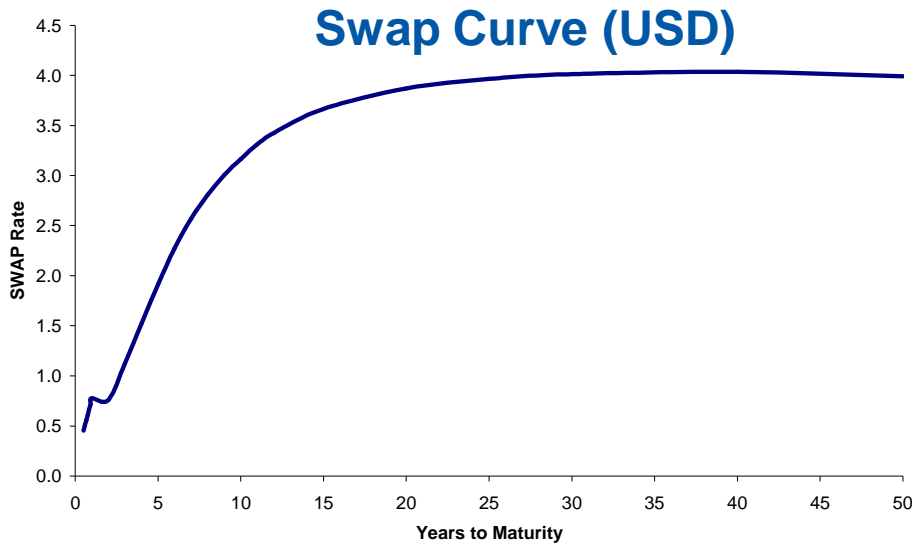
- Increased risk of locking the CoE for a longer period of time (now 8 years)
- ILG yields are expected to increase
 - Yield curve is upward sloping
 - Merrill Lynch Global Fund Manager Survey (14-Dec-10), shows investors (net 27%) expecting an even steeper yield curve
- The allowed cost of equity needs to allow for headroom to accommodate the expected increase in yields
- We assume that our estimate of the current cost of equity based on a spot risk free rate of 0.7% increase by 0.7% over the 8 year period

Source: Bank of England; projections based on NERA calculation of UK instantaneous implied real forward curve, Data Cut-off point 13 Dec 2010

Ofgem plans to extend depreciation lives from 20 years to 45-55 years, which increases financing costs by c.0.5%



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- Extending the regulatory depreciation lives increases cash flow risk
- Analysis of yield curve data shows premiums investors require to compensate for duration risk
 - Swap curve data shows extending asset live by 30 years increases the *base risk premium* by c.0.1%
 - BBB corporate debt curve data shows extending the asset life by 30 years increases the risk premium by c.0.5%.
- No direct evidence from equity markets on duration risk but this debt market evidence provides a proxy for equity

Term Premium (%)

Increase in Duration
(Years)

20->50

USD Corporate (BBB)	0.5
USD SWAP Rate	0.1

Note: 50 year maturity for BBB Corporates based on log-linear projection (using data for maturity years 20 to 30)

Source: Bloomberg and NERA calculation

Note: Analysis based on US data since EUR/GBP data is less liquid in particular at the long end of the curve

A longer review period and longer asset lives are likely to increase the required rate of return



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- A longer review period exposes SPT to higher risk
 - Market evidence shows more downside risk than upside risk in market returns
 - The distribution of key financial ratios widens which increases the probability of a credit event
- A longer review period exposes SPT to increased risk of higher future risk free rates
 - Market evidence shows an increase of 0.7% in government bond yields over the next 8 years
 - The risk free rate and hence CoE needs to be adjusted for this projected increase in yields
- Extending the regulatory depreciation lives increases cash flow risk to equity
 - Extending asset lives by 30 years under RIIO increases the cost of equity by c.0.5%
- Ofgem’s current range does not account for these increased risks
- E.g. Merrill Lynch states
 - *“... although the upper range of Ofgem’s range would represent a 50bps premium [relative to DPCR5], there may be debate about whether this is sufficient to reflect the risks associated with a longer control period (now 8 years) and changes to asset lives”*



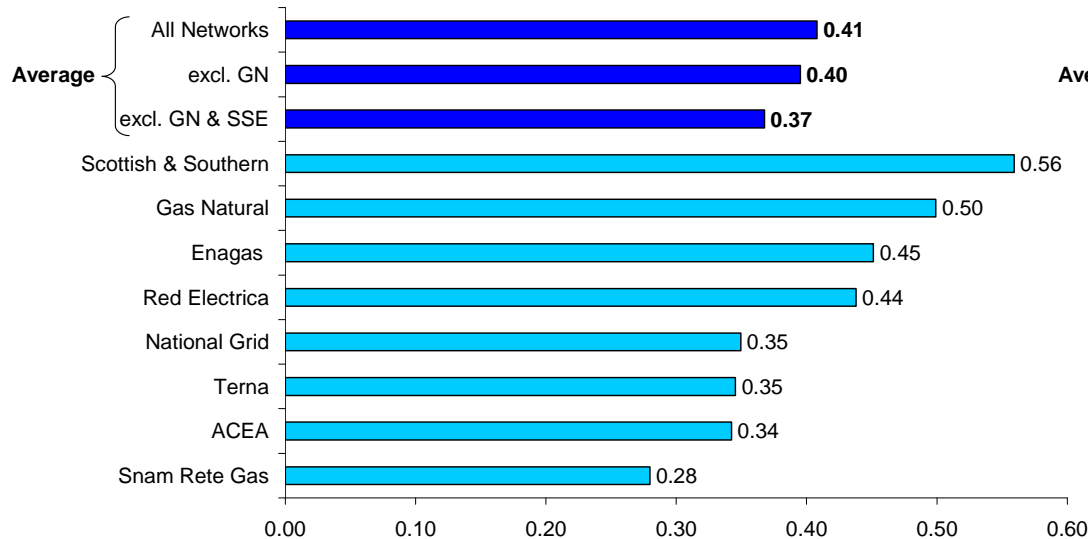
NERA Historic Beta Analysis

Asset betas for European energy networks depend on estimation period

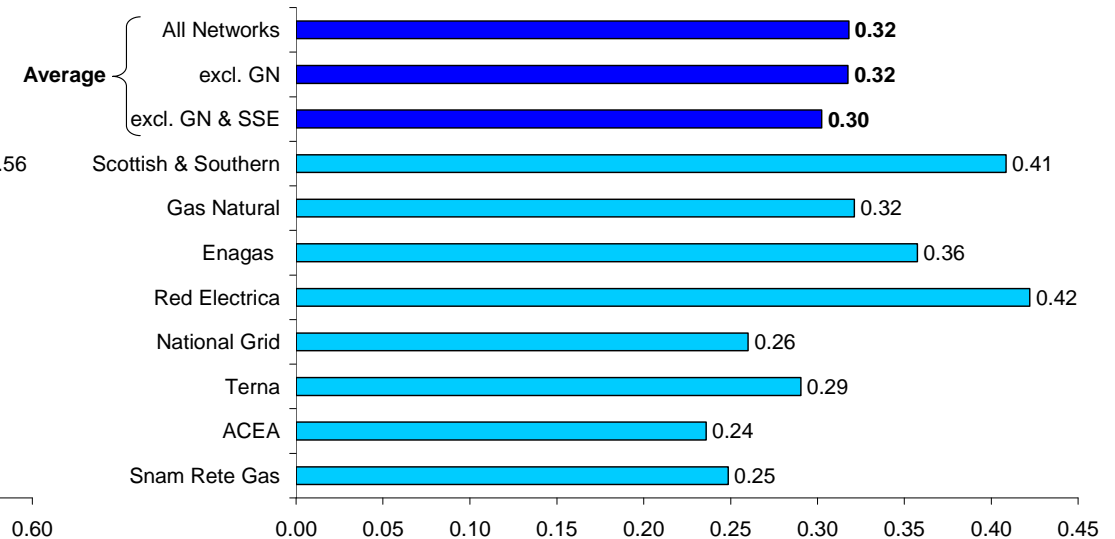


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5Y Asset Betas for European Network Operators (Dec 05 – Nov 10)



2Y Asset Betas for European Network Operators (Dec 08 – Nov 10)



Source: Bloomberg; Raw betas Blume-adjusted; asset betas based on Miller formula. Daily Data. EUR Companies regressed against Euro Stoxx 600; UK companies, are regressed against FTSE All Share

Average Asset Beta of 0.41 for all energy networks

- Equity Beta = 0.82 (50% Gearing)
- Equity Beta = 1.03 (60% Gearing)

Average Asset Beta of 0.32 for all energy networks

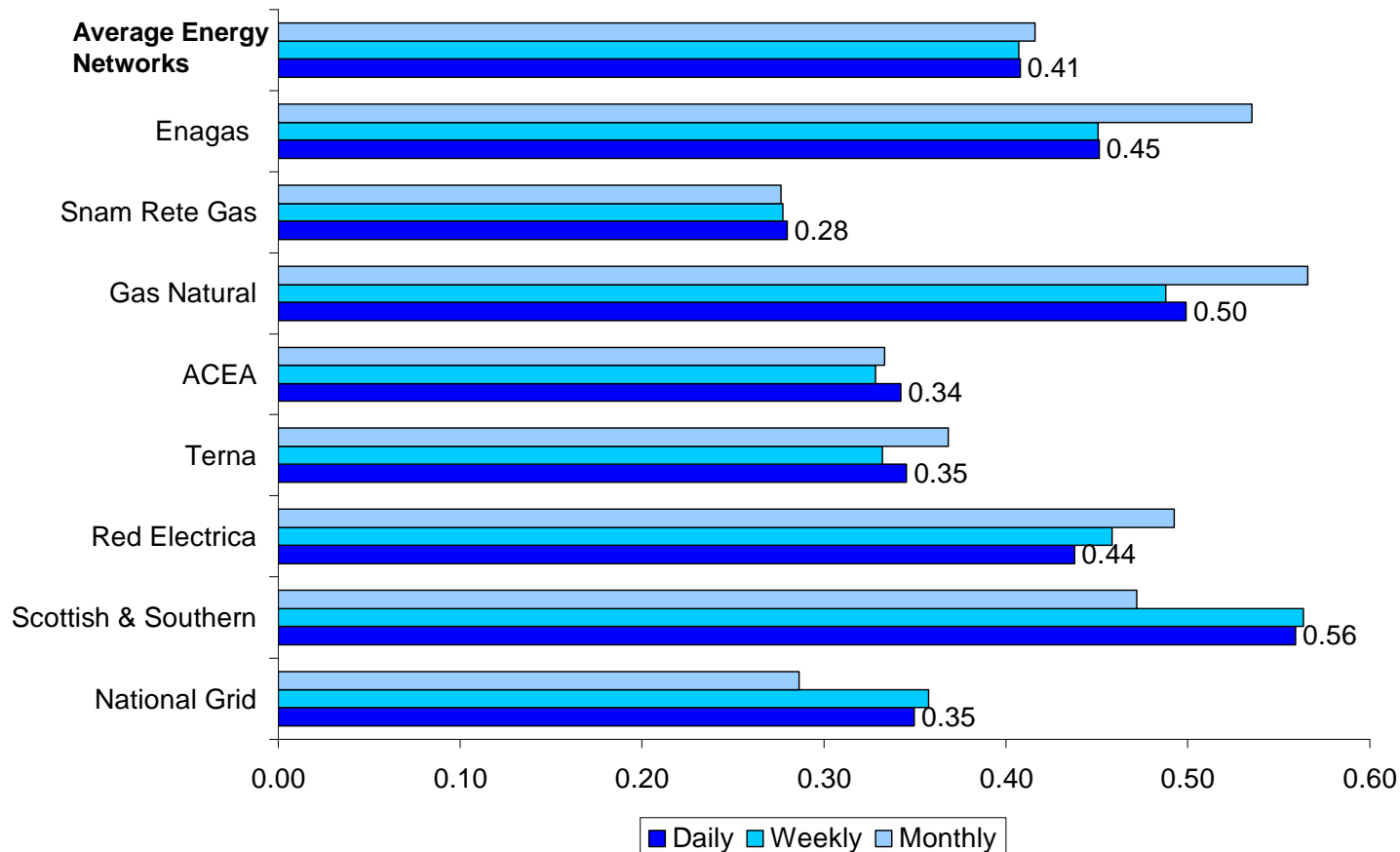
- Equity Beta = 0.64 (50% Gearing)
- Equity Beta = 0.80 (60% Gearing)

- Note: Ofgem/EE use SSE. EE also use integrated utilities Centrica, Enel, GDF Suez and International Power as cross checks. GN has >50% share of profit from regulated activities
- Increased corporate activity at GN does not necessarily increase beta as it is likely to be uncorrelated to general market movements

Our results are similar for daily, weekly and monthly data



5Y Asset Beta for Network Operators (Dec 05 – Nov 10)



- Results based on daily and weekly data very close
- Monthly data is less robust due to the small sample size (60 observations)
- R-squared for daily and weekly similar (see next slide)

Raw betas Blume-adjusted; asset betas based on Miller formula. EUR Companies regressed against Euro Stoxx 600; UK companies regressed against FTSE All Share)

We also check the explanatory value (R-squared) for all our estimations



R-squared measures for different specifications 5-Year Time Horizon

	Beta			R-squared		
	Daily	Weekly	Monthly	Daily	Weekly	Monthly
National Grid	0.35	0.36	0.29	0.35	0.38	0.17
Scottish & Southern	0.56	0.56	0.47	0.32	0.37	0.18
Red Electrica	0.44	0.46	0.49	0.27	0.34	0.30
Terna	0.35	0.33	0.37	0.17	0.20	0.29
ACEA	0.34	0.33	0.33	0.19	0.17	0.13
Gas Natural	0.50	0.49	0.57	0.41	0.34	0.40
Snam Rete Gas	0.28	0.28	0.28	0.11	0.11	0.07
Enagas	0.45	0.45	0.54	0.31	0.28	0.31
Average Energy	0.41	0.41	0.42	0.27	0.27	0.23
Northumbrian Water	0.27	0.29	0.17	0.23	0.27	0.03
Severn Trent	0.33	0.36	0.24	0.31	0.35	0.07
United Utilities	0.34	0.36	0.28	0.37	0.40	0.17
Penon	0.34	0.39	0.32	0.23	0.34	0.17
Average All	0.38	0.39	0.36	0.27	0.30	0.19

Source: Estimation based on Bloomberg data; European companies regressed against Euro Stoxx 600, UK companies against FTSE All Share. Time Period: Dec 05- Nov 10

- R-squared measures the share of total variation in stock returns that is explained by variation in market returns
- Variation in market returns can explain ca. 30% of all variation in stock returns
- Little difference in beta and explanatory power (R-squared) for different frequencies when only energy companies are considered

Explanatory value (R-squared) for 2-year estimates



R-squared measures for different specifications 2-Year Time Horizon

	Beta			R-squared		
	Daily	Weekly	Monthly	Daily	Weekly	Monthly
National Grid	0.26	0.28	0.23	0.23	0.38	0.16
Scottish & Southern	0.41	0.39	0.38	0.17	0.22	0.19
Red Electrica	0.42	0.42	0.47	0.27	0.39	0.37
Terna	0.29	0.22	0.33	0.13	0.04	0.35
ACEA	0.24	0.19	0.19	0.09	0.04	0.05
Gas Natural	0.32	0.31	0.44	0.31	0.29	0.60
Snam Rete Gas	0.25	0.20	0.24	0.07	0.02	0.06
Enagas	0.36	0.31	0.46	0.27	0.20	0.36
Average Energy	0.32	0.29	0.34	0.19	0.20	0.27
Northumbrian Water	0.23	0.22	0.17	0.18	0.17	0.04
Severn Trent	0.24	0.25	0.16	0.18	0.28	0.02
United Utilities	0.25	0.26	0.22	0.21	0.30	0.12
Pennon	0.29	0.33	0.29	0.19	0.37	0.26
Average All	0.30	0.28	0.30	0.19	0.23	0.21

Source: Estimation based on Bloomberg data; European companies regressed against Euro Stoxx 600, UK companies against FTSE All Share. Time Period: Dec 08- Nov 10. Note: Monthly data over 2 years is generally quite unreliable as it is based on 24 data points only.

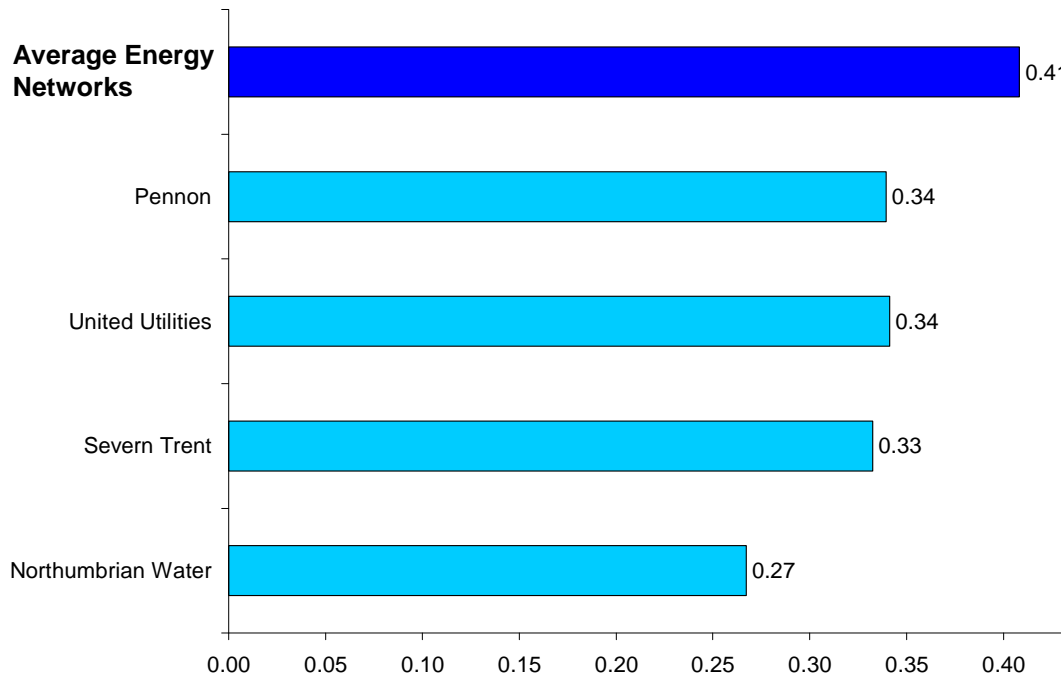
- For energy companies R-squared is highest for monthly data, which has highest beta values but:
 - Monthly data over 2 years is quite unreliable as it is based on 24 data points only
 - In the literature R-squared is mostly used for comparing specifications that explain the same dependent variable
- Changing the frequency / time period means “total variation” to be explained changes → R-squared not directly comparable

Asset betas for UK water companies are lower than for energy networks

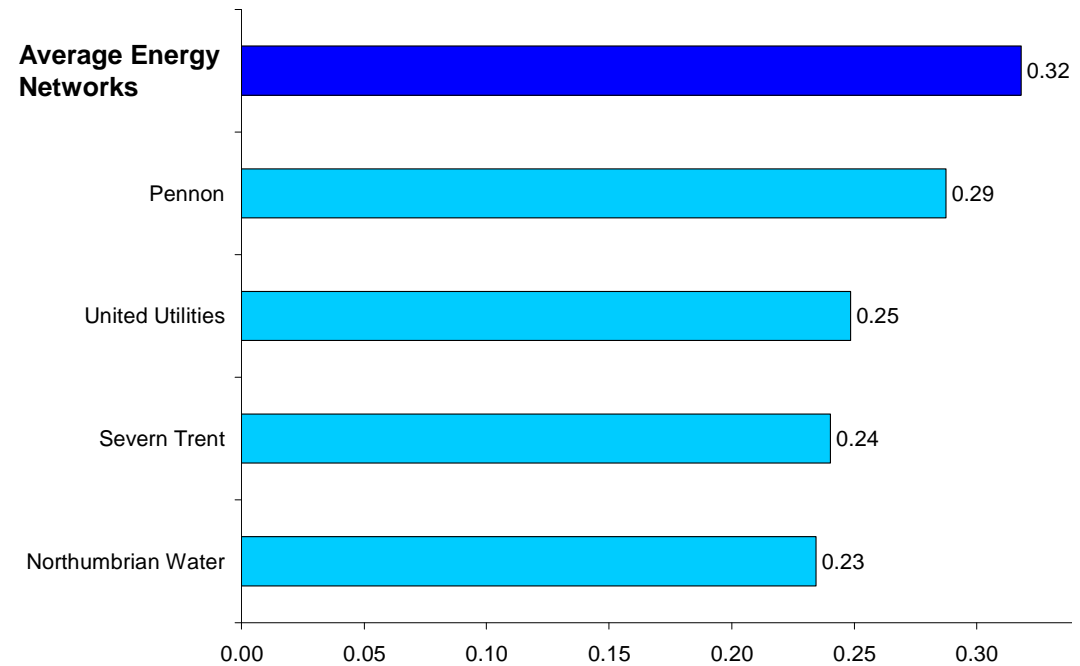


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5Y Asset Betas (Dec 05 – Nov 10)



2Y Asset Betas (Dec 08 – Nov 10)



Source: Bloomberg; Raw betas Blume-adjusted; asset betas based on Miller formula. Daily Data. Water stocks regressed against FTSE All Share)

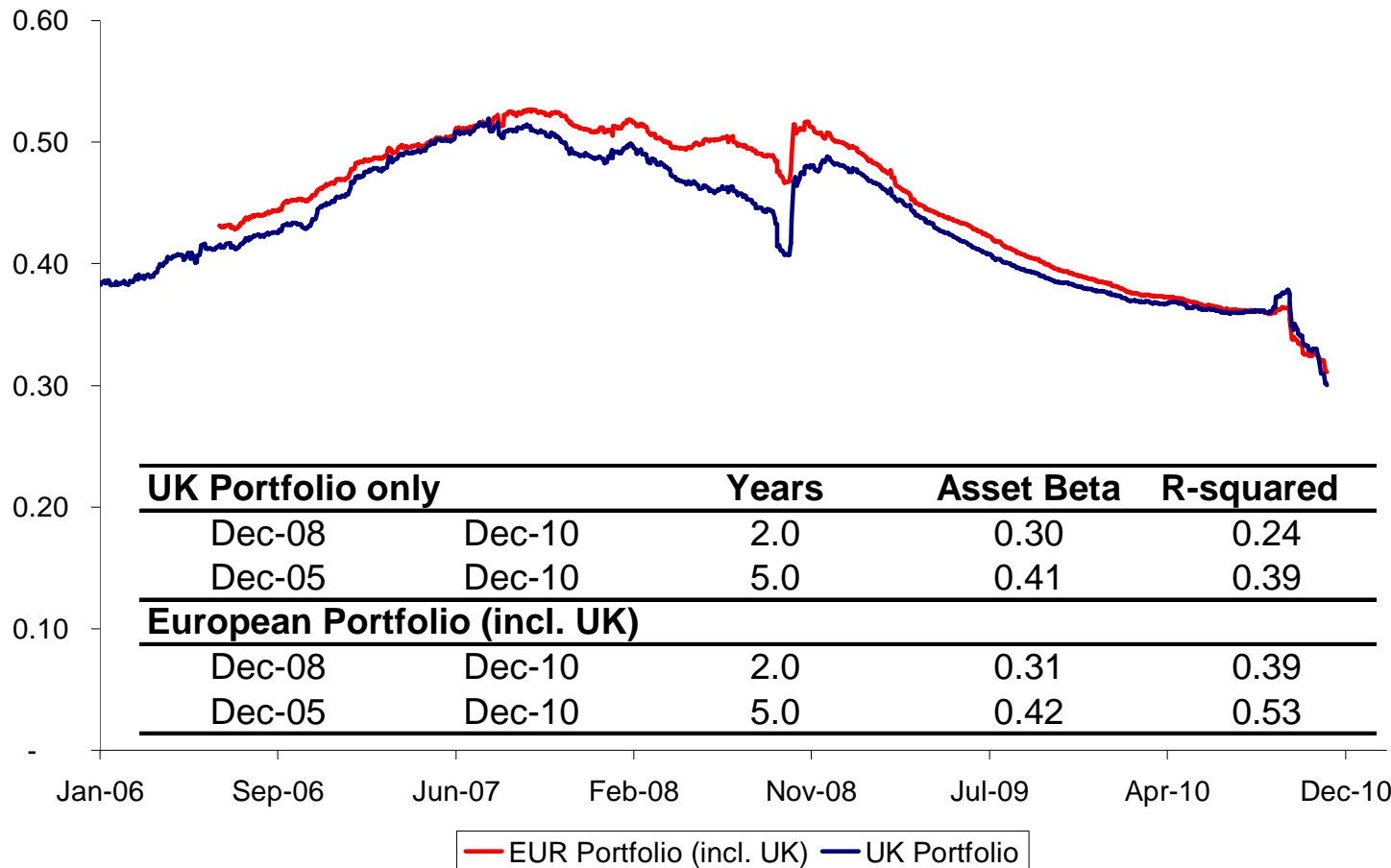
- Excluding Gas Natural and SSE produces an average asset beta of 0.37 (5Y) and 0.30, which is still higher than asset betas of water stocks

We cross-checked using a beta for a portfolio of energy network stocks



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2Y Rolling Asset for Portfolios of Network Operators



- We construct a market cap weighted portfolio of UK network operators and a broader portfolio of UK and EUR network operators
- We calculate betas based on portfolio returns

Source: Bloomberg; raw betas Blume-adjusted; asset betas based on Miller formula. UK Portfolio: National Grid, Scottish & Southern, Scottish Power; European Portfolio: National Grid, Scottish & Southern, Scottish Power; Red Electrica (ESP), Terna (ITA), ACEA (ITA), Gas Natural (ESP), Snam Rete Gas (ITA), Enagas (ESP); Based on daily data, European index against Euro Stoxx 600, UK portfolio against FTSE All Share

Summary



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Asset Betas over 5 years (Dec 05 – Nov 10) and 2 years (Dec 08 – Nov 10)

	5 Year		2 Year	
	Individual	Portfolio	Individual	Portfolio
National Grid	0.35		0.26	
Scottish & Southern	0.56		0.41	
Red Electrica	0.44		0.42	
Terna	0.35		0.29	
ACEA	0.34		0.24	
Gas Natural	0.50		0.32	
Snam Rete Gas	0.28		0.25	
Enagas	0.45		0.36	
Average GB	0.45	0.41	0.33	0.30
Average EU incl. GB	0.41	0.42	0.32	0.31
Average Electricity Networks (USA)	0.41		0.36	

- Based on empirical evidence we use a zero debt beta
- Portfolio approach yields consistent results with average peer group beta
- 5-Year average beta about 0.1 higher than 2-Year beta
- Cross Check with US evidence confirms our 5-Year results; the recent fall in US betas was less than for European betas

Past Beta for European portfolio may not be best predictor of SPT's future beta



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- SPT's asset beta going forward is affected by:
 - RAV nearly triples by 2021 - will beta still be the same?
 - High levels of investment postpone cash flows into the future
 - Low carbon policy makes investments more risky
 - Longer review periods increase scope for out-/underperformance before correction

- To capture market perceptions of future risks, we also use the Dividend Growth Model (DGM) to check the estimate of the overall cost of equity (see below)



Gearing

The prudent level of leverage for SPT is substantially below recent Ofgem decisions



- Ofgem (2010): RIIO Handbook, p.107
 - “we expect a network company to take a range of factors into account when choosing their financial structure including the scale of future capital expenditure requirements and the expected risks that the business faces”
- SPT Draft Investment Dossier (2010)
 - Unprecedented capital investment programme; SPT Base Case sees Net Debt to RAV increase to 65%, downside case >70% despite current leverage (~40%) substantially below TPCR4 notional gearing (60%)
- Bank of International Settlement (2010): Basel 3 Rules on Capital
 - BIS Impact Study (Dec 2010) calculates banks will be forced to raise €165bn in equity to meet Common Equity requirements. Required de-levering will likely reduce available volume of bank funding and may increase cost of funding
- Moody’s (2010): UK Water Sector Outlook cautions high leverage doesn’t come for free
 - “Moody’s notes that the highly-leveraged companies have rigid financing structures that are not designed to accommodate significant changes in industry structure or regulation”

The notional level of gearing for SPT needs to take account of forward-looking risk

Evidence supports gearing of 50-55% for ET operators and small utilities



- **Regulatory Decisions in 2010 consider a range from 50-60%**
 - Most recent decisions for ET operators in Europe consider gearing range from 50 to 60% (CER, Ireland - Nov 2010; Energiekamer, Netherlands – Sep 2010)
 - Average level of gearing used in US rate cases in 2010: 49% (electricity), 48% (gas)
- **Ofwat's Final Determinations set gearing for small companies at 52.5%**
 - Ofwat used a notional gearing assumption of 52.5% for the small water only companies (which are comparable in size to SPT)
 - “given the rating agencies’ approach, we consider that because the small companies may have higher exposure to specific risks, it is appropriate to assume a 5% differential in gearing” (Ofgem (2009))
- **Actual company gearing in the energy sector is around 50%**
 - Average gearing for Ofgem UK energy portfolio is ca 50% (NG: ~60%, SSE: ~35%)
 - Average gearing for European operators (incl. NG & SSE) is c.50% (Red Electrica: ~50%, Terna: ~45%, ACEA: ~60%, Gas Natural: ~65%, Snam Rete Gas: ~50%, Enagas: ~60%)
 - Average gearing of 46 US electricity utilities in 2010: 49%

A horizontal decorative bar consisting of a solid dark blue section on the left and a section on the right containing several 3D cubes in various shades of blue and yellow, arranged in a perspective view.

Real Cost of Equity – Preliminary Analysis

Indicative ranges for the CAPM real cost of equity



CAPM Real Cost of Equity: NERA vs Ofgem

	Ofgem		NERA CAPM (50% Gearing)		NERA CAPM (60% Gearing)	
	Low	High	Market Evidence Long-Run	Market Evidence 'Current'	Market Evidence Long-Run	Market Evidence 'Current'
Market Returns	5.4%	7.5%	7.2%	9.6%	7.2%	9.6%
Risk Free Rate	1.4%	2.0%	2.0%	0.7%	2.0%	0.7%
ERP	4.0%	5.5%	5.2%	8.9%	5.2%	8.9%
Asset Beta	na	na	0.41	0.32	0.41	0.32
Gearing	na	na	50%	50%	60%	60%
Equity Beta	0.65	0.95	0.82	0.64	1.03	0.80
Real CoE	4.0%	7.2%	6.3%	6.4%	7.3%	7.9%

NERA 'current' asset beta and risk-free rate are holding assumptions.

- We set out explicit “long-run” and “current” scenarios
 - Ofgem “Low” and “High” scenarios combines parameters without theory
- Our “current” CAPM CoE is based on a ‘spot’ risk free rate. Analysis from forward markets suggests that the CoE will increase by 0.7% over the 8 year RIIO-T1 period (slide 16). We therefore add 0.7% to our CoE based on ‘current’ market evidence to derive SPT’s CoE for RIIO-T1 (see slide 61)
- Ofgem results are low relative to our market evidence for 60% gearing (=TPCR4):
 - Ofgem high end (7.2%) is below NERA range (7.3-7.9%) at 60% gearing and roughly consistent with NERA range for 50% (6.3-6.4%)
 - Ofgem’s low end is inconsistent with a reasonable cost of equity at any plausible gearing
 - EE report suggests that Ofgem consider using 70% as sector gearing. In that case CoE would have to be significantly above Ofgem’s current top end
- The real CoE for SPT will depend on company-specific factors (discussed below)

We cross check our results using an alternative model (DGM)



DGM Real Cost of Equity: Indicative Estimates

	Real Cost of Equity (Company actual gearing)	Real Cost of Equity (50% gearing)	Real Cost of Equity (60% gearing)
National Grid	9.2%	8.4%	10.0%
Scottish and Southern	9.0%	11.1%	13.4% includes generation
Red Electrica	7.7%	7.7%	9.1%
Terna	7.1%	7.7%	9.1%
ACEA	7.2%	5.8%	6.7% includes water
Gas Natural	10.1%	7.4%	8.7%
Snam Rete Gas	6.9%	7.4%	8.7%
Enagas	8.1%	7.6%	9.0%
Average	8.2%	7.9%	9.3%
Average (exc. SSE)	8.1%	7.4%	8.8%
Low	6.9%	5.8%	6.7%
High	10.1%	11.1%	13.4%

Source: Bloomberg, IBES, NERA analysis

- DGM is the standard model US regulators use to calculate the CoE
→ accounts for risks not covered by CAPM, e.g. asymmetric risks
- We estimate dividend growth rates based on explicit analyst forecasts (short-term) and long-run GDP growth expectations (long-term)
- DGM results are in line with US regulatory precedent (avg base rate: 8.5% at 50% gearing, see appendix) and slightly above NERA's CAPM range

US Regulatory Precedent for Transmission consistent with our DGM results



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Recent FERC Decisions for Electricity Transmission Operators

Company Name	Decision Year	Nominal Base ROE (%)	Real Base ROE (%)	Company Gearing ¹
Virginia Electric and Power Company	2008	10.9	8.2	48%
Startrans	2008	12.0	9.3	
Virginia Electric and Power Company	2008	10.9	8.2	48%
Pepco Holdings	2008	11.3	8.6	53%
Central Maine and Maine Public Service	2008	11.1	8.4	
NSTAR	2008	11.1	8.4	58%
Duquesne Light Company	2008	10.9	8.2	46%
Public Service Electric and Gas Company	2008	11.2	8.5	
Green Power Express LP	2009	10.8	8.3	
ITC Great Plains LLC	2009	10.7	8.2	
Public Service Electric and Gas Company	2009	11.2	8.7	
Average		11.1	8.5	51%
Median		11.1	8.4	

- ROEs generally estimated using the DGM. Differences in capital structure are taken into account in selecting appropriate comparators
- FERC also allows for ‘adders’ for new investments that reduce congestion or increase reliability as well as other incentive adders, e.g. for membership in an integrated structure

Average real RoE for ET (8.5%) higher than for distribution (7.8%) over same period

In the past Ofgem has not used DGM evidence



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- At TPCR4 (and DPCR5) Ofgem has not considered the DGM
- At DPCR5 Ofgem has not used NERA's DGM analysis
 - DGM evidence was brought in late into the debate
 - But Ofgem's adviser (PwC) has used the DGM at DPCR5
- At DPCR4 Ofgem last used the DGM as a cross-check
 - Ofgem used the simple one-stage DGM (i.e. Gordon growth model)
 - Ofgem used relatively low long-term dividend growth rates of 1% and 2%
 - “... in the case of DNOs the main issue what guides dividend growth is load growth, which has been in the range of 1% to 2%”
 - Ofgem's DGM-CoE: 6.3-7.6% (final proposal 7.0% at 60% gearing)
- In its report on BAA (2003), the Competition Commission assumed future expected dividend growth rate at par with GDP growth
- More recently (Bristol 2010) the CC states that GDP growth overstates long run dividend growth

DGM Cross Check confirms CoE for 50% Gearing around top end of Ofgem range



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Real CoE Evidence

	Ofgem		NERA CAPM (50% Gearing)		NERA DGM (50% Gearing)		
	Low	High	Market Evidence Long-Run	Market Evidence 'Current'	Low	Avg	High
Market Returns	5.4%	7.5%	7.2%	9.6%			
Risk Free Rate	1.4%	2.0%	2.0%	0.7%			
ERP	4.0%	5.5%	5.2%	8.9%			
Asset Beta	na	na	0.41	0.32		N/a	
Gearing	na	na	50%	50%			
Equity Beta	0.65	0.95	0.82	0.64			
Real CoE	4.0%	7.2%	6.3%	6.4%	5.8%	7.9%	11.1%

Source: Bloomberg, IBES, NERA analysis

- Consistency between NERA DGM, CAPM and US regulatory precedent
 - NERA CAPM range lies within the DGM range but below mid-point
 - NERA DGM in line with US precedent, mid-point slightly below US mid-point
- Only the top end of Ofgem's range is consistent with other estimates at 50%
 - Ofgem do not specify the gearing at which their estimates CoE applies. Higher levels of gearing require higher CoE.

UK Competition Commission has set lower CoE (at 60% gearing) for similar risk



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UK Competition Commission Determination for Bristol Water (2010)

	CC Bristol Final Range	CC Bristol Final Point Est.	CC - Water (Without SCP) Range	CC - Water (Without SCP) Point Est.
Gearing (%)	60	60	60	60
Tax (%)	28	28	28	28
Real Risk Free Rate (%)	1.0–2.0	2.0	1.0–2.0	2.0
Equity Risk Premium (%)	4.0–5.0	5.0	4.0–5.0	5.0
Asset Beta (number)	0.32–0.43	0.43	0.27–0.36	0.36
Debt Beta (number)	0.1	0.1	0.1	0.1
Equity Beta (number)	0.64–0.92	0.92	0.53–0.75	0.75
Cost of Equity (post-tax, %)	3.6–6.6	6.6	3.1–5.8	5.8

Source: UK Competition Commission Bristol Case (2010), Appendix N.

“... electricity and gas transmission and distribution companies ... were often thought to have systematic risk not dissimilar to water companies.”

UK Competition Commission Bristol Case (2010).

As part of this work, we will need to address the flaws and inconsistencies in the CC’s decision

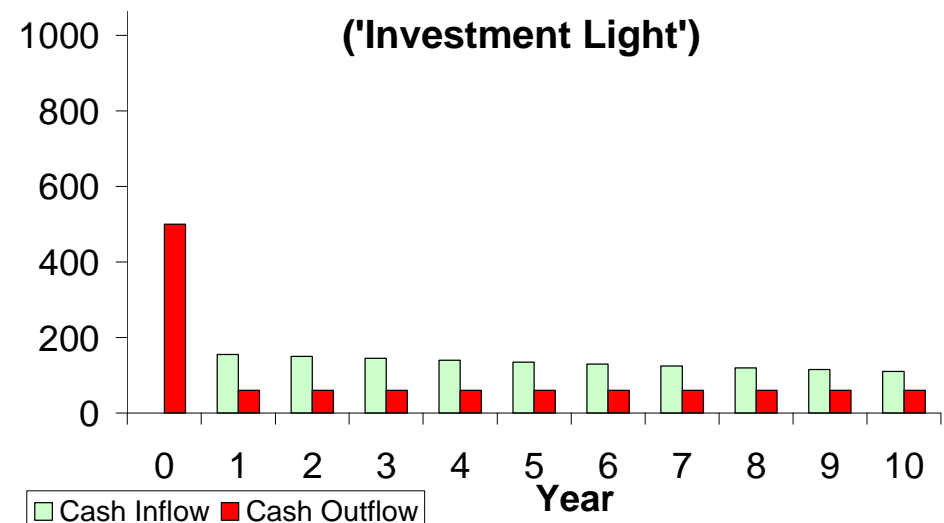
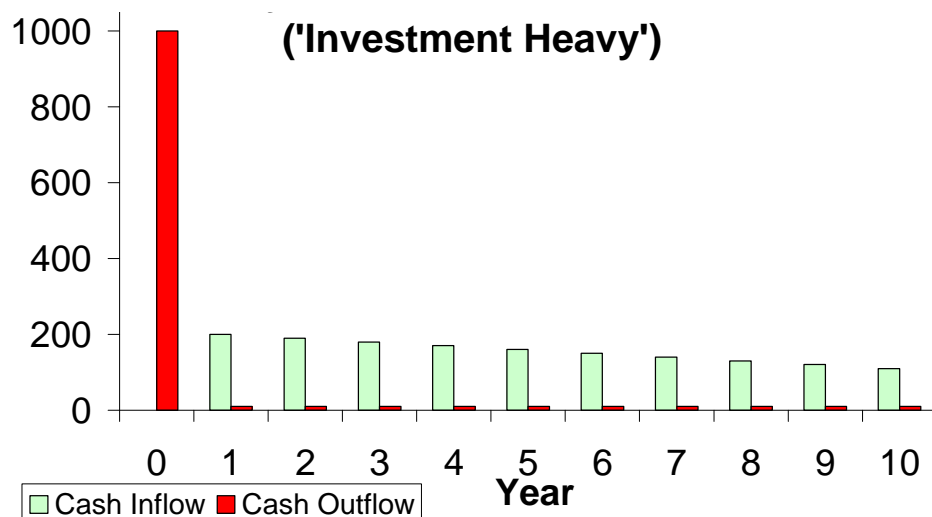


Impact of SPT's Capex Programme on WACC

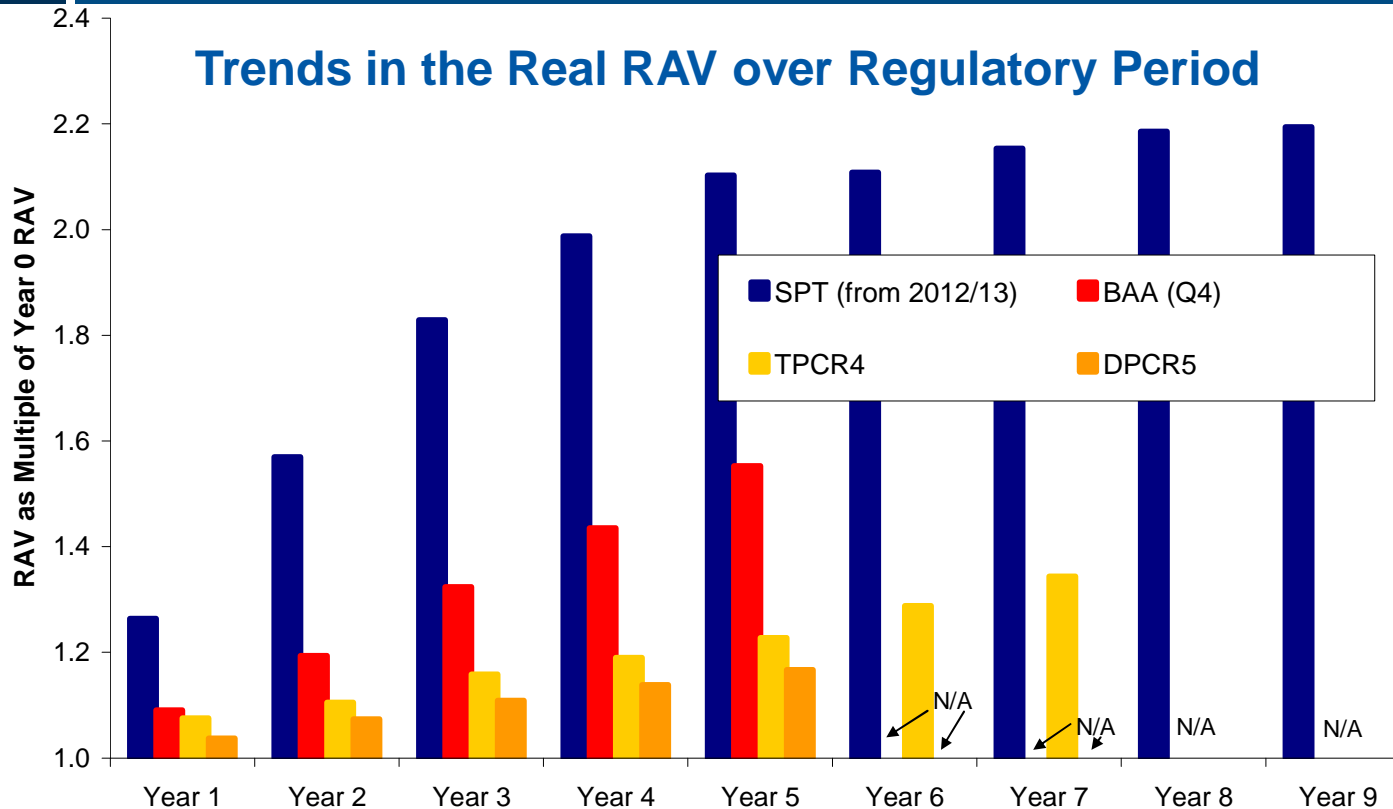
A substantial capex programme can increase the cost of capital

- Capex creates a mismatch between certain cash outflows and uncertain future returns
 - Risk of asset stranding (ex-post disallowance) increases asymmetric risk
- Capex is a 'fixed' claim on future cash flows, which increases operating leverage
 - increases beta risk
- Capex foregoes real option value (irreversible investment under uncertainty)
 - Uncertainty increases the gain from waiting and hence increases hurdle rate of investment

Stylised Cash Flow Profiles for Different Investment Programmes



SPT capex larger than at reviews where WACC uplifts have been allowed



- Growth in RAV = *measure of delay of returns into the future*
 - SPT real RAV growth larger than any other review
 - Real RAV doubles in 5 years
 - Nominal RAV (not shown) nearly triples between 2010/11 and 2017/18

Real RAV Growth in Absolute Numbers

	£m	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Basis
SPT (Y0 = 2011/12)		1195	1510	1876	2186	2376	2513	2009/10 prices
BAA (Y0 = 2002/03)		6013	6559	7175	7961	8632	9337	2002 prices
DPCR5 (Y0 = 2009/10)		16123	16731	17308	17878	18360	18817	2007/08 prices
TPCR4 (Y0 = 2004/05)		5853	6296	6468	6780	6964	7183	2004/05 prices

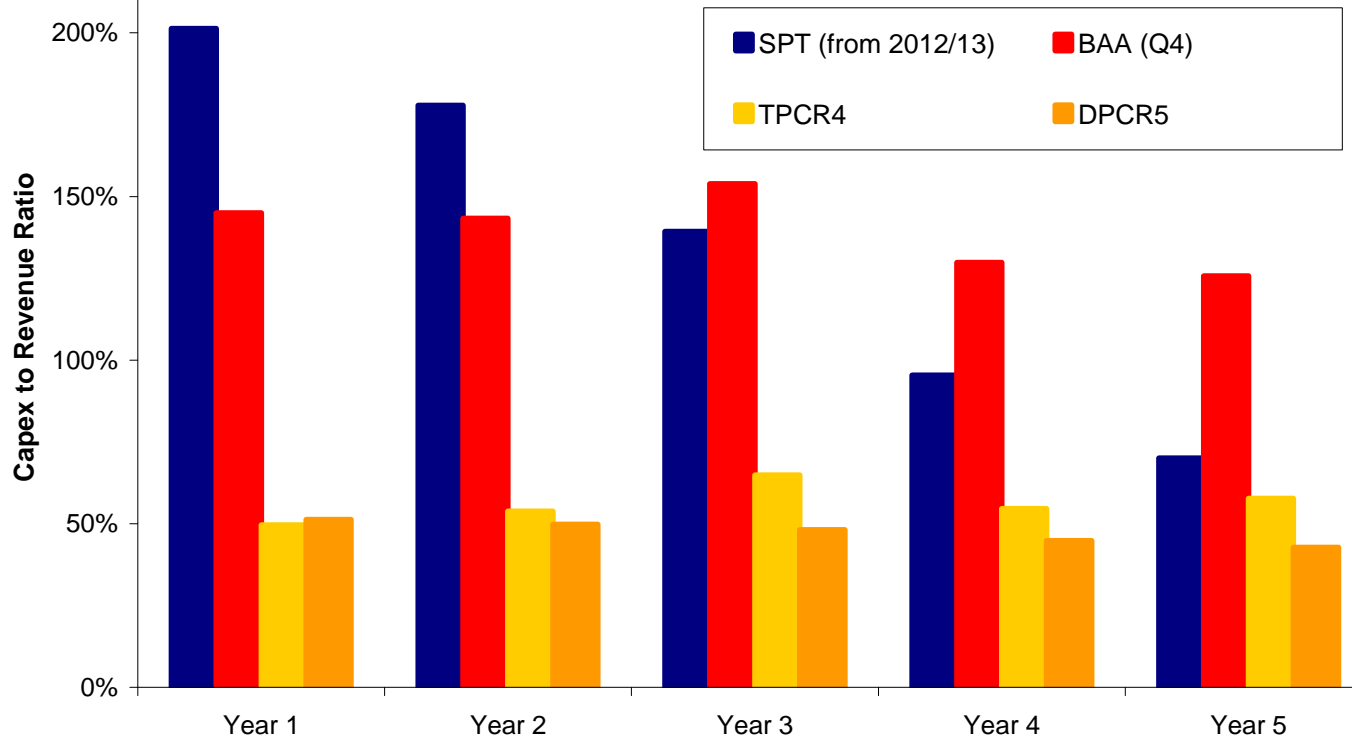
Source: Ofgem Financial Models, CAA Final Decision 2003 and SPT Draft Investment Dossier; * Real RAV Calculation based on NERA analysis of SPT Draft Investment Dossier. To be confirmed by SPT

SPT will spend unprecedented >200% of annual revenue to cover 2012/13 capex



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Capex to Revenue over Regulatory Period



- Capex to Revenue ratio = *measure of weight of fixed cash outflows compared to company revenues*

- Cash outflow >200% of 2012/13 revenue
- Larger than TPCR4 & DPCR5, similar to BAA Q4 (period including construction of Heathrow Terminal 5)

Comparison of Capex to Revenue

	Year 1	Year 2	Year 3	Year 4	Year 5	5Y Avg
SPT (from 2012)	201%	178%	139%	95%	70%	137%
BAA (Q4)	145%	143%	154%	130%	126%	140%
DPCR5	51%	50%	48%	45%	43%	47%
TPCR4	50%	54%	65%	55%	58%	56%

Source: Ofgem Financial Models, CAA Final Decision 2003 and SPT Draft Investment Dossier; * Real RAV Calculation based on NERA analysis of SPT Draft Investment Dossier. To be confirmed by SPT

Regulators and rating agencies link large investment programmes to financing costs



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- **CC (2003): BAA Q4 WACC uplift of 0.25% for Heathrow T5**
 - “In our view the special factors linked to T5 ... can best be recognized by way of a further T5-related uplift to the WACC of some 0.25 per cent.”
- **Ofgem (2006): TPCR 4 Final Proposals: WACC at upper end of range**
 - “Our decision on the cost of capital has taken into account ... the investment focus of the review, the risk profiles of the companies, ...”
- **Moody’s Global Infrastructure Finance (Dec-09)**
 - “...companies facing a very large investment programme compared to their asset base ... would score (a rating) at the low end of the spectrum”
- **Standard & Poor’s (Sep 02): BAA Plc, Full Analysis**
 - “the large-scale nature of the capital projects is likely to reduce BAA's flexibility to re-profile projects in times of financial stress.”

Relative risk assessment of SPT capex programme against Heathrow T5 criteria



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Competition Commission's Reasons for Uplift	Relative Risk Assessment (SPT vs BAA)	
Loss of Real Option Value	Irreversible investment and uncertain demand (in particular for capex associated with low carbon generation)	✓
Financing Cost / Rights Issue	Percentage addition to the asset base (>100%) much larger than for BAA (~50%) Even base case requires SPT to cut dividends or undertake rights issues	✓
Scope for outperformance	Scope for outperformance not clear until package is known. BAA's regulatory framework allowed BAA to capitalise any cost overruns at the end of the regulatory period.	?
Construction Triggers	Uncertain: BAA had asymmetric trigger mechanism, does not appear fully comparable to SPT revenue driver	?

Returns on new investment in the US often above base RoE because of incentive adders



- FERC Orders 679 and 679-A establish criteria and procedures for “incentive-based adders” to the base ROE to incentivise investment in new electricity transmission facilities.
- Adders are granted for ‘non-routine’ facilities that will improve regional reliability and/or reduce transmission congestion.
- In the past the FERC has considered the following risks when determining ‘non-routine’ status
 - Financial risks (adverse changes to a company’s credit rating)
 - Project size (both in absolute terms and relative to the company’s asset base)
 - Siting, construction and environmental risks (e.g. the use of advanced technologies)
 - Interaction with numerous state and municipal regulators
- The precise uplift is determined on a case-by-case basis and there is no guarantee of the uplift being approved. Recent FERC decisions have tended to allow 100-150 bps as well as non-RoE incentives such as allowances for abandoned construction

FERC has allowed adders of around 150bps in numerous cases



Company Name	Decision Year	Description
Virginia Electric Power Company	2008	150bps adder for 4 projects; 125bps adder for 7 projects; 50bps adder for RTO membership
New York Regional Interconnect	2008	125bps for advanced technologies; 50bps adder for RTO participation; 100bps adder for Transco formation (no base RoE determined yet)
Pepco Holdings (includes Potomac Electric Power Company)	2008	150bps adder for the MAAP Project
Northeast Utilities	2008	100bps adder for Middletown-to-Norwalk Project; 50bps adder for advanced technologies for an underground cable
Central Maine and Maine Public Service	2008	150bps adder for Maine Power Connection Project; 50bps adder for RTO membership
NSTAR	2008	100bps adder for specific projects; 50bps adder for RTO membership
Duquesne Light Company (1)	2008	50bps adder for RTO membership; 100bps adder for enhancement plan DTEP
Public Service Electric and Gas Company (PSE&G) (1)	2008	50bps adder for RTO membership; 125bps adder for 130-mile 500kV Susquehanna-Roseland line
Duquesne Light Company (2)	2008	150bps adder for PJM Regional Transmission Expansion Project; 50bps for RTO membership
Tallgrass Transmission and Prairie Wind Transmission	2008	150bps adder for each project; up to 50bps for participation in SPP (Southwest power Pool)
Green Power Express LP	2009	10bps incentive adder for building a series of 765 kV transmission lines in the Midwest; hypothetical capital structure of 60% Equity, 40% Debt approved; 50bps adder for RTO participation; 100bps adder in recognition of its status as an independent transmission-only company
ITC Great Plains LLC	2009	100bps adder for independent transmission companies; 50bps adder for RTO membership
Public Service Electric and Gas Company (PSE&G) (2)	2009	150bps incentive adder for its part of construction of new transmission facilities as part of a 230 mile, 500 kV Mid-Atlantic Power Pathway (MAPP) Project
SoCal Edison	2009	100bps adder for additional risks, continued 50bps for zone membership
Public Service Electric and Gas Company (PSE&G) (3)	2009	125bps incentive adder for Branchburg-Roseland-Hudson 500 kV Line; 50bps adder for RTO membership (previous decision)

Other incentives

- Participation in regional transmission organisations (typically 50bps)
- Formation of “Transcos”, corporations that own only transmission assets (typically 100bps)
- In some cases the FERC has allowed non-RoE incentives (e.g. hypothetical capital structures, abandonment protection)

Note: according to FERC there was no case in 2010 where a network operator requested RoE incentives

In some cases FERC has explicitly cited “size of the capex programme” as risk justifying an “add” to the allowed RoE



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Company	Date	Size of Capex programme relative to Asset Base	Allowed ROE Uplift	Other Allowances & Notes
Southern California Edison	17-Dec-09	~20%	1.00%	FERC acknowledges absolute size as criterion for RoE adder despite small relative size
Central Maine – MPRP	20-Oct-08	467%	1.25%	Cost recovery in case of abandonment
Duquesne	10-Oct-08	94%	1.50%	Large adder because Duquesne is constructing another large project at the same time (total investment is around 200% of existing asset base)
PPL	22-Apr-08	60%	1.25%	
PSE&G	22-Apr-08	80%	1.25%	

FERC Allowances of 100-150bps for projects smaller in size than SPT capex

SPT's capex programme merits consideration of a WACC uplift



- Rating agencies require healthier ratios (for same credit rating) for large capex programmes
- At TPCR4 (2006) Ofgem chose WACC towards top end of range because of 'investment focus'
- CC (2003) recommended an 0.25% uplift to WACC (circa 0.5% to equity) to compensate for additional risks associated with Heathrow T5
 - SPT's capex programme substantially larger than at TPCR4 and larger than BAA's capex programme (incl. Heathrow T5)
- In the US the FERC has explicitly cited size of the capex programme as risk justifying an adder to the allowed base RoE in the range of 1.0-1.5%
- **This evidence suggests a minimum of 0.5% premium on equity for SPT's Capex Risk**

A decorative horizontal bar spanning the width of the slide. It features a solid dark blue background on the left and right, with a central section containing a 3D rendering of several blue and yellow cubes of varying heights and orientations, creating a geometric, architectural feel.

Impact of Dividend Policy on Cost of Equity

Ofgem proposes to inject new equity and/or cut dividends to fund new capex



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- “Under the RIIO model, ... the onus will be on the company to resolve the situation of [e.g. high capital expenditure], including by **injecting equity** and/or **reducing dividend payments** as they see fit.” (RIIO Handbook, p110, para 12.27)
- Ofgem sees cutting dividends as a less costly alternative to new rights issues:
 - “... allow firms to increase equity through retained earnings, rather than by new rights issues, which may reduce the transaction cost to firms...” (RIIO ‘Finance’ paper, para 2.45)
- Modigliani-Miller (1961) argued that dividend policy is “irrelevant”. However, newer theories show that dividend payout policy does have an impact on the cost of capital *in some circumstances*:
 - “**Term Premium**”: Investors prefer dividends as it is more certain than capital gains. Argument is strongest where opportunities for re-investment in similar assets are limited.
 - “**Clientele effects**”: There are different “types” of investors with different preferences for income or capital gains. Argument is strongest where (income/CGT) tax systems are different or there are other restrictions on use of capital gains (e.g. endowments).
 - “**Agency theory**”: Dividend policy is a mechanism for reducing monitoring costs. Argument is strong in a regulated context where dividends are used to control regulatory behaviour
- According to the newer theories, cutting dividends to fund new capex is likely to have an impact on the cost of capital

Examining the Term Premium Argument in a Regulated Context



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- Gordon¹ and Lintner² (GL) argue that lower payouts result in higher costs of capital
 - Investors prefer dividends as it is more certain than capital gains
 - GL show that a higher “capital gains/dividend” ratio increases the required rate of return by investors due to increased risk
 - The GL findings are particularly relevant in the regulatory context where retained earnings are subject to future regulatory discretion
 - Our review of analyst reports shows that analysts attach a premium to utilities with stronger or more stable dividend yields.
- Ofgem acknowledges - in the context of extending asset lives - that deferring cashflows can increase regulatory risk:
 - “... avoid any increased perception of **regulatory risk** that could arise from a sudden **deferral of cashflows**” (RIIO Consultation ‘Finance’ paper, para 2.45)
- **Cutting dividends to fund new capex may increase the cost of capital as future dividends are more risky than current income**

1) Myron J. Gordon, “Optimal Investment and Financing Policy”, *Journal of Finance*, May 1963.

2) John Lintner, “Dividends, Earnings, Leverage, Stock Prices, and the Supply of Capital to Corporations,” *Review of Economics and Statistics*, 1962.

The “clientele effect” also suggests that a dividend cut may increase the cost of capital for a regulated utility



- Different groups, *or clienteles*, of stockholders prefer different dividend payout policies¹
 - Retired individuals, pension funds, university endowment funds generally prefer cash income
 - Stockholders in their peak earning years might prefer reinvestment (less need for current investment income; they are generally in a high tax bracket)
- If a firm retains and reinvests income rather than paying dividends, those stockholders who need current income are disadvantaged
 - They would need to sell off some of their shares to obtain cash, incurring transaction costs
 - Some institutional investors (e.g. endowment funds) may be legally precluded from selling stock
- Stockholders who are saving rather than spending dividends might favour the low dividend policy
 - The less the firm pays out in dividends, the less the investor will have to pay in current taxes
- Therefore, investors who seek current income generally own shares in high dividend payout firms and investors who seek future income generally own shares in low dividend payout firms
 - Our review of city analysts reports strongly suggests that investors holding utility stocks expect current income, i.e. the marginal investor is likely to be an institutional pension fund
- **Changes in the dividend policy might cause current shareholders to sell their stock, forcing the stock price down; this effect may be permanent if few new investors are attracted by the new dividend policy**

1) Petit, R. Richardson "Taxes, Transaction Costs and the Clientele Effect of Dividends", Journal of Financial Economics, 1977

Agency theory arguments are strong in a regulated context



There are many academic papers that justify the payment of dividends in a regulated context as a mechanism for controlling regulatory risk

- Merton H. Miller, “Behavior Rationality in Finance: The Case of Dividends”, Journal of Business (1986)
 - “Public utility managements have found a policy of high dividends combined with frequent external equity financing to be a useful strategy for forcing their regulators to keep utility rates high enough to continue attracting new funds from investors.”
- Stewart C. Myers, “The Capital Structure Puzzle”, Journal of Finance (1984)
 - “Regulated firms, particularly electric utilities, typically pay dividends generous enough to force regular trips to the equity markets. They have a special reason for this policy: it improves their bargaining position vs. consumers and regulators. **It turns the opportunity cost of capital into cash requirements.**”
- Clifford W. Smith, “Investment Banking and the Capital Acquisition Process,” Journal of Financial Economics (1986)
 - “By paying high dividends, the regulated firm subjects *both its regulatory body as well as itself* to capital market discipline more frequently. Stockholders are less likely to receive lower-than-normal levels of compensation due to lower allowed product prices when the regulatory authority is more frequently and effectively monitored by capital markets.”

In US regulation, utilities typically continue to pay dividends and regulators allow for “flotation costs” of new equity funding



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- Ofgem acknowledges that funding new capex through new rights issues increases transaction costs and that a dividend cut may be less costly
- However, according to “agency theory”¹, dividends will subject a regulated firm and its regulators to the discipline of the capital markets
- Cutting dividends might signal less effective monitoring by capital markets, which increases agency costs and reduces the value of the firm
- In the US, regulated utilities have maintained their dividend policies even during periods of large new capex funding requirements²
 - The benefits of subjecting the regulator (and the regulated company) to the scrutiny of financial market outweigh the increased costs of flotation costs
 - Under US regulation, flotation costs are allowed to be passed on to ratepayers
- **Using dividends to fund new capex may signal to the market less effective monitoring leading to increased regulatory risk**

1) F. Easterbrook, “Two Agency-Cost Explanations of Dividends”, American Economic Review, 1984;

2) Clifford W. Smith, “Investment Banking and the Capital Acquisition Process,” Journal of Financial Economics, 1985; Moyer, Rao Tripathy (1992)

Evidence from City Analysts support the fact that dividend policy has an impact on utilities' valuation



- Dividends are a key consideration by investors in their investment making decision:
 - “In this report, we address the specific issue of whether NG is attractive through looking at its balance sheet, the impact of its higher capex plan, regulation, dividends, the underlying macro and relative valuation” (Credit Suisse , 21 October 2010, National Grid)
 - “NG would have the superior dividend growth.... In our view, this lower-risk dividend growth deserves a premium.” (Credit Suisse , 21 October 2010, National Grid)
 - “(W)e believe this premium [for UK Water] is partly justified on the basis of ... no concerns on dividend sustainability...” (Credit Suisse, 02 June 2010, European Power Breakfast, p3)

- Utilities compete in dividend yields to attract capital:
 - “This leaves [NWG] trading with a c4.1% dividend yield whilst stocks such as NG and UU are offering c6.4% and c5.1% respectively”
(Credit Suisse puts NWG on underperformance from neutral, 21 October 2010, UK regulated utilities, p12)
 - “We remain buyers of the UU ... it has a fast growing RAB, the highest dividend yield...” (Credit Suisse, 30 July 2010, UK Regulated Utilities, p1)

NERA Analysis of Impact of Dividend Cuts on Cost of Equity: DRAFT RESULTS



- To estimate the impact of cutting dividends on the share price, we need to control for the expectations already priced into the share price at the time of the announcement
 - We expect the share price to increase if the dividend cut is less than what the market expects (and vice versa)
 - By contrast, if dividend payout policy were to be “irrelevant”, we would expect no significant reaction of the share price following the announcement of a dividend cut

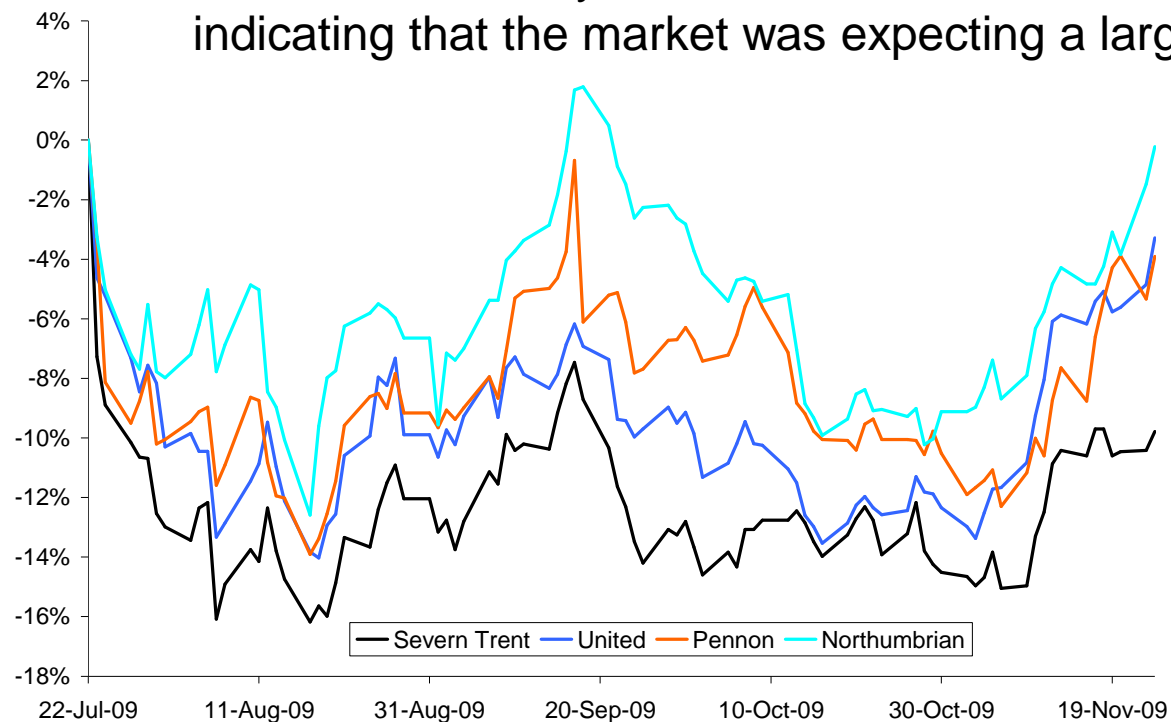
Case Study 1: Evidence from United Utilities (22 Jan 2010)

- UU announced a dividend cut of 12.5% for the next financial year in response to water regulator Ofwat’s tougher-than-expected price controls
 - Analysts had been projecting a dividend cut of 20-25%, i.e. more than what the company actually announced (Reuters news release), which suggests actual dividend cut was ca. 10% *smaller* than what was already in the price
 - Shares in United Utilities *increased* by over 4% after the announcement (making it the top gainer within the FTSE 100 index) and by up to 8.46% over the next two weeks
- Since the announcement of the dividend cut was less what the market expected, the increase in UU’s share price confirms the impact of a dividend cut on the share price
 - **However, the impact on the cost of equity is less clear:**
 - In the one-stage DGM: $\text{CoE} = D/P + g$
 - For constant long run growth rates (g) the impact of the observed UU price is an increase in the CoE from the smaller than expected dividend cut: $\Delta\text{CoE} = (1+\Delta D)/(1+\Delta P) - 1 = (1+10\%)/(1+8.46\%) - 1 \approx + 1.2\%$

Further Case Studies

Case Study 2: Evidence from Severn Trent

- Following the publication of Ofwat’s draft determination (23 Jul 09) Severn Trent’s share price falls more than other water companies because of widespread concerns about the sustainability of its dividend
 - Forecast Cuts of SVT dividend: 30% (Morgan Stanley), 20% (Goldman), no specified magnitude (CS, JP Morgan). However, UBS positive that no cut is needed
- When SVT actually announced a 10% dividend cut in Jan 10 share prices rose indicating that the market was expecting a larger cut



- “Whilst there are a variety of reasons for this fall, speaking to investors, we believe the key concerns over the sustainability of the dividends were brought to prominence.” (Credit Suisse, 24 Jul 09)
- “We continue to view United Utilities and Pennon’s dividend policies as potentially sustainable into the next regulatory period. However we believe that the extension of Severn Trent’s dividend policy would be a stretch” (JP Morgan, 27 Jul 09)

Indicative Conclusions on Case Studies



- There is strong evidence that dividends are a key consideration by investors in their investment making decision:
 - UU's share price surged after the company announced a smaller than expected dividend cut in January 2010
 - Severn Trent's share price significantly underperformed the other listed water companies after Ofwat's draft determination as numerous equity analysts stated that Severn Trent's dividend was most at risk
- Linking the case studies to changes in the cost of equity is less straightforward:
 - Impact on cost of equity defined by relative size of dividend cut compared to share price reaction
 - UU's share price increased by slightly less than 10% following a dividend cut that was c.10% smaller than expected (i.e. a perceived dividend increase)
 - SVT down more than 15% following Ofwat DD with a number of analysts forecasting dividend cuts of 10-30%
 - Impossible to isolate impact of dividend cut, share price movements reflect impact *relative* to expected changes and also other announcements, e.g. lower cost of capital at Ofwat DD
 - No consensus on expected dividend cut → not clear what exactly market prices reflect

Two ways of funding new capex through equity



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1. New Equity costs

- NERA formula
- Reg Precedent

2. Dividend Cut

- Theory says CoE increases
- Case Studies results
- 2 bigger impact than 1. = This is why US regulators allow the flotation cost

Summary / Conclusions



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- Ofgem sees cutting dividends to finance new capex as a less costly alternative to new rights issues.
- Our analysis shows that dividend cuts can increase the cost of equity of regulated companies for the following reasons:
 - **“Term Premium”**: Investors prefer dividends as it is more certain than capital gains. Analysts attach a premium to utilities with stronger or more stable dividend yields.
 - **“Clientele effects”**: There are different “types” of investors with different preferences for income or capital gains. Our review of city analysts reports strongly suggests that investors holding utility stocks expect current income, i.e. the marginal investor is likely to be an institutional pension fund.
 - **“Agency theory”**: Dividend policy is a mechanism for reducing monitoring costs. Argument is strong in a regulated context where dividends are used to control regulatory behaviour. Many academic papers support this argument.
- In US regulation, utilities typically continue to pay dividends and regulators allow for “flotation costs” of new equity funding
- Evidence from City Analysts’ reports and “event studies” support the fact that dividend policy has an impact on utilities’ valuation



**Summary - Indicative Ranges for SPT's Real
Cost of Equity**

Indicative ranges for SPT's real cost of equity



SPT's Preliminary Real Cost of Equity Range (%)

	50% Gearing			60% Gearing		
	CAPM		DGM (National Grid)	CAPM		DGM (National Grid)
	Market Evidence Long-Run	Market Evidence 'Current'		Market Evidence Long-Run	Market Evidence 'Current'	
CoE based on average network operator	6.3	6.4		7.3	7.9	
Uplift for projected increase in risk free rate	0.0	0.7		0.0	0.7	
SPT - Uplift for capex risk	0.5	0.5		0.6	0.6	
Compensation for extended asset lives under RIIO	0.5	0.5		0.6	0.6	
SPT Cost of Equity	7.3	8.1	8.4	8.6	9.7	10.0

- SPT's real CoE (50% gearing) lies in range of 7.3-8.4%
 - Upper end of CAPM reflects evidence from forward markets that shows that the CoE will increase by c.0.7% over the 8 year RIIO-T1 period (see slide 16)
 - Upper end of CAPM range (8.1%) slightly lower than National Grid's CoE based on DGM
- Small company premium not included in cost of equity (unless further evidence can be found to support this), but we recommend including in cost of debt and gearing

A decorative horizontal bar consisting of a solid dark blue section on the left and a section on the right containing several 3D cubes in various shades of blue and yellow, arranged in a stepped pattern.

Cost of Debt – Preliminary Analysis

The economic case and regulatory precedent for indexation



- Ofgem proposes an annual debt allowance indexed to a 10-year trailing average of corporate bond yields
- The economic case for and against indexation
 - Indexation can insulate companies from risks that they do not control, e.g. changes to government bond rates
 - Indexation can blunt efficiency incentives if companies do not earn rewards/ penalties for decisions they do control
- Ofgem appears to prefer a broad index for the cost of debt rather than company-specific debt costs
 - Companies retain an incentive to ‘beat the index’
 - However, one size may not fit all (e.g. Small Company Premium)
- To our knowledge regulators in Belgium, Finland and Portugal index the risk-free rate but not the debt premium. We are not aware of regulators who index CoD.

Practical issues with indexation



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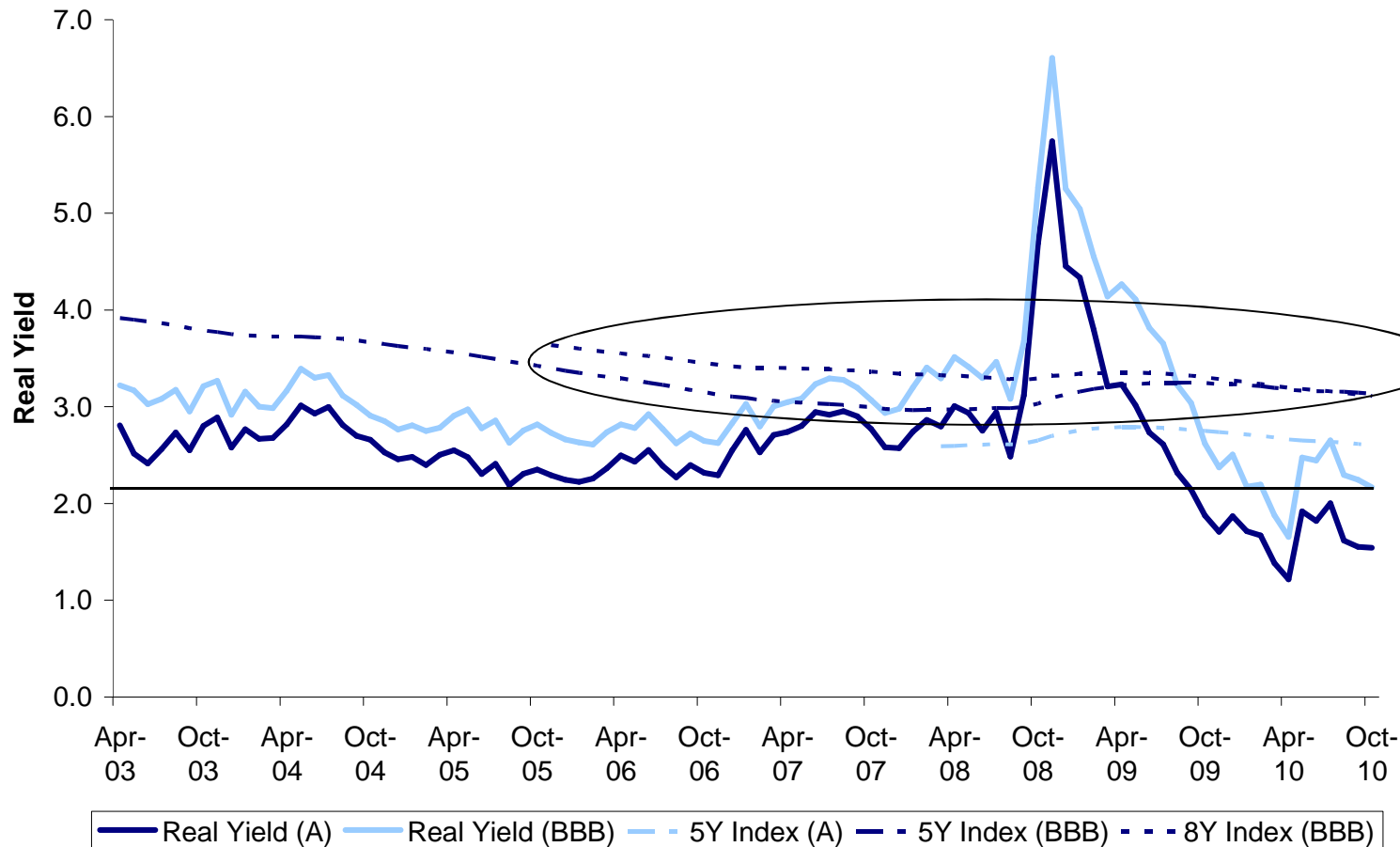
- Limited data availability
 - Bloomberg provides only one GBP-denominated index going back 8Y+ (Ticker: GBP EUR BFV BBB Curve)
 - But this index is based on debt issued in GBP by companies outside UK
- Different data providers such as IBoxx have GBP-denominated debt issued by UK companies
 - However, IBoxx indices only available for rating classes A and BBB and not for A- and BBB+
- Further issues
 - Regulatory cost of debt is defined in real terms; but no index for the real cost of debt exists
 - Using index-linked gilt (ILG) yields plus credit spread produces lower cost of debt than deflating nominal gilts, using inflation from Economic Consensus or Bank of England (because ILG yields are downwardly biased)
 - “Breakeven inflation” [nominal gilt yield – ILG yield] is (on average) higher than forecast inflation
 - Risk of leveraging bias in ILG market into the cost of debt allowance

Indexation options based on Bloomberg data



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Real Yields on GBP-denominated Debt issued by European Corporates rated A and BBB



- 8Y trailing averages of yields vary very little and provide no more protection against volatility in yields than a fixed allowance

Source: Bloomberg; real CoD based on ILG yield + debt spread. This method gives lower real CoD figures than nominal yields less expected inflation, where inflation is taken from Economic Consensus or Bank of England; this is because breakeven inflation is (on average) higher than forecast inflation.

Secondary market yield index fails to account for pre-funding & transaction costs



NERA preliminary analysis of additional costs

- **Transaction costs** include bank, legal, trustee and agent fees (~7pbs p.a.)
- **Pre-funding costs** are a real cost to companies (the difference in the cost of the debt and the interest earned on deposits is the 'cost of carry')
- We have previously calculated pre-funding and transaction costs (non-coupon costs) at around 15 bps before the financial crisis and 60 bps after the collapse of Lehman Brothers

Regulatory Precedent

- At DPCR5 Ofgem has dismissed the need for an explicit non-coupon cost allowance but allowed it implicitly by setting the allowed cost of debt above the trailing average.
- CC has allowed 30 bps for Bristol (10 bps for transaction costs + 20 bps for pre-funding)

Recent utility debt issuance (GBP)



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Recent Utilities Debt Issues (GBP, tenor larger than 10 years)

Issuer	Rating	Issue Date	Amount (£m)	Maturity (Years)	Headline Coupon Yield (%)	Real Coupon Yield (%)
DONG ENERGY A/S	A-	09/04/2010	500	30	5.87%	3.11%
ANGLIAN WATER SERV FIN	A-	17/05/2010	130	35	2.26%	2.26%
ELECTRICITE DE FRANCE	A+	22/09/2010	1000	40	5.23%	2.48%
GDF SUEZ	A	01/10/2010	700	50	5.13%	2.39%
CENTRAL NETWORKS WEST PL	A	10/12/2010	250	14	5.56%	2.83%
CENTRAL NETWORKS EAST PL	A	10/12/2010	250	30	5.85%	3.09%
Average "A" Rating				33	4.98%	2.69%
SOUTH EAST WATER FIN LTD	BBB	11/02/2010	130	31	2.53%	2.53%
NORTHERN GAS NETWORKS	BBB+	23/03/2010	200	30	5.71%	2.96%
WESTERN POWER S.WEST	BBB+	23/03/2010	200	30	5.81%	3.05%
WESTERN POWER S. WALES	BBB+	23/03/2010	200	30	5.81%	3.05%
THAMES WATER UTIL CAYMAN	BBB-	13/09/2010	300	20	5.80%	3.05%
Average "BBB" Rating				28	5.13%	2.93%
Average All				31	5.05%	2.80%

Source: Bloomberg; Ratings based on S&P where available and Moody's where S&P was not available. The headline coupon yield is calculated as the coupon reported by Bloomberg divided by the issue/ reoffer price. We adjust for expected inflation (as reported by Consensus Economics) over the life of the bond.

Recent utility debt issuance (EUR)



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Recent Utility Debt Issues (EUR, tenor larger than 10 years)

Issuer	Rating	Issue Date	Amount (£m)	Maturity (Years)	Nominal Coupon Yield (%)	Real Coupon Yield (%)
TENNET HOLDING BV	A-	09/02/2010	500	12	4.53%	2.53%
ACEA SPA	A	16/03/2010	500	10	4.51%	2.54%
IBERDROLA FINANZAS SAU	A-	23/03/2010	1100	10	4.16%	2.19%
CEZ AS	A-	16/04/2010	750	15	4.89%	2.85%
ELECTRICITE DE FRANCE	A+	27/04/2010	1500	20	4.68%	2.62%
TENNET HOLDING BV	A-	03/06/2010	200	20	4.75%	2.69%
SUEZ ENVIRONNEMENT	A-	24/06/2010	500	12	4.16%	2.16%
RTE EDF TRANSPORT S.A	A+	28/06/2010	750	12	3.91%	1.92%
CEZ AS	A-	28/06/2010	500	10	4.54%	2.57%
GDF SUEZ	A	18/10/2010	1000	12	3.52%	1.54%
ELECTRICITE DE FRANCE	A+	12/11/2010	750	15	4.05%	2.03%
ELECTRICITE DE FRANCE	A+	12/11/2010	750	30	4.51%	2.43%
CEZ AS	A-	08/12/2010	250	10	4.56%	2.59%
Average "A" Rating				14	4.37%	2.36%
GAS NATURAL CAPITAL	BBB	27/01/2010	850	10	4.53%	2.56%
VEOLIA ENVIRONNEMENT	BBB+	06/07/2010	834	11	4.25%	2.27%
EUROGRID GMBH	BBB+	22/10/2010	500	10	3.89%	1.94%
Average "BBB" Rating				10	4.22%	2.25%
Average All				14	4.34%	2.34%

- BBB yields lower than "A" debt
 - But, BBB shorter maturities
 - Small number of BBB issues
- Shorter average tenor may explain some of the difference between GBP (2.8%) and EUR (2.3%) issues

Source: Bloomberg; Ratings based on S&P where available and Moody's where S&P was not available. The headline coupon yield is calculated as the coupon reported by Bloomberg divided by the issue/ reoffer price. We adjust for expected inflation (as reported by Consensus Economics) over the life of the bond.

Note that for comparability with GBP issues we only look at issues with a minimum maturity of 10 years. See the appendix for a full list.



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