Financial Modelling Workshop

7 July 2006

Agenda

10:00 Introduction & Model overview

10:15 Input sources

11:15 Break

11:30 Calculations

11:45 Outputs

12:00 Future elements

12:30 Q&A

- Lunch served from 12:30

Introduction

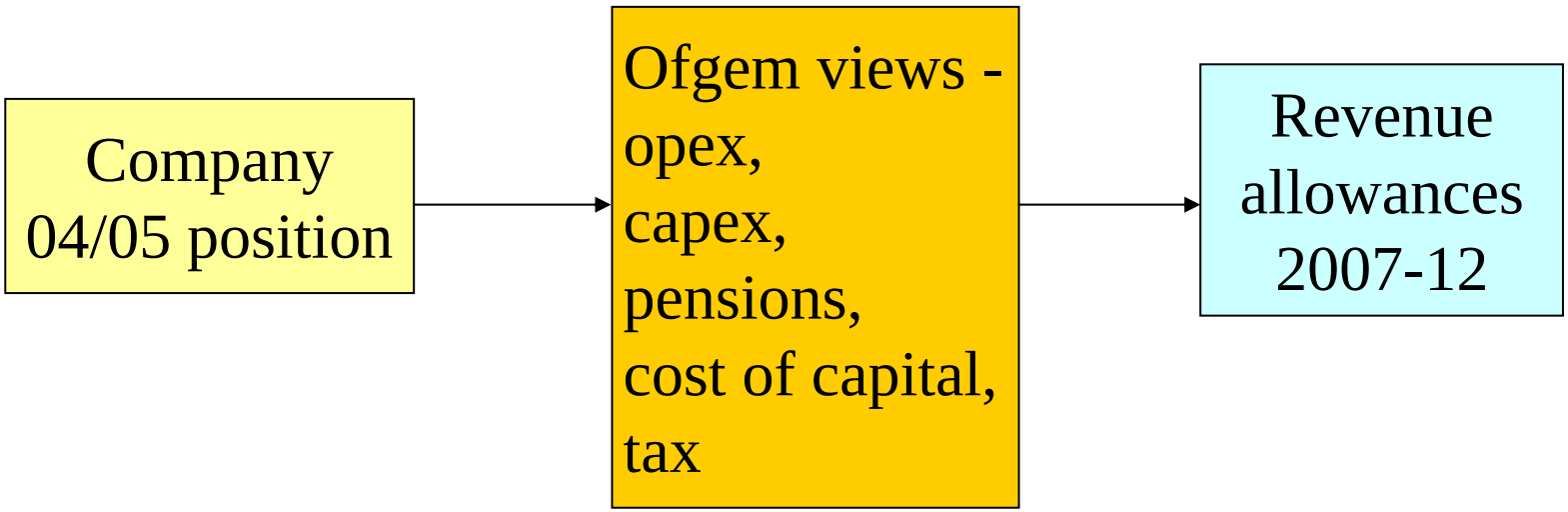
- Objectives
  - Provide insight to the modelling of the TPCR
    - Model structure
    - Description of calculation mechanisms
  - Demonstrate potential enhancements
    - **NOT** a policy commitment, but an illustration of how suggestions in Initial Proposals could affect current numbers if implemented

Financial model – general points

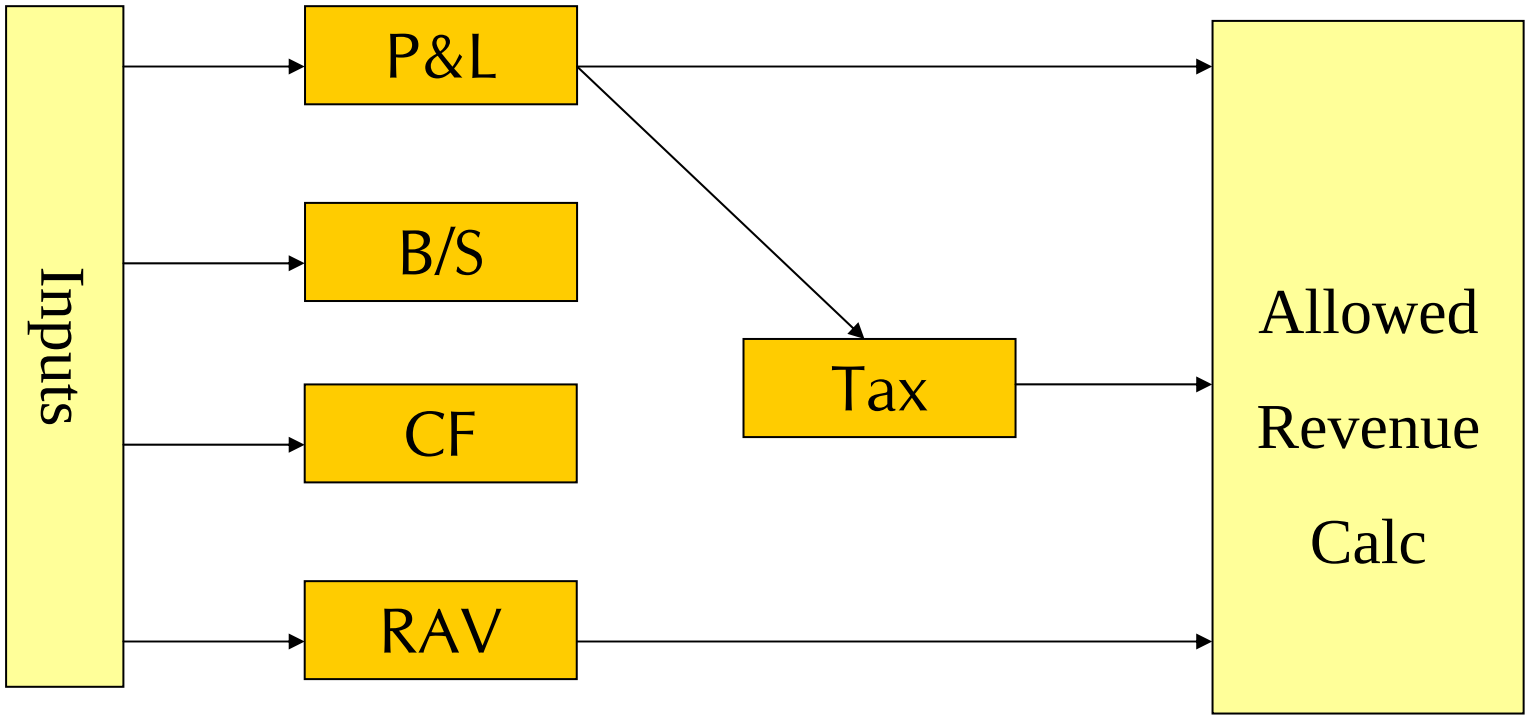
- Developed by Ofgem but with feedback from licensees
- Still "work in progress"
- Version with dummy data available on website
- Independently audited by PKF

- Expectation of releasing a fully populated version at some future time

Model structure (1 of 2)



Model structure (2 of 2)



Model inputs

- HBPQ
- Regulatory Asset Value (RAV)
- Pensions
- Cost of capital
- Opex
- Capex
- Accountancy & Tax

RAV rollover (1 of 3)

- Mini-reviews/rollovers did not assess capex efficiency, so RAV figures "soft"
- Capex teams have assessed company capex back to:
  - 1999/00 for SPT & SHETL
  - 2000/01 for NGET
  - 2002/03 for NGGT

RAV rollover (2 of 3)

- Basis of calculation:

  Opening RAV

  \+ Additions

  \- Depreciation

  \- Disposals

  = Closing RAV

Includes items such as BETTA & PLUGS & transfer to SO adjustments

RAV rollover (3 of 3)

- Period to 2004/05
  - No adjustments to electricity licensees
  - Consulting on potential £75m disallowance for NGG relating to excess investment in St. Fergus entry capacity
- 2005/06 & 2006/07 – Load related
  - Some exclusions (£237m)
  - Subject to further review

Pensions (1 of 3)

Licensee (Scheme)	NGGT £m	NGET £m	SPT £m	SHETL £m
Total expected deficit	425	406	Surplus	Surplus
- non attributable element	36	5	n/a	n/a
- non attributable element (Centrica)	62	n/a	n/a	n/a
- unfunded ERDC's	259	190	0	0
= Deficit for allowance	68	211	0	0
Annual deficit allowance	9	27	0	0
Annual ongoing allowance	16	19	3	2
Total annual pensions allowance	25	47	3	2
Capitalised portion of the allowance	0%	25%	64%	52%
	£m	£m	£m	£m
Opex portion of the allowance	25	35	1	1

Pensions (2 of 3)

- **Pension Costs**
  - Developing Network Monopoly Price Controls (2002/03)
  - Electricity Distribution Price Control Review (2003/04)
  - Transmission Price Control Review (2005/06)
- **Pension Principles (15)**
  - Publish an amalgam of all previously stated Pension Allowance Calculation Guidelines
- **Every 5 years**
  - Compute an explicit allowance for pension costs
- **Deficits Repair Period**
  - Arising from Actuarial Assumptions, Valuations and New Legislation

Pensions (3 of 3)

- **"Ongoing" Allowance**
  - Contribution Rate x Attributable Pensionable Salaries
- **Subsequent Price Control reviews for Pension Allowance**
- **Over - funding or Under - funding**
  - Variance between actual funding levels, and the revised allowances
- **Ex Ante – Ex Post**
  - Allowance for changes in ex ante assumptions
- **ERDCs – Severance**
  - Adjust where additional contributions to the pension fund are less than the additional liability

Cost of capital (1 of 6): Past

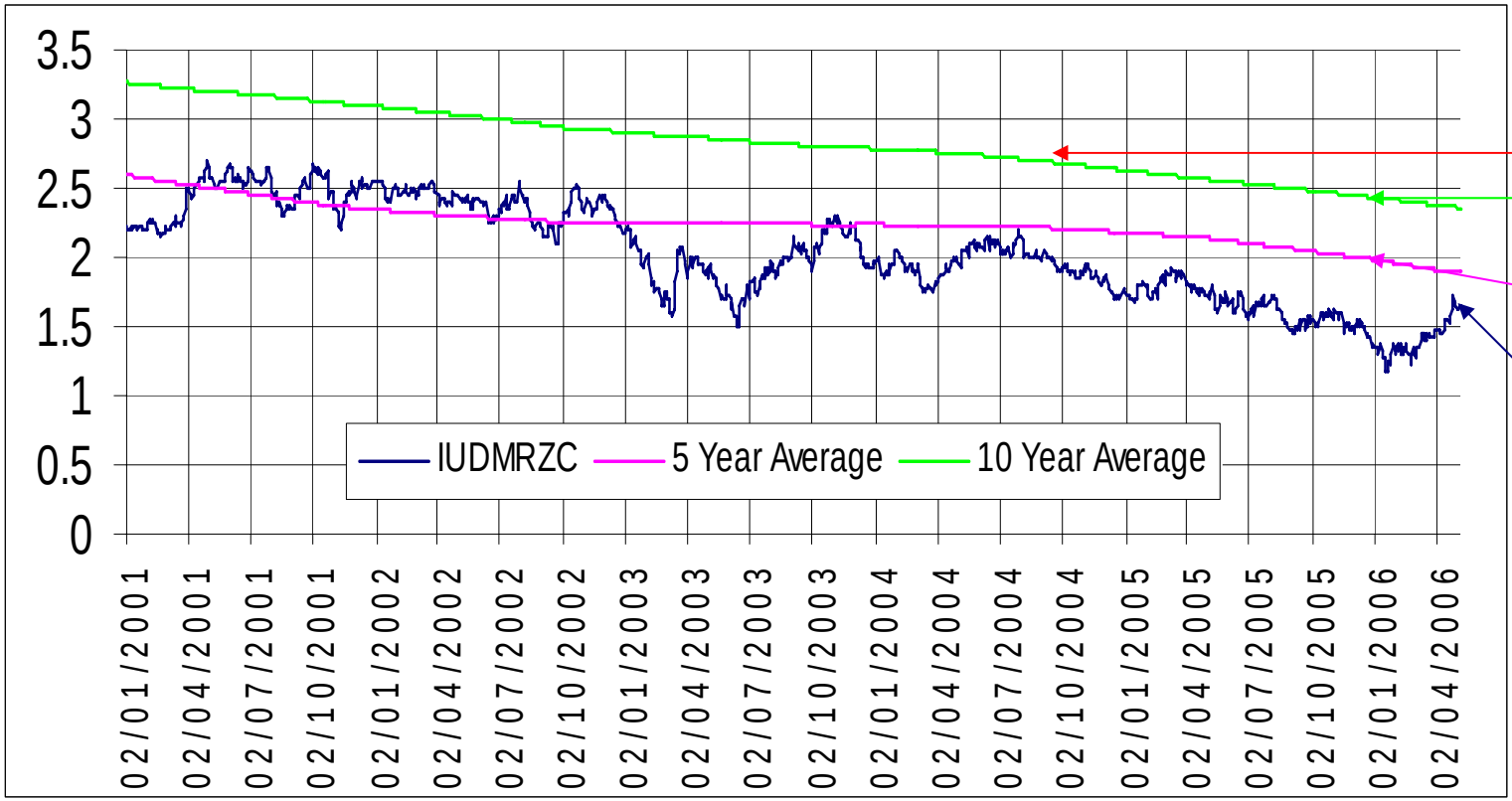
- Allowances from previous reviews:

Components	Scots Dec 99	NGC Dec 00	Transco Sep 01	DPCR4 Nov 04	TIRG Dec 04	Scots RO Dec 04	NGET RO Dec 05
Risk Free rate	2.50&	2.75%	2.75%	2.75%	2.75%	2.75%	2.75%
Debt Premium	1.85%	1.70%	1.90%	1.35%	1.35%	1.35%	1.00%
Cost of Debt	4.35%	4.45%	4.65%	4.10%	4.10%	4.10%	3.75%
Equity Premium	3.50%	3.50%	3.50%	4.75%	4.75%	4.75%	4.75%
Equity Beta	1.00	1.00	1.00	1.00	1.00	1.00	0.90
Cost of Equity	6.00%	6.25%	6.25%	7.5%	7.5%	7.5%	7.0%
Gearing	50%	60%	62.5%	57.5%	50%	57.5%	60%
WACC pre tax	6.50%	6.25%	6.25%	6.91%	8.81%	6.91%	6.25%
WACC post tax	4.52%	4.37%	4.37%	4.84%	6.16%	4.84%	4.39%

Cost of capital (2 of 6):Ranges

Component	Spot (Low)	DPCR4 (High)	View in Model	Debt: 10 Year Avg Equity: @ 7.5%	Debt : 5 Year Avg Equity: @ 6.5%
Risk Free rate	1.65%	2.75%	2.3%	2.4%	2.1%
Debt premium	0.65%	1.35%	1.1%	1.1%	1.0%
Cost of debt	2.3%	4.1%	3.4%	3.5%	3.1%
Equity premium	5.85%	4.75%	5.20%	5.1%	4.4%
Equity Beta	0.5	1.0	0.9	1.0	1.0
Cost of Equity	4.6%	7.5%	7.0%	7.5%	6.5%
Gearing	60%	57.5%	60%	60%	60%
WACC pre tax	4.0%	6.9%	6.0%	6.4%	5.6%
WACC post tax	2.8%	4.8%	4.2%	4.5%	3.9%

Cost of capital (3 of 6) : Debt



2.75% DPCR4
10 Yr Avg

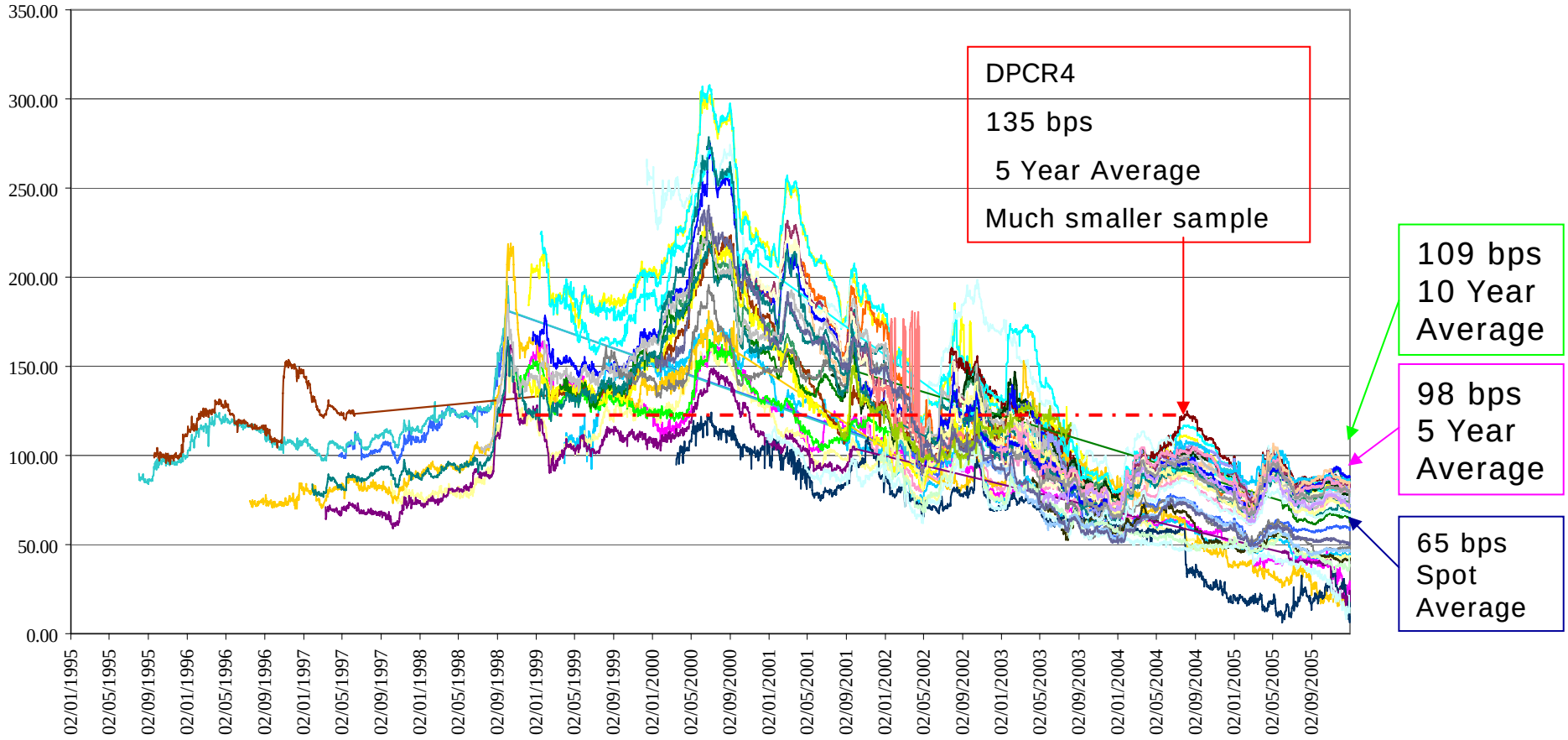
2.4% 10 Yr Avg

2.0% 5 Yr Avg

1.65% Spot

Source: Bank of England 10 Year Perpetual Index Linked

Cost of capital (4 of 6) : Debt Premium



Cost of capital (5 of 6) : Equity

- Smithers Report 2003

"Our central estimate of the cost of equity capital is around 5.5% (geometric average) and thus 6.5% to 7.5% (arithmetic average), 95% confidence intervals are, at a conservative estimate, of up to two percentage points either side of this point estimate."

Cost of capital (6 of 6)

- Post-tax cost of capital, with specific tax allowance
  - Cost of debt 3.4%
  - Cost of equity 7.0%
  - Gearing (Net debt/RAV) 60%
  - Post-tax WACC of 4.2%
- Continuing evidence of low real interest rates
- Strong evidence that UK utility equities exhibit risk which is definitely below market average

Operating Expenditure

- Four stage approach
  - Normalise 2004/05 base year
  - Consider scope for efficiency improvement (items identified by consultants)
  - Consider specific upward cost pressures
  - Consider scope for continuing efficiency improvement
- Non-op capex & quasi-capex
- IFI

Capital Expenditure

- Ofgem capex team worked with consultants to establish view on historic and future capex spend
  - Historic used to establish RAV roll forward
  - Model splits Load/Non-load to allow for separate treatment of each if required

- TIRG is excluded from the calculations of revenue allowance, but can be "switched on" to allow for overall financeability considerations

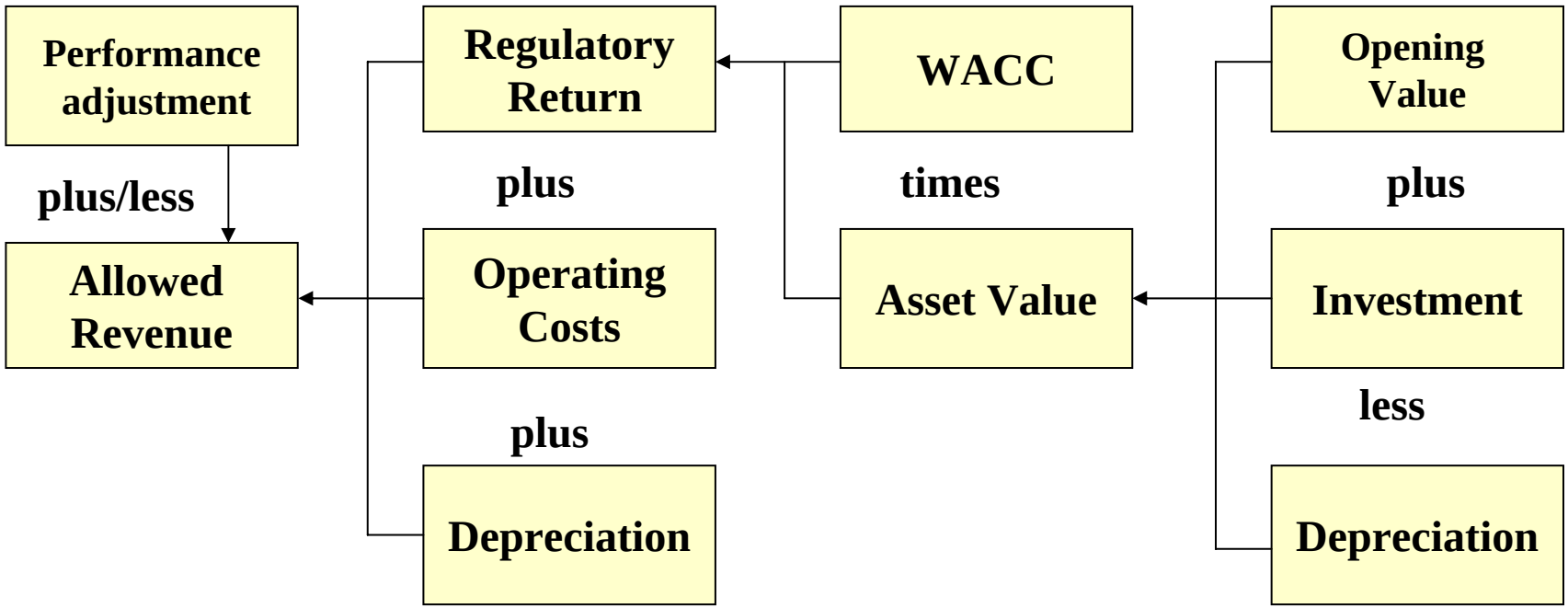
Accountancy & Tax (1 of 2) – Calculation

- Profit before Tax using Vanilla return (ie Post tax Debt + Pre tax Equity)
- +/- Company specific items
- - Capitalised Pensions
- - Capital Allowances
- NB no Interest deduction
- = Profit for Tax at 30%

Accountancy & Tax (2 of 2) – UK GAAP

- Model follows UK GAAP and not IFRS
- RAV excludes interest during construction
- Interest is based on cost of capital model

Traditional RPI-X calculation



Allowed revenue calculations (1 of 3)

- Key parameters & features
  - Post-tax allowance, with specific current tax calculation
  - Vanilla WACC of 4.84% used to discount future cash flows
  - Current allowances based on actual gearing not notional 60% level
  - Incentives not included
  - IFI allowance added afterwards as 0.4% of revenue

Allowed revenue calculations (2 of 3)

- Revenue allowance comprises:

  Change in Present Value (PV) of opening and closing RAV

  +

  PV of 5-year sum of (opex + capex + pensions + tax)

- The above sum is divided by the sum of the period's discount factors to derive the PV of the annual revenue

- Revenue can be profiled using "X"

Allowed revenue calculations (3 of 3)

- Inherent circularity in model
  - Tax payments depend on revenue allowance, revenue allowance in part determined by tax payments required

- Model uses "Goal-seek" to iterate until tax payments in P&L equal tax allowance in revenue build-up
  - Multiple iterations required due to interaction of tax payments in successive years

Model Outputs (1 of 2)

All prices are £m in 2004/05 terms

		2006/07	2007/08	2008/09	2009/10	2010/11	2011/12
		£m	£m	£m	£m	£m	£m
	Regulatory Asset Value (RAV						
1	Opening asset value		2,872.7	3,198.3	3,282.8	3,224.0	3,158.6
2	Total capital expenditure		421.8	188.7	48.0	41.1	37.0
3	Depreciation		-96.3	-104.2	-106.9	-106.5	-105.9
4	Closing asset value		3,198.3	3,282.8	3,224.0	3,158.6	3,089.7
5	Present value of opening/closing RAV		2,872.7				2,439.4
6	5 year movement in RAV						433.3
	Allowed items						
7	Operating costs (excluding pensions)		137.3	135.8	135.0	133.2	134.9
8	Capital expenditure		421.8	188.7	48.0	41.1	37.0
9	Pensions allowance		24.5	25.4	26.2	26.9	27.8
10	Tax allowance		58.4	53.1	53.6	57.0	59.3
11	Total of allowed items		642.0	403.0	262.8	258.1	259.1
12	Present value of allowed items		627.0	375.4	233.5	218.8	209.4
13	5 year movement in RAV						433.3
14	Total present value over 5 years						2,097.5
	Revenue						
15	Revenue index		1.000	1.000	1.000	1.000	1.000
16	Discounted revenue index		0.977	0.932	0.889	0.848	0.808
17	Price control revenue	442	471.1	471.1	471.1	471.1	471.1
18	Present value of PC revenue		460.1	438.8	418.6	399.2	380.8
19	Total present value over 5 years						2,097.5

Model Outputs (2 of 2)

- Key financial ratios
  - Net debt/RAV
  - Funds from operations (FFO)/Net debt
  - FFO/Interest

- Simple indication of level of equity requirement to meet investment plans

Future additions

- Revenue drivers
- Capex efficiency incentive
- Depreciation tilting

Revenue drivers

- Revenue drivers
  - Automatic adjustment mechanisms
  - Nodal for gas entry
  - Two part system for electricity

- Could be implemented as 'bolt-on' to existing revenue streams

Capex efficiency incentive

Two approaches:

- **DPCR4 example:** Companies incentivised depending on the level of their forecast compared to the view of Ofgem's consultant PB Power
  - DNOs with forecast closer to Ofgem's were given a capex allowance closer to its own forecast, a higher efficiency incentive rate, and a higher additional income
  - DNOs allowed to "**re-bid**".
  - The reduced gap in forecasts reduced their capex allowance, but increased their marginal incentive rate and the additional "bonus"
- **Rolling Incentive:** baseline allowance with a lower return on expenditure above and below this level.

We will provide an update in the September update

DPCR4 Sliding Scale Mechanism

Reward/penalty to DNO for under/over-spend (in PV terms):

(allowed expenditure - actual spend) x efficiency incentive + additional income

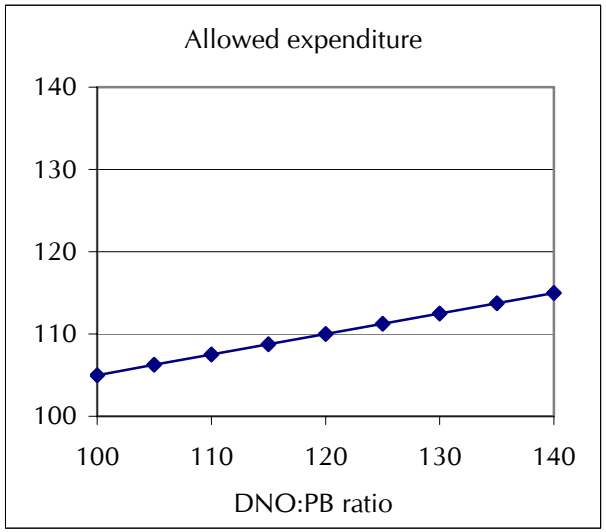
where values for the three circled parameters depend on the ratio between the forecasts of DNO and Ofgem (PB), as shown in the table below.

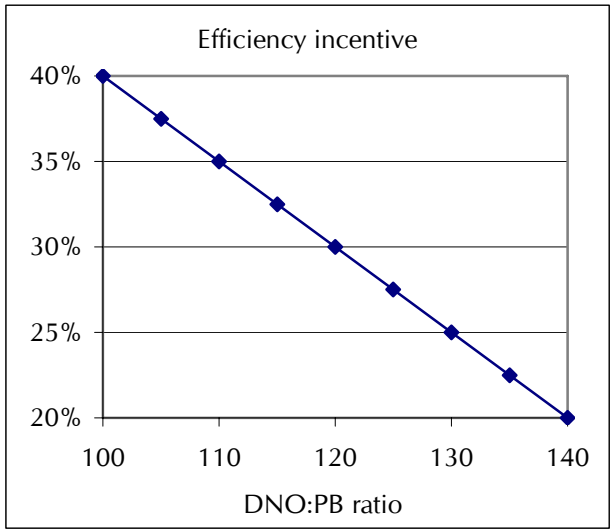
(Sliding scale parameters published in DPCR4)

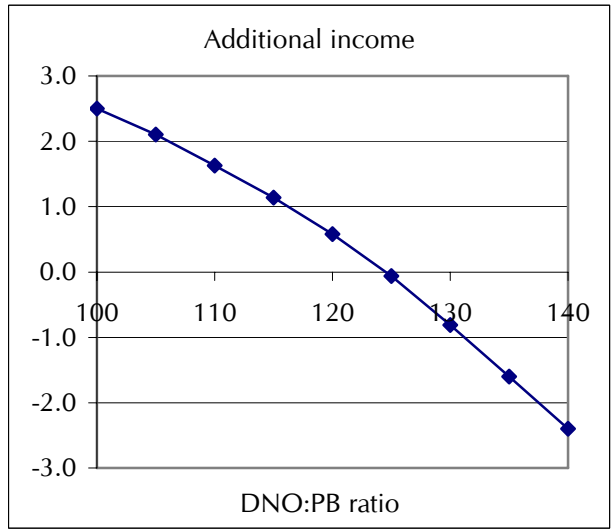
DNO:PB ratio	100	105	110	115	120	125	130	135	140
Efficiency Incentive	40%	38%	35%	33%	30%	27.5%	25%	23%	20%
Additional income	2.5	2.1	1.6	1.1	0.6	-0.1	-0.8	-1.6	-2.4
Rewards & Penalties									
Allowed expenditure	105	106.25	107.5	108.75	110	111.25	112.5	113.75	115

DPCR4 Sliding Scale – choosing the parameters

- **Allowed expenditure** and **efficiency incentive** are linear functions of the DNO:PB forecast ratio;
- **Addition income** is adjusted to ensure the "incentive compatibility", i.e. at any level of actual spend, DNO gets the highest rewards (lowest penalty) if the spend agrees with its own forecast. (See next slide.)







DPCR4 Sliding Scale - information & efficiency incentives

(Sliding scale reward/penalty table published in DPCR4)

DNO:PB ratio	100	105	110	115	120	125	130	135	140
Efficiency Incentive	40%	38%	35%	33%	30%	27.5%	25%	23%	20%
Additional income	2.5	2.1	1.6	1.1	0.6	-0.1	-0.8	-1.6	-2.4
Rewards & Penalties									
Allowed expenditure	105	106.25	107.5	108.75	110	111.25	112.5	113.75	115
Actual Exp									
70	16.5	15.7	14.8	13.7	12.6	11.3	9.8	8.2	6.6
80	12.5	11.9	11.3	10.5	9.6	8	6.5	4.9	4.6
90	8.5	8.2	7.8	7.2	6.6	5	3.5	1.7	2.6
100	4.5	4.4	4.3	4.0	3.6	3	2.2	1.1	0.6
105	2.5	2.6	2.5	2.4	2.1	1.7	1.1	0.4	-0.4
110	0.5	0.7	0.8	0.7	0.6	0.3	-0.2	-0.8	-1.4
115	-1.5	-1.2	-1.0	-0.9	-0.9	-1.1	-1.4	-1.9	-2.4
120	-3.5	-3.1	-2.7	-2.5	-2.4	-2.5	-2.7	-3.0	-3.4
125	-5.5	-4.8	-4.2	-3.9	-3.9	-4.0	-4.1	-4.1	-4.4
130									
135									
140									

Efficiency incentive: reward/penalty for under/overspend

Information incentive (rewarding accurate forecast)**:** highest reward / lowest penalty when actual spend = DNO forecast

Depreciation tilting

- Accelerated depreciation ("depreciation tilting")
  - Recalculates long-life asset RAV using a shorter lifespan
  - Difference between depreciation based on shorter life and depreciation received to date is given to licensee over a certain number of years (the "smoothing period")
  - RAV depreciation going forward based on shorter lifespan
- Net effect is to advance depreciation payments, this mitigates the cliff-face effect of sudden discontinuance of pre-vesting RAV

Revenue effect

- Cliff-face effect on electricity TO RAV's
  - NGET £238m p.a.
  - SPT £43m p.a.
  - SHETL £10m p.a. (but not until 2012)
- Not relevant for gas RAV
- Adjusting lifespan and smoothing period can result in a wide variety of depreciation advances
  - Revenue allowance calculation spreads effect within control period

Potential effect of tilting

- For example, from the March consultation:
  25 year life + 20 year smoothing
- NGET: +£170m/pa on depreciation for 2010/11 & 2011/12
- SPTL: +£20m/pa over same period
- SHETL not affected in this control
- Excessive shortening of pre-vesting assets would recreate the problem in the future

Future Processes

- Iteration with the licensees
- Publication of cost of capital study & bond analysis
- Pensions guidance and illustrative example
- Tilted depreciation
- Revenue drivers
- Financeability
- Update document in September

Q&A

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Promoting choice and value for all gas and electricity customers