The cost of capital for an energy transmission business

An independent perspective, with reference to the interests of users

Ian Rowson

analysis for confidence in policy

- Ian Rowson
- specialist advisor on regulatory economics and policy
- since 1999 for regulators
- background as chartered accountant
- working with a number of major gas shippers and suppliers
- on NGG’s cost of capital

Three issues: tax, evidence for beta , conditions for investor confidence

Required revenue calculations

NGG NTS:

Required revenues per initial proposals	*Post-tax*	*Pre-tax*
(averages weighted by discount factor)	*£m*	*£m*
Required IRR	4.84%	6.72%
Equivalent accounting return	4.73%	6.51%
Average RAV	3,167.3	3,166.6
Rate of return on average RAV	4.73%	6.51%
Allowed return	149.7	206.0
Opex	161.4	161.4
Depreciation	103.7	103.6
Tax allowance (after tax shelter)	56.2	0.0
Unknown rounding and methodology errors	0.0	0.0
Total allowed revenues	471.1	471.1

NB: averages are affected by discount rates used

tax @ 43%

Pre-tax CoC ≈ 43% of revenues

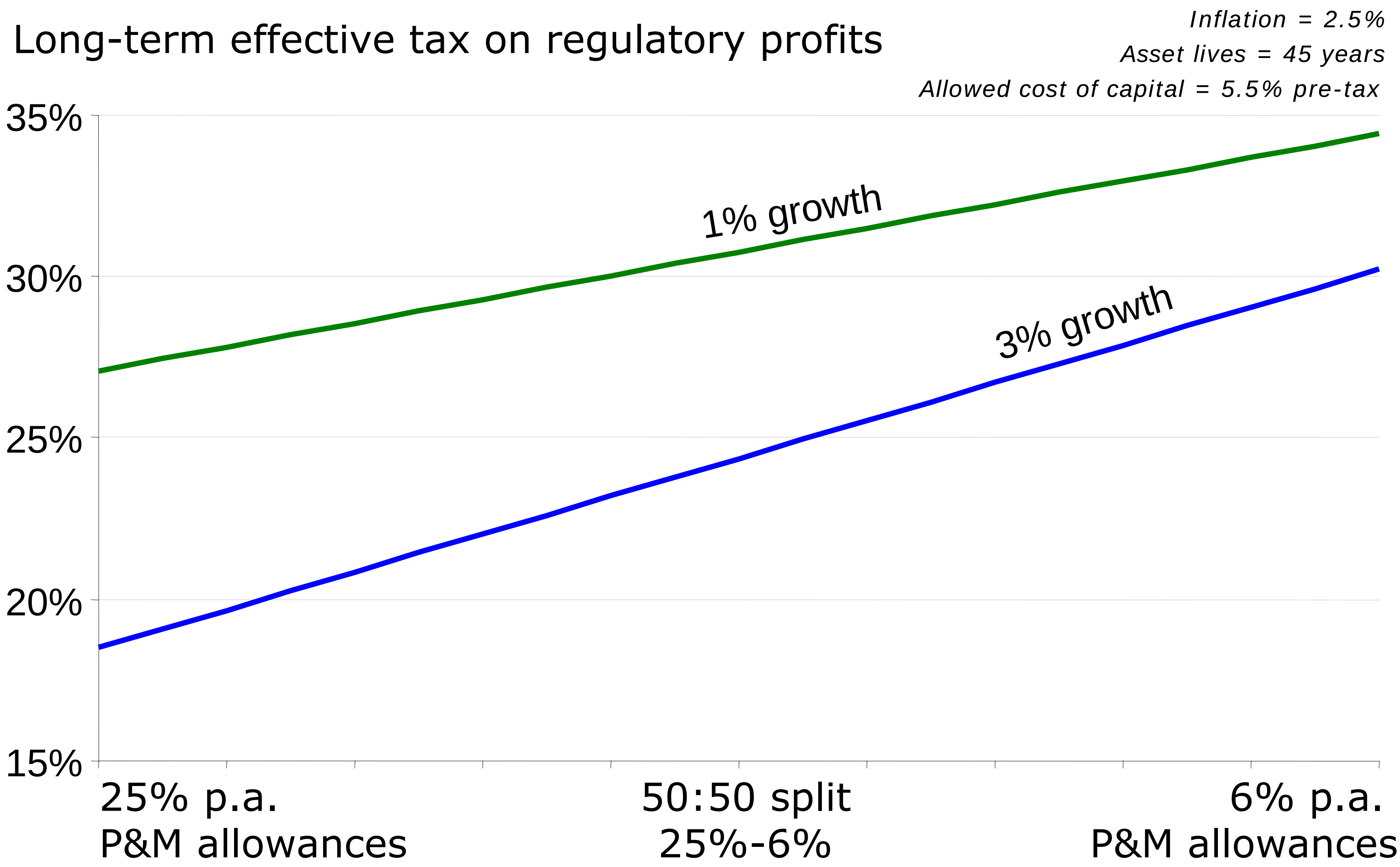
Tax and the WACC

- Observed rates of tax in statutory accounts
  - capital allowances vs. depreciation
  - rates of growth, CA eligibility, depreciation
- Effective rate of tax on real-terms profits
  - ACAs reduced

    …indexed depreciation > HCA depreciation
  - Real tax shelter % increased

    …tax relief on nominal cost of debt, not real cost
- Real tax effects:
  - enterprise effect (CAs, depreciation)
  - gearing effect (tax shelter)

Effective tax rates and capital allowances

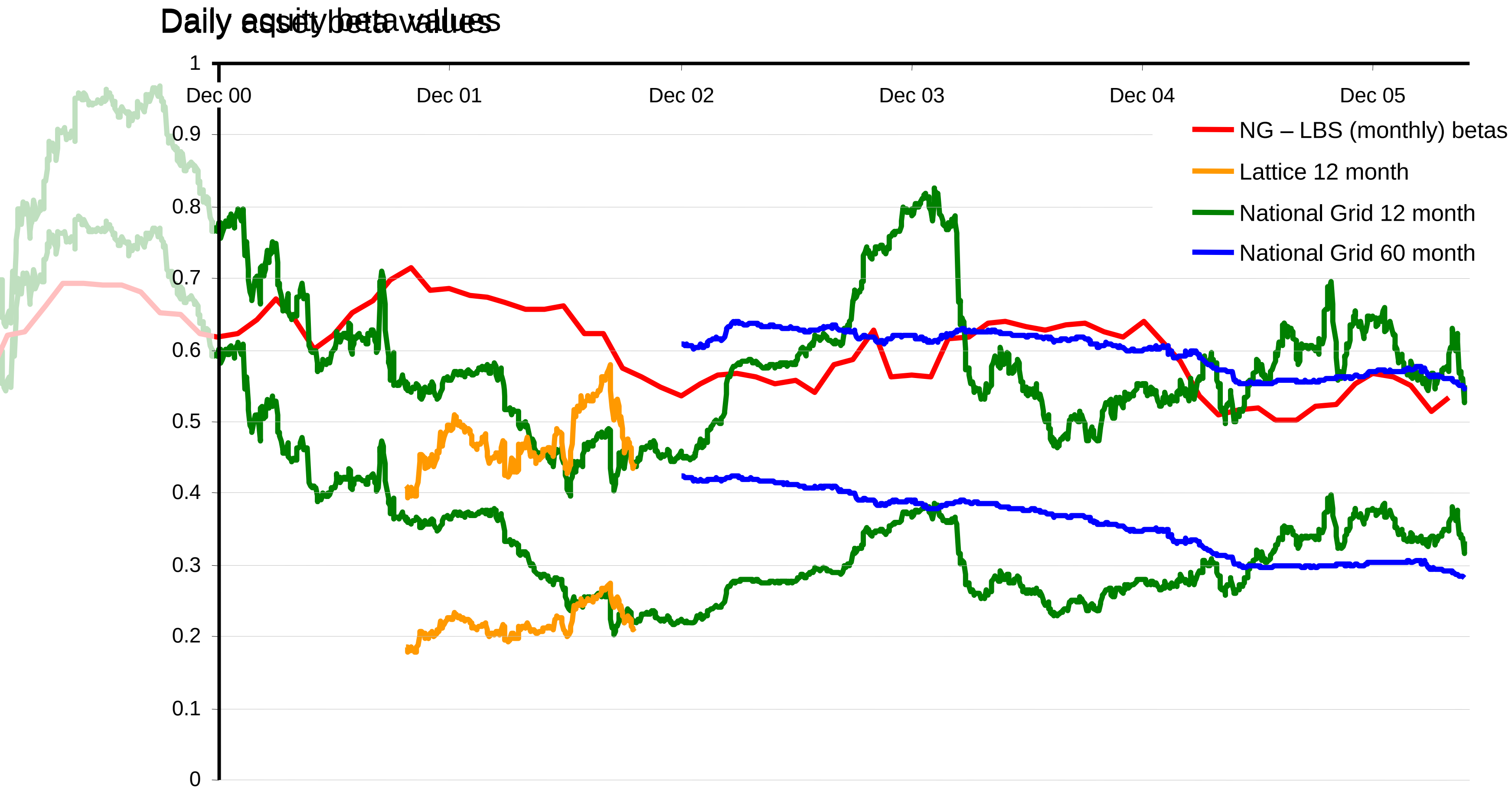


Regulation is all about risk

- Risk that is for management to manage
  - if a profit is certain, there is no **incentive**
- Risk that increases expected costs
  - **asymmetric risk** vs. symmetric risk
- Risk that requires an extra return
  - **systematic risk** vs. diversifiable risk

If non-systematic volatility deserved extra returns . . . aggregate returns on all investments would be greater than the market return

Beta graphs



Source data: Perfect Information, Lattice and NG accounts & preliminary results, NG press releases; calculations: IMR

Observed systematic risk

New information

How does this affect the stock market?

How does this affect share A?

investor/analyst perceptions about the business and its regulation . . . and what that means for its prospects

Prospects for transmission business

- Prospects ≈ present value assessment

$$PV = RAV + function(\text{outturns vs. allowances, regulatory regime})$$

$$PV = RAV + \underbrace{f(R_A, R_R)}_{\text{revenues}} + \underbrace{f(O_A, O_R)}_{\text{opex}} + \underbrace{f(C_A, C_R)}_{\text{capex}} + \underbrace{f(B_A, B_R)}_{\text{buy-back costs}} + \underbrace{f(FCR)}_{\text{future control reviews}}$$

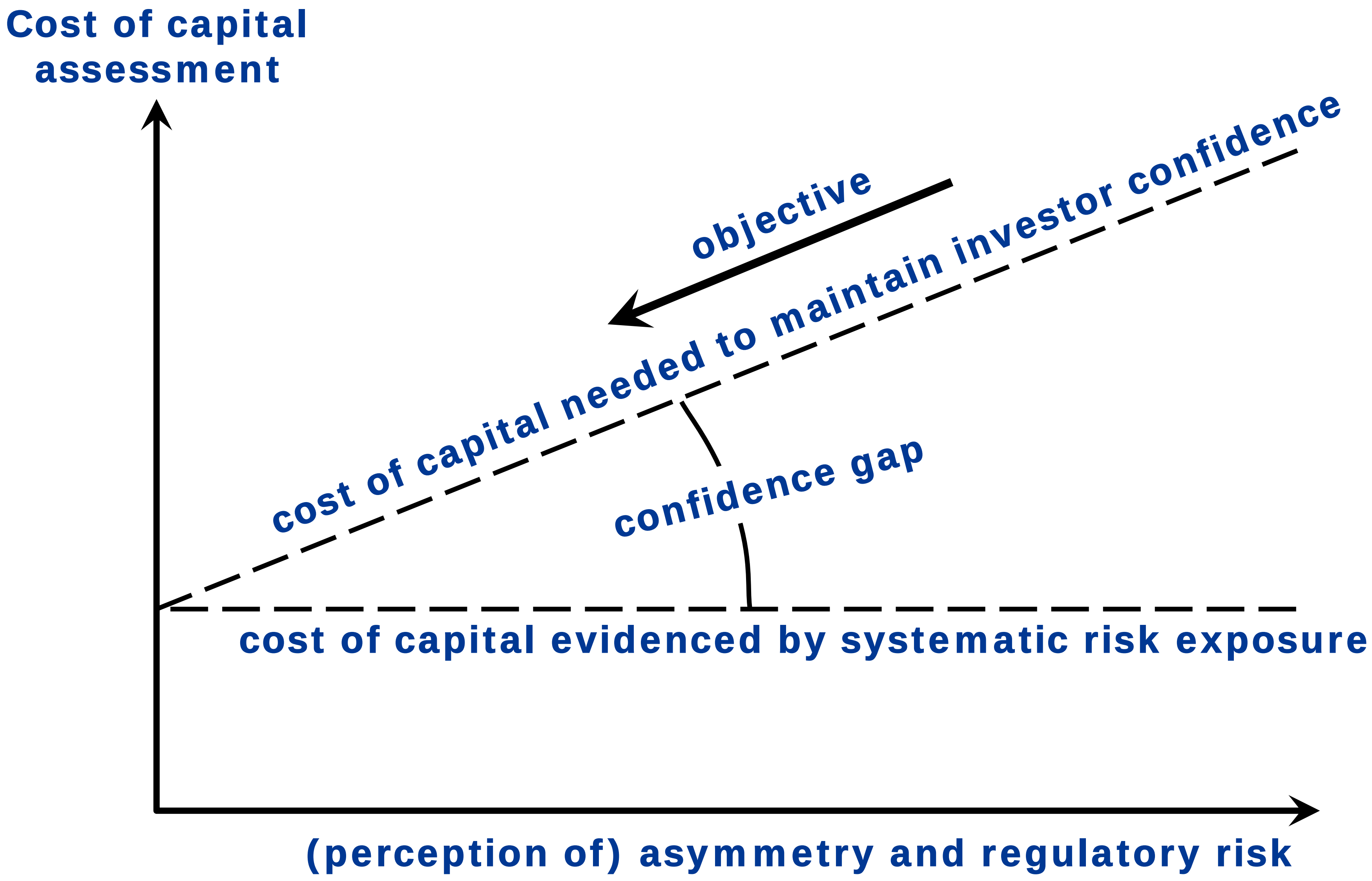
- Analysis of these components, and the effect of regulation . . .
- . . . company is substantially protected from systematic risk by price control and lack of demand volatility
- key potential risk issue in $f(FCR)$

Conclusion on beta

- Beta has been persistently well below 1.0
- Plausible for investors to see low risk
- Reasonable for past to indicate the future
- Required standard of evidence is not certainty – it isn't elsewhere in the building block calculation

Investment incentives depend on confidence in longer-term process

Developing and maintaining investor confidence remains key


Cost of capital
assessment
objective
cost of capital needed to maintain investor confidence
confidence gap
cost of capital evidenced by systematic risk exposure
(perception of) asymmetry and regulatory risk

Confidence in the risk story

- Asymmetry and regulatory risk are expensive
- Ofgem in a unique position to analyse and inform about risk issues
- Better analysis and more transparent communication of risk issues should:
  - reassure investors about underlying risks
  - signal awareness of regulatory risk and asymmetry
  - reassure users that maximum is being done to limit the heavy cost of risk

Illustrative WACC calculations

WACC estimate: tax analysis
Based on Ofgem TPCR initial proposals

	Equity beta = 1		Equity beta = 0.75		
	No inflation headline tax	With inflation 37.25% tax	No inflation headline tax	With inflation 37.25% tax	
Gearing	60.00%	60.00%	60.00%	60.00%	
Cost of debt					
Pre-tax cost of debt	3.40%	3.40%	3.40%	3.40%	
Inflation		2.50%		2.50%	
Nominal pre-tax cost of debt	3.40%	5.99%	3.40%	5.99%	
Headline rate	30.00%	30.00%	30.00%	30.00%	
Post-tax nominal cost of debt	2.38%	4.19%	2.38%	4.19%	
Inflation		2.50%		2.50%	Effect of tax shelter
Post-tax real cost of debt	2.38%	1.65%	2.38%	1.65%	
Cost of equity					
Post-tax MRP	5.00%	5.00%	5.00%	5.00%	
Equity beta	1.000	1.000	0.750	0.750	
Risk premium	5.00%	5.00%	3.75%	3.75%	
Risk-free rate	2.00%	2.00%	2.00%	2.00%	
Post-tax cost of equity	7.00%	7.00%	5.75%	5.75%	
					Vanilla post-tax
Vanilla post-tax (pre-tax debt)	4.84%	4.84%	4.34%	4.34%	
WACCs					Full post-tax
Post-tax WACC	4.23%	3.79%	3.73%	3.29%	
Effective enterprise tax rate	30.00%	37.25%	30.00%	37.25%	Pre-tax cost of capital
Pre-tax enterprise WACC	**6.04%**	**6.04%**	**5.33%**	**5.24%**	

Ofgem initial proposals

Relying on low risk assessment depends on selling low risk assessment