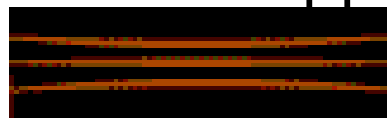




NEW ZEALAND INSTITUTE FOR THE STUDY
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Transpower





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REGULATION OF LINES NETWORKS

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Traditional and Incentive Regulation

- **Traditional regulation attempts to determine the profitability of the firm**
 - Often by setting the rate of return on investments approved by the regulator
- **Incentive regulation attempts to provide the firm with incentives to reduce costs and require those cost savings to be shared with customers**
 - Price cap allows firm to keep all savings in excess of those required to break even at the regulated price
 - Planned reductions in the price cap force the cost savings to be shared with consumers



Lines Companies and Regulation

- **The Commerce Commission is required to implement some form of price control**
- **Purpose of regulation is to**
 - Limit excessive profits
 - Create incentives to improve efficiency and provide the quality that consumers demand; and
 - Share the benefits of efficiency gains with consumers, including through lower prices.
- **The Commission has great discretion in design and implementation**



Lines Companies Regulation

The proposed scheme is

- August 2001 starting price level (trusts net of consumer discount)
- CPI-x
- Assign companies to categories $x = 2\%, 3\%, 5\%$
- Value added (Profit) accumulated over 5 years at some WACC: (enters re-set of x ?)
- Reliability statistics to be monitored
- Breach triggers investigation of x : if x is found to be reasonable it is imposed on the company.



Background

Three themes from recent ISCR work on regulated network industries

- **Optimal profit caps in relation to the WACC**
- **Impact of setting profit cap above and below the optimal level**
- **Impact of historical cost and replacement cost base for the profit cap**



Optimal Profit Cap

- **Implications of a profit cap when the regulated firm is not guaranteed this return**
- **Real options**
 - **Timing**
 - **Options provided to customers**
- **Compensation for stranded assets**



Profit Cap Above and Below the Optimal Level

- **Above**
 - Welfare losses; *but*
 - Entry and appropriate investment timing encouraged
- **Below**
 - Investment delayed
 - Very large welfare losses from missing market



Historical Cost and Replacement Cost

- Interplay of profit cap, implications of regulatory error and the basis for asset valuation
- Recommended reading
 - Evans, Quigley, Zhang (regulatory error)
 - Evans, Guthrie (historical and replacement cost)

(Papers can be found at www.iscr.org.nz)



The Regulatory Environment

- **Deregulated decision-making**
 - Incumbent network provider chooses timing of sunk investment in the absence of competition
 - Applies to maintenance as well as construction
- **Profits regulated by either:**
 - Maximum-allowed rate of return on defined asset base (historical / replacement cost)
 - Maximum price which declines at a defined rate through time.



Bad and Good News When Profits are Capped

- Replacement cost-based regulation
 - Cost falls _ lower capped profits = bad news
- Historical cost-based regulation
 - Cost falls _ locked in high capped profits = good news



Bad and Good News When Prices are Capped

- Cost falls more than x_c higher rate of return than expected = good news
- Cost falls less than x_c lower profits = bad news



Investment

- **Key characteristics of investment**
 - Irreversible
 - Uncertainty
 - about future profit flows
 - about future replacement costs
 - The firm has investment timing flexibility
- **Incentives for investment are the key driver of dynamic efficiency and long-term consumer gains**



The bad news principle for investment

- **Two things can go wrong**
 - Waiting, when you should invest
 - Investing, when you should wait
- **Bad news principle**
 - It is the second mistake that matters
 - PV of profits must exceed cost of network by just enough to compensate the firm for any future bad news
 - If the potential for bad news becomes greater, the firm is more likely to delay investment



Sources of bad news for a firm which has invested

- Profit falls _ firm cannot cover cost of capital
- Cost falls _ if the firm had waited, network would have been cheaper



Regulation and investment timing with profit caps on historical cost

- Invest now and lock in a high cap
- Important when:
 - Cost is trending downwards
 - Cost and surplus negatively correlated
 - Why wait for higher profits if the cap will fall?



Regulation and investment timing with price caps

- Cost falls more than $x_{\text{—}}$ investment would have been cheaper if delayed
- Cost falls less than $x_{\text{—}}$ investment would have been more expensive if delayed



Conclusion

- Optimal industry regulation is a complex combination of
 - static efficiency (price or profit caps) and
 - dynamic efficiency (incentives for investment)
- Price or profit cap
 - Typically must allow returns greater than the risk adjusted discount rate to compensate for loss of the option to delay investment
 - Too low is much worse than too high

