



**NEW ZEALAND INSTITUTE FOR THE STUDY  
OF COMPETITION AND REGULATION INC.**

# **LINKING REGULATION TO OUTCOMES:**

## **Network separation, price discrimination and investment in small-scale economies**

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# MMBA503 QUESTION 1

What is the objective of regulation?



# THE REGULATORY OBJECTIVE I

To correct market inefficiencies?

- caused by deviations from ‘perfect competition’
  - monopoly, externalities, uncertainty, opportunistic behaviour
- regulation increases efficiency (total welfare = sum of consumer and producer welfare) ‘objective’ measure
  - but which efficiency - static (current period) vs dynamic (over time)
  - information and uncertainty – cause inefficiencies and hamper the ability to devise appropriate corrections



# REGULATORY OBJECTIVES II

To promote or protect the public welfare?

- subjective
- a justification for redistribution
- safety is an efficiency issue
  - opportunity cost of saving a life
  - who pays is a distributive issue

Should redistribution occur even if it reduces total welfare?

- Kaldor-Hicks Criterion – if an action increases welfare, then the ‘winners’ could compensate the ‘losers’ and still leave nobody worse off (and at least somebody better off) even if the redistribution does not actually occur



# REGULATORY OBJECTIVES III

## To promote competition?

- Competition Law objective
- allocation of responsibilities an economic consideration: which is best-placed to promote pursuit of economic efficiency?
- generic courts vs specialist regulators?

## To promote investment?

- Telecommunications Act 2006 objective
- who will invest?
  - public investment has always been a potential ‘solution’ to ‘market failure’ and a substitute for regulation
  - private investment – must address risk and return incentives



# WHAT IS COMPETITION?

A code of behavioural etiquette?

A process of strategic interaction?

A means to the end of increased efficiency?



# REGULATORY OBJECTIVES IV

Which form of competition maximises efficiency?

- perfect competition
  - homogeneous product; perfect information; complete contracts
  - infinitely large number of market participants
  - price = marginal cost; single price
  - all participants are price-takers
- monopolistic competition
  - small number of participants; differentiated products
  - high fixed, sunk costs => price tends to average cost
  - market power a given; uncertainty; information asymmetries
  - efficiency may be maximised with multiple prices
- dominant firm/competitive fringe
  - dominant firm has least-cost technology
  - fringe competitors can constrain losses arising from dominance



**WHAT IS 'REGULATED COMPETITION'?**

**IS 'REGULATED COMPETITION' FEASIBLE?**





# 'REGULATED COMPETITION'

To impose the artefacts of perfect competition on the industry (one means)?

- marginal cost pricing of artificially-standardised incumbent outputs
- increasing number of participants/decreasing incumbent market share as performance benchmark

To increase industry efficiency (the end)?

- recognising different underlying economic circumstances are counter-indicative to perfect competition
- rules to govern an industry-specific competitive process (the means)
- performance assessed by incremental increases in welfare



# INCREASING EFFICIENCY IN NETWORK INDUSTRIES I

High fixed & sunk (irreversible) costs

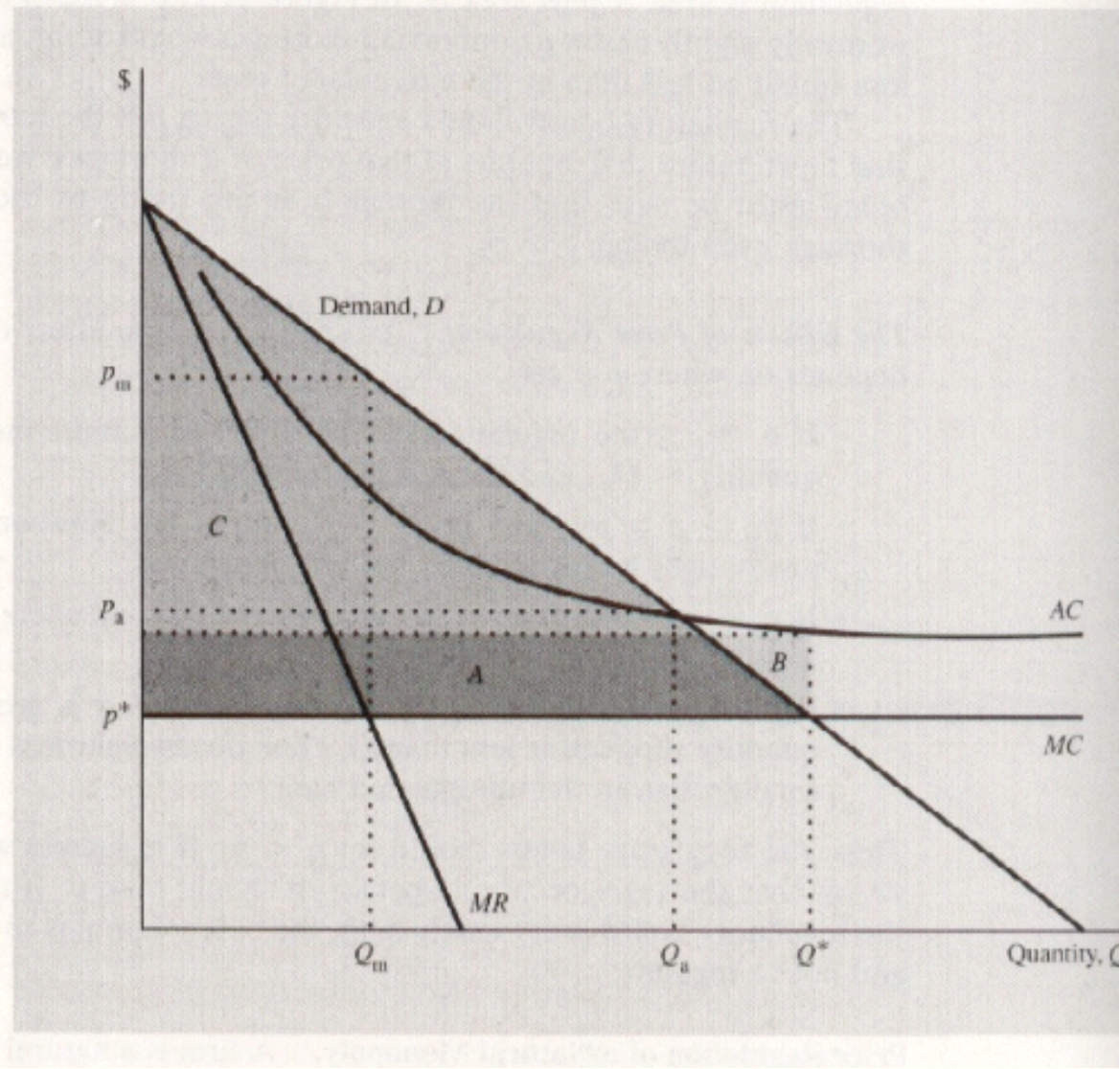
- scale economies matter – the natural monopoly problem
- marginal cost pricing is never optimal

Mandatory unbundling at marginal cost (and even TSLRIC) prices reduces rather than increases efficiency

- short-run – cannot recover fixed costs
- long-run – falling costs - discourages innovation, new investment (the patents problem) –
- solution is restricting short-run competition

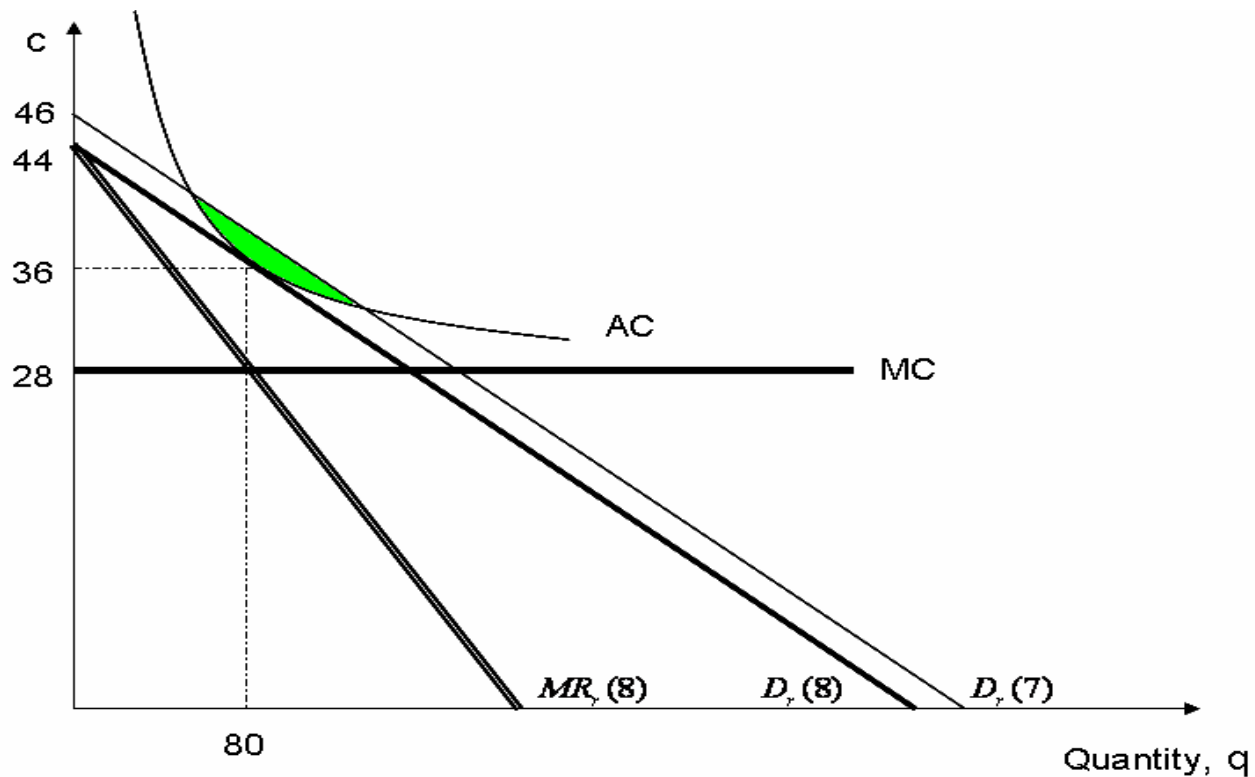


**FIGURE 21.3** Price Regulation of a Natural Monopoly



# MONOPOLISTIC COMPETITION

Entry means residual demand shrinks till zero profits: fixed costs really matter



Monopolistically Competitive Equilibrium

$$pq - 0.28q - F = 0 \quad \Rightarrow: \quad F = 6.40 \Rightarrow n^* = 8, \quad (F = 1.60 \Rightarrow n^* = 17)$$



# RISKS OF MONOPOLISTIC COMPETITION

Too much entry is possible with differentiated products

- entrants do not consider effect of their entry upon market share of other entrants (information problem)
- the problem is bigger the lower the fixed/sunk costs
  - greatest risk of excessive entry in ‘unbundled’ markets when entrants’ fixed costs are low (only their establishment costs) and incumbent bears all the fixed

But not enough entry when fixed costs are very high and all entrants must bear the full extent of fixed costs alone



# INCREASING EFFICIENCY IN NETWORK INDUSTRIES II

Uncertainty increases risks

- how to incentivise investment in new technologies?

Timing of investment matters

- uncertainty => wait for more information
- but potential welfare lost while waiting



# 'PROBLEM' NOT UNIQUE TO NETWORK INDUSTRIES

## Digital goods

- music, software, books

## Professional services

- doctors, lawyers, accountants

## Entertainment industries

- movie screenings, concerts, museums



# PRICE DISCRIMINATION

Shifts focus from supply-side to the demand-side

Take differing consumer valuations into account

High-valuers 'subsidise' low-valuers

Overcomes the 'missing market' problem (static efficiency)

Brings forward time at which technology is made available  
(dynamic efficiency)

A common feature of deregulated network industries

- e.g. airlines

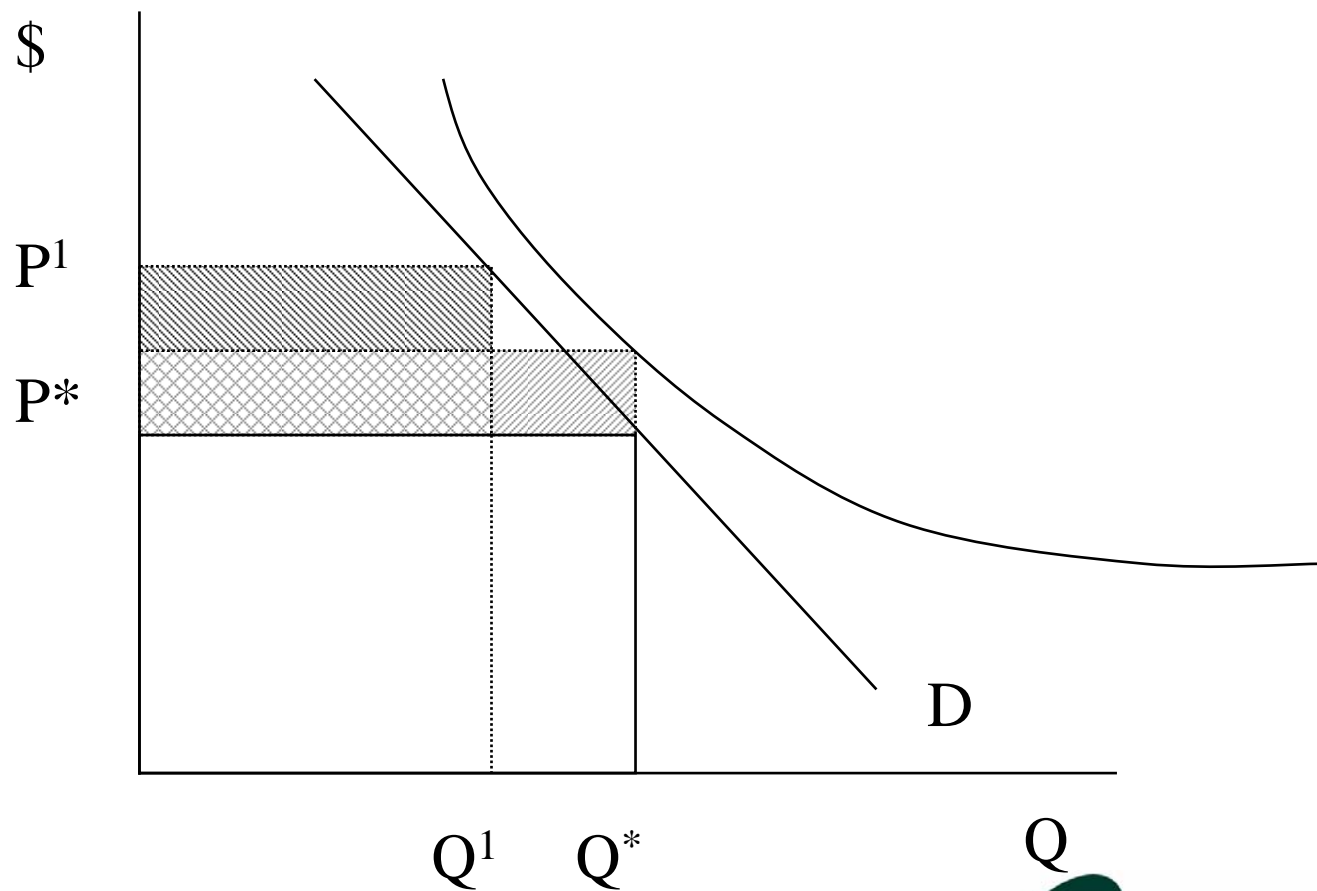
And used to be common in electricity, telecommunications

- Ramsey prices





# PRICE DISCRIMINATION ENABLES EARLIER ADOPTION OF A NEW TECHNOLOGY



# BUT PRICE DISCRIMINATION IS PROHIBITED IN MOST REGULATORY REGIMES

Why?



# BUNDLING, TYING AND PRICE DISCRIMINATION

## Two goods

- a degree of market power in at least one is a given
- e.g. monopolistic competition: product preference => high m/share

## Customers have different valuations for each of the two goods

- but supplier does not know the individual valuations

## Supply individually at a single price

- consumer will purchase both only if each is valued at or above the price

## Supply as a bundle

- consumer will offset consumer surplus gained from the more valued good against the less-valued good in the bundle but not if offered alone
- total welfare increased

Sky TV channels; newspapers etc.



# BUNDLING, TYING AND BROADBAND UPTAKE: THE DEMAND-SIDE STORY

For the vast majority of consumers, the broadband connection is the lower-valued product in the bundle

- relatively elastic demand indicated in most studies (especially compared to telephony connection elasticity)

Triple and quadruple play

- increases range of products where greater individual valuations can be utilised

Bundling can bring forward the time at which the infrastructure supporting the lower-valued product is invested in

- market power in applications (e.g. content copyright – where market power exists) to extract surplus to subsidise infrastructure costs



# BUT STRUCTURAL SEPARATION INHIBITS EFFICIENCY-ENHANCING INFRASTRUCTURE INVESTMENT

Netco (i.e. BT Openreach or Chorus or .....

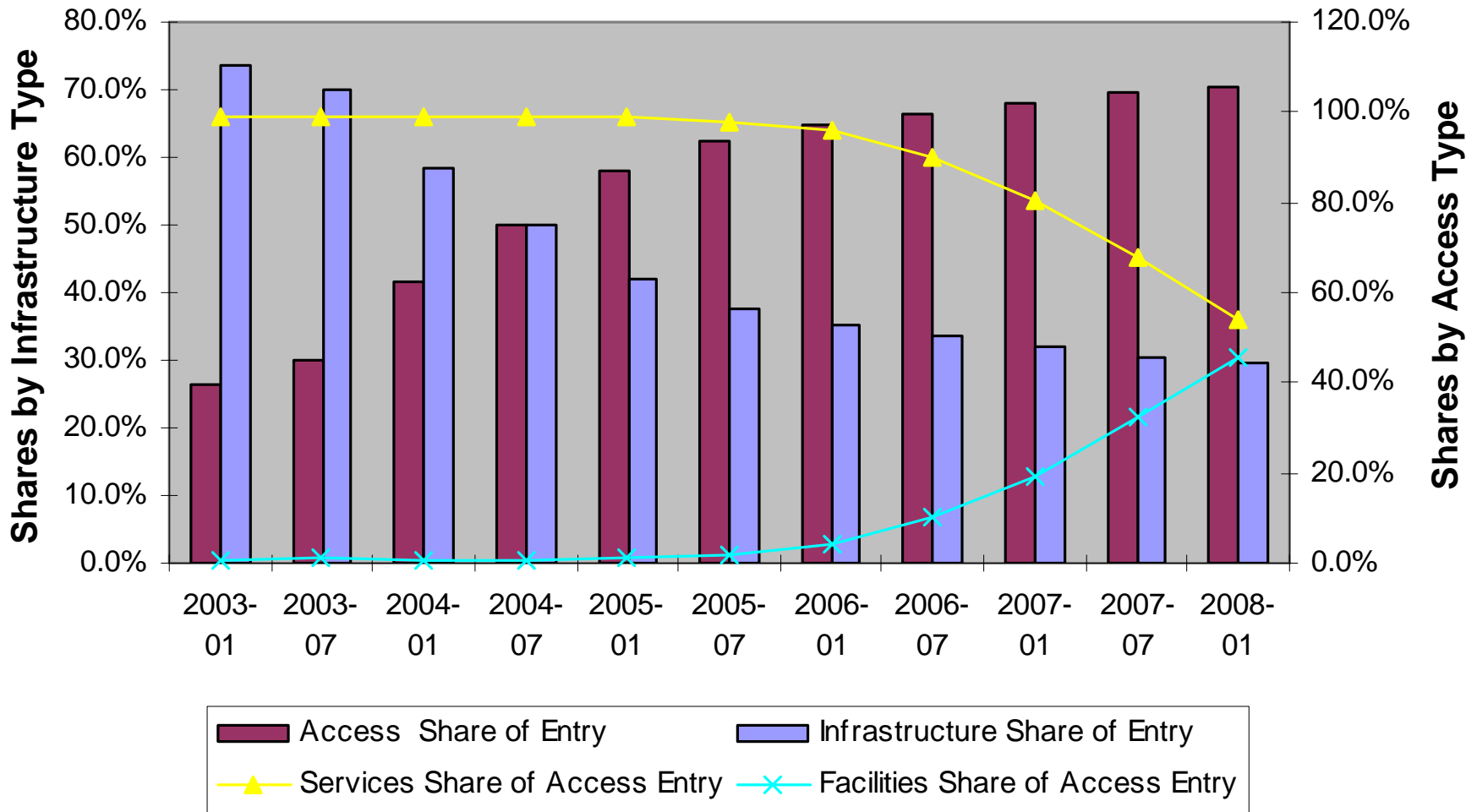
- must supply at non-discriminatory prices
- cannot utilise margins on retail applications to offset infrastructure investment costs
- cannot extract margins from customers with the preferred applications who use the infrastructure

Asymmetric regulation

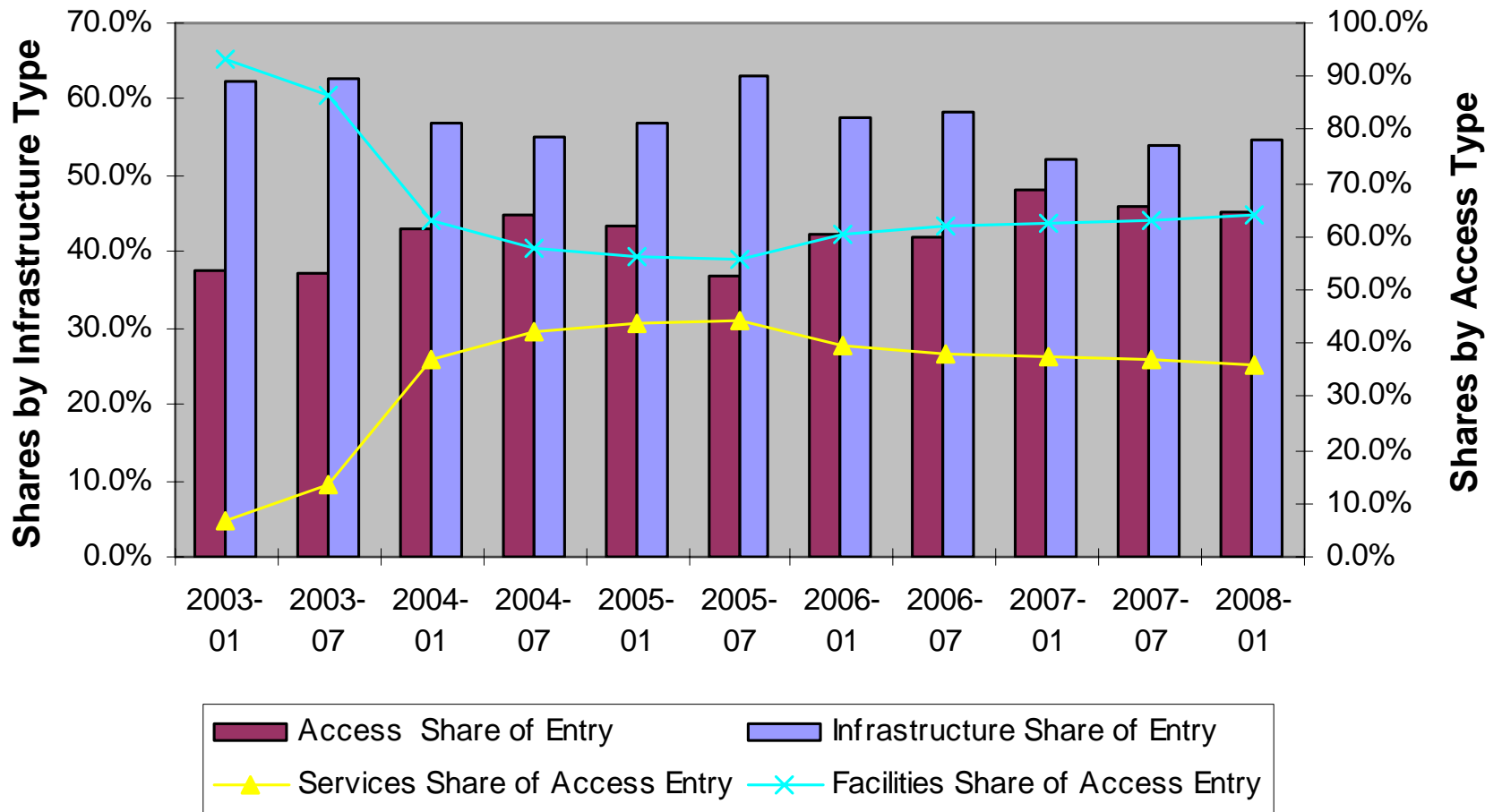
The greater the degree of reliance upon the incumbent's network, the greater the delay that can be expected in the timing of new network investment



# Entrant Shares by Technology: United Kingdom



## Entrant Shares by Technology: Denmark



# HORIZONTAL DISCRIMINATION BETWEEN INFRASTRUCTURES

Market power in one infrastructure industry can be used to offset investment in another infrastructure industry

- e.g. power lines and fibre

Already occurring in New Zealand?

- Wired Country (fibre/wireless)
- Northpower/TelstraClear

‘Open access’ rules on the Telco infrastructure no protection as power lines customers pay higher prices subsidising earlier fibre (Telco) investment/rollout

- ownership and risk allocation may be important
  - if ‘LinesCo’ is a consumer co-op (bearing risks of demand uncertainty), would consumers willingly forego dividend/purchase refunds to promote fibre rollout?





# REGULATORY DILEMMAS

Which regulatory body will govern?

If 'LinesCo' (or any vertically integrated ISP/infrastructure company) can price discriminate but Telecom can't, then competitors get regulated advantage over Telecom in the investment in new technologies in those areas where a business case exists



# MANDATORY SEPARATION DELAYS TEHNOLOGY DIFFUSION

## Mobile handsets in Finland

- pre 2005 bundling handsets with monthly access accounts prohibited
- 2005 - average age of handset stock >2 yrs 9 months
- 2005 – restriction removed
- 2006 – average age of handset stock < 2 yrs 6 months

## Practically all mobile phone use in Finland is voice calls

- handset demand very elastic
- calling market very much less elastic (and doesn't require 3G capabilities)
- subsidise handsets from calling => increase uptake of 3G connections
- 2005 – NZ 25% of connections 3G, Finland 2% (same number of connections per capita)



# CONCLUSION

Impacts of regulation very much more than simply increasing competition (whatever that may be)

Structural solutions (e.g. separation) have substantial impact upon dynamic competition and investment

No longer confined to activities in single industries

Suggests a need to rethink role of industry-specific regulation

- increasing efficiency is the logical economic starting point



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