Electricity Policy Research Group

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Regulating electricity networks in an age of rising real prices

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Outline

- A new era for utility regulation: RPI+X?
- ‘Extending’ competition
- Negotiated settlements
- ‘Alternative’ ownership models

A new era for utility regulation?

- RPI-X in the UK very successful
  - Regulated prices have fallen
  - Focussed on monopoly elements
  - Final prices increasingly subject to competition
- Recent UK price reviews have seen rising prices:
  - Water price review (2004)
  - Electricity distribution price review (2004)
  - Electricity and Gas transmission price review (2006)
  - London airport price review (2007)

A new era for utility regulation?

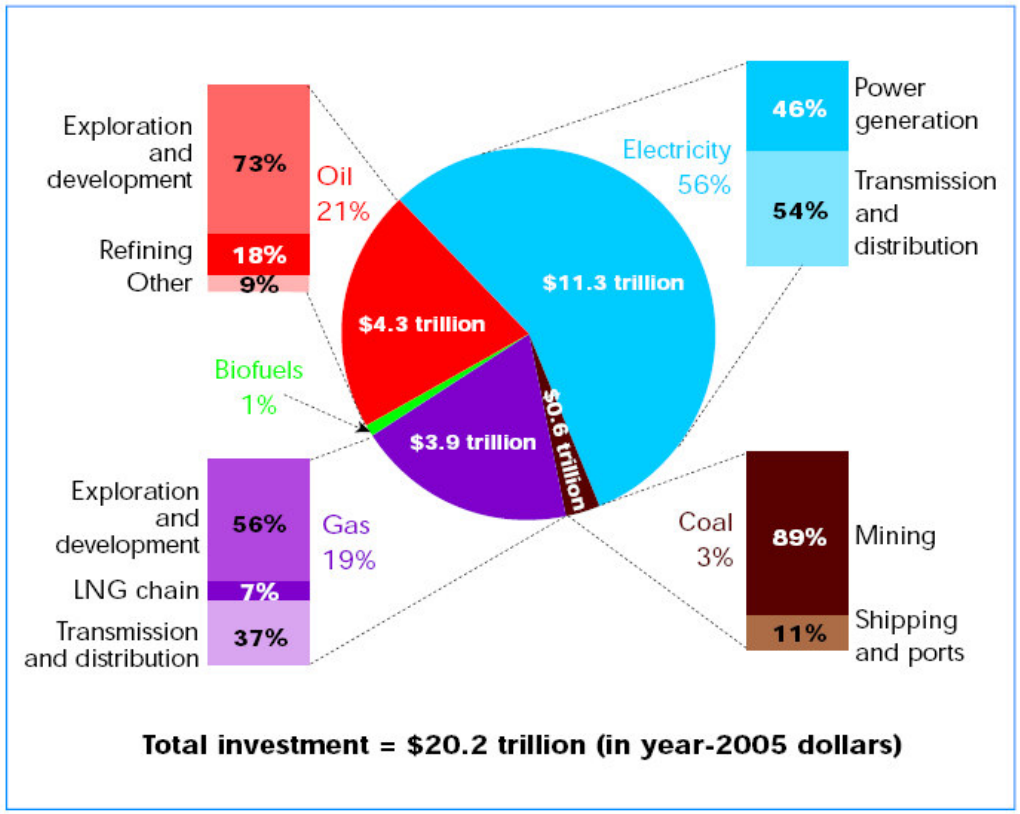
- Problems with the RPI-X system (e.g. Pollitt, 2005):
  - RPI-X does not share risk adequately
  - X assessment methodologically suspect
  - 5-year reviews not necessarily optimal
  - Review lengthy and inflexible
  - System has completed its initial mission

A new era for utility regulation?

- Investment demands rising:
  - Asset renewal cycles arising from 1960s peak
  - Asset sweating possibilities lower
  - Underlying demand growth strong
  - Demands for ‘quality’ related investment from
    - Climate change
    - New technology and services
    - Security
    - Quality of operation standards rising

Network investment significant

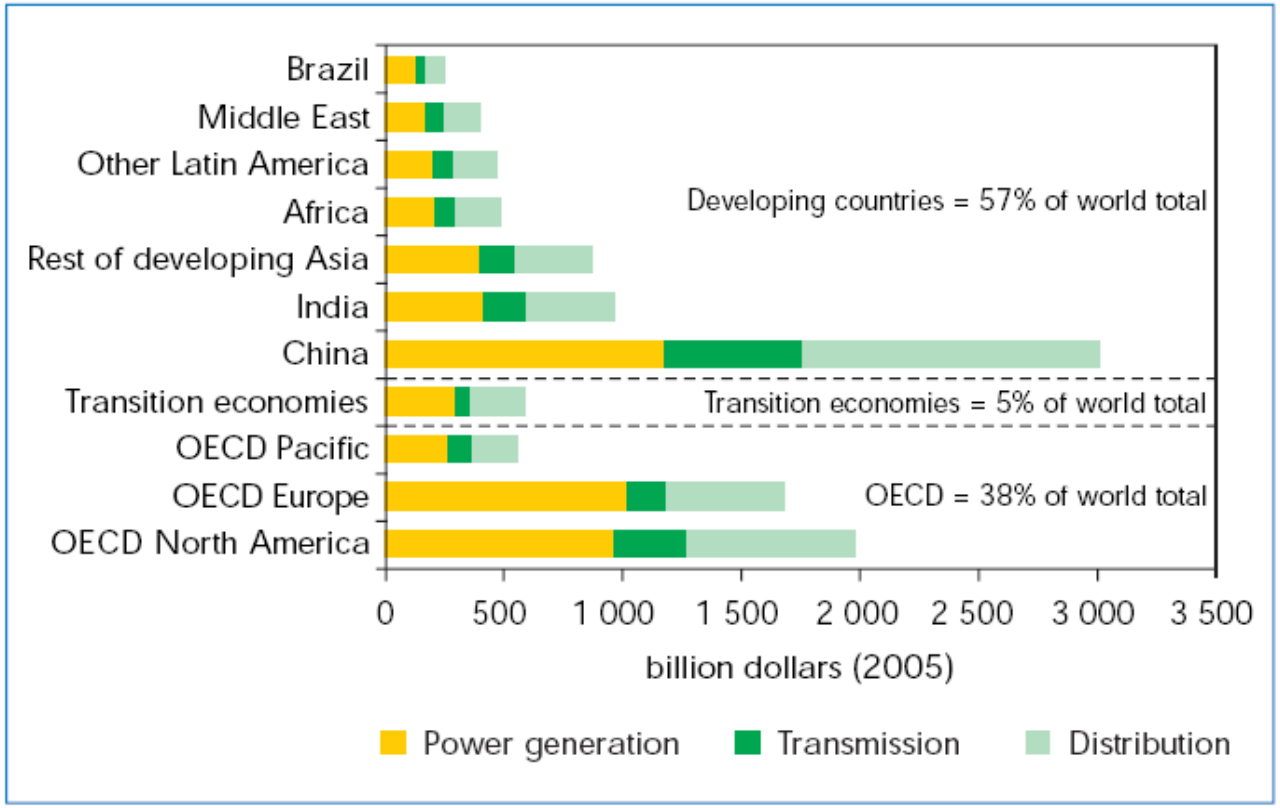
Figure 2.6: Cumulative Investment in Energy Infrastructure in the Reference Scenario by Fuel and Activity, 2005-2030
(in year-2005 dollars)



Source: World Energy Outlook, 2006, p.78.

Network investment significant

Figure 6.10: Cumulative Power-Sector Investment by Region in the Reference Scenario, 2005-2030



Source: World Energy Outlook, 2006, p.149.

Network investment savings large

Table 8.1: **Change in Cumulative Electricity Investment in the Alternative Policy Scenario*, 2005-2030**
($ billion in year-2005 dollars)

	Electrical equipment and appliances	Electricity Supply: Renewables and nuclear generation	Electricity Supply: Fossil-fuel generation	Electricity Supply: Tranmission and distribution	Electricity Supply: Total electricity supply	Overall electricity investment
OECD	**667**	**244**	**–508**	**–756**	**–1 020**	**–352**
North America	258	78	–214	–306	–442	–184
Europe	288	132	–242	–337	–447	–159
Pacific	121	33	–52	–112	–131	–10
Transition economies	**34**	**32**	**–46**	**–89**	**–103**	**–69**
Developing countries	**252**	**329**	**–475**	**–783**	**–929**	**–677**
Developing Asia	139	257	–397	–589	–730	–590
China	*94*	*138*	*–201*	*–312*	*–375*	*–282*
India	*3*	*62*	*–73*	*–101*	*–112*	*–109*
Latin America	77	16	–26	–101	–111	–34
Africa	12	44	–29	–47	–32	–20
Middle East	23	12	–22	–46	–56	–33
World	**954**	**604**	**–1 028**	**–1 629**	**–2 053**	**–1 099**

* Compared with the Reference Scenario.

Note for OECD Europe investment in T&D is 50% less than for Reference scenario.
Source: World Energy Outlook, 2006, p.197.

A new era for utility regulation?

- Investment driven prices creates new pressure:
  - To decide what investments are socially necessary?
  - To decide socially efficient cost of given investment?
- High level efficiency assessments based on comparators increasingly marginal

- Higher investment driven prices increases interest in:
  - Poor consumers
  - Private companies profits
  - Social value of investments
  - Industrial policy aspects of investment choices

A new era for utility regulation?

- Basically regulators have to make increasingly difficult choices about investments based on price-quality combination outcomes.
- Regulation of investment is now the key focus of utility regulators.
- Price reduction per se is an increasingly a meaningless indicator of success of regulation.

‘Extending’ competition

- Competition remains the default option.
- Utility competition has delivered:
  - Telecoms: fixed and mobile services
  - Airlines and airports demand
  - Energy security in recent gas price spike
- Key benefit: privatisation of the final price.

‘Extending’ competition

- Telecoms deregulation the gold standard, though relationship may be inverted for electricity.
- The market is capable of making price-quality tradeoffs, subject to embedded standards.
- Regulatory barriers to the proper operation of the market must be removed so market can ‘regulate’ investment.
- Need to value power of market to: innovate, price ration; offer signals for pro-poor subsidies; determine quality.

‘Extending’ competition

- Significant challenges to the current level of competition exist (Grubb, Jamasb and Pollitt, 2007):
  - Climate change investments where carbon benefits require formal public sector support.
  - Resurgence of industrial policy arguments for intervention (e.g. support UK CCS industry).
  - Higher prices mean that ‘energy poverty’ will mean rising government ‘interest’ in way services are produced.

‘Extending’ competition

- However more competition is desirable:
  - History of government / regulatory failure in investment choices e.g. UK nuclear, Concorde (see Henderson, 1977), Gas moratorium (?)
  - Increasingly price-quality tradeoffs too complex for regulators.
  - Extend competitive tendering in assessment of regulatory asset base additions.
  - As long as switchers benefit then consumer inertia a bad reason for continuing regulation (caveat emptor).
  - Aligning ‘regulation’ of utility sectors with competitive sectors maximises long run productivity, stimulates innovation and improves quality of government.

Negotiated settlements

- How do we decide if utility investments are really necessary?
- Answer: need a supply and a demand side.
- This is related to creating a competitive market for utility services.
- Need the purchasers of utility services to be represented in the process by counterparty with incentive to demand an efficient combination of services.
- Four cases:
  - Argentine electricity
  - London airports
  - Canadian gas pipelines
  - Florida utilities

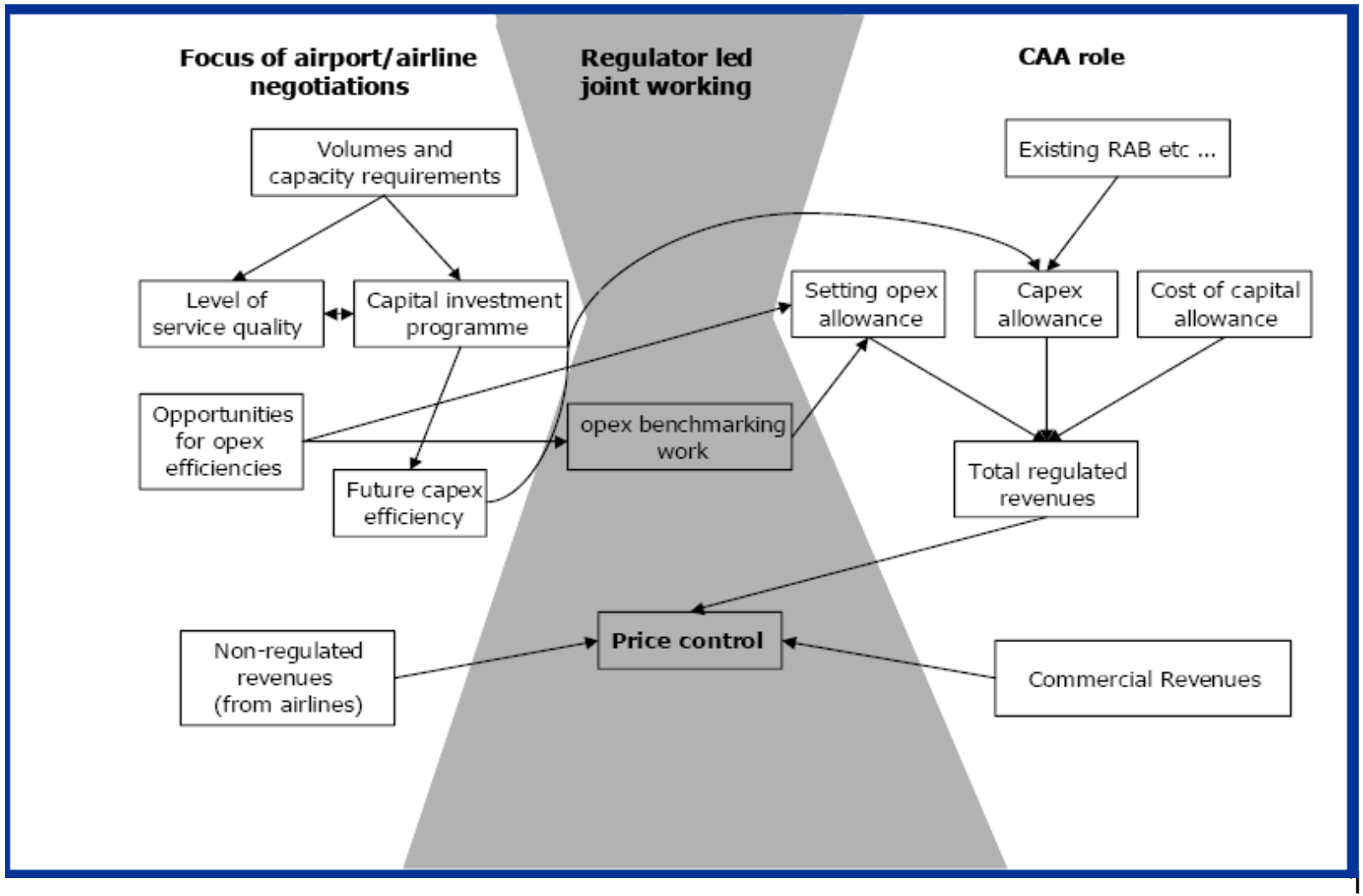
Negotiated settlements: Argentine electricity

- Public contest method for new transmission investments
  - Voting on new investments by generators and distributors
  - Maximum price agreed
  - Competitive tender
  - Successful operation (1992-2002) [Littlechild and Skerk, 2007]
- Public contest method effectively extended in Buenos Aires Province
  - 1999 Regional Electricity Forum of distribution companies and other companies implemented a 10 year sub-transmission expansion plan.
- Littlechild and Ponzano (2007) find that the Forum was able to reconcile stakeholder views and that the transaction costs of negotiation was low.

Negotiated settlements: London Airports

- BAA London Airports.
- ‘constructive engagement’ negotiations between airports and airlines (CAA, 2005)
- Price Control Business Plan to be negotiated, forms basis of X factors.
- Successful at Heathrow and Gatwick.
- Successfully identified Stansted (and Manchester) as operating in competitive market.
- Recent changes to price transparency will aid this process in the future.

Negotiated settlements: London Airports



Source: Bush, 2007, slide 19

Negotiated settlements: Canadian Gas Pipelines

(Doucet and Littlechild, 2006)

- National Energy Board regulation of 3 oil and 5 gas pipelines.
- From 1994 change of approach:
  - Normally accept unopposed settlements
  - Not judge whether each element reasonable, but whether process OK: open, informed, agreed.
  - Accept that ‘consensus of affected parties a good measure of the public interest’
  - Employ annually calculated ‘generic’ cost of capital in negotiations.

Negotiated settlements: Florida utilities

(Littlechild, 2007)

- Role of Office of Public Counsel (OPC) in Florida.
- Regulator (FPUC) encouraged settlements.
- Settlements negotiated directly between consumer advocate and regulated utilities
- Sometimes the settlement reached by the OPC and the utility tougher than the regulator required (FPL 1999 case)
- Result large positive benefits for consumers.

Negotiated settlements

- Role of regulator:
  - Formalise existing arrangements for negotiation
  - Monitor case for unbundling / incentives (e.g. energy distribution)
  - Provide independent analysis to inform discussions
  - Calculation of generic WACC
  - Monitoring of process, rather than outcome
  - Enforcement of sensible negotiation via threat.
- New role for consumer advocate?

‘Alternative’ models of ownership

- Challenges to private company provision:
  - social discount rate, externalities and investment
  - private sector may not invest at reasonable return without unacceptable lack of risk transfer
  - incentives to reduce consumption important
  - challenging sovereignty of consumer preferences
  - overcoming local planning process
  - overall cost too sensitive to equity cost
  - price rationing has implications for poor
  - ‘no reason to believe in one organizational form as being good for all seasons’ (Olsen and Skytte, 2002, p.71)

‘Alternative’ models of ownership

- Why does public ownership emerge in utility sector? (e.g. Glaeser, 2001; Millward and Ward, 1993)
  - Investment needs cannot be met by private sector
  - Private sector corruption of political process
  - Lack of standardisation in private sector provision
  - Price regulation reduces private sector profitability
- Some forms of ‘public’ ownership have apparently done well in the deregulation era e.g.
  - Manchester Airport Group
  - Glas Cymru customer owned water company
  - Danish/NZ energy customer cooperatives
  - Municipal energy utilities in Norway/Sweden

‘Alternative’ models of ownership

- Example of Woking Council Energy Service Company (ESCo) (Thameswey) (see London Energy Partnership, 2007)
- Integrates electricity, heating (and cooling), demand side management, energy poverty alleviation and local siting issues within overall carbon reduction targets.
- Ownership structure: 100% council owned, but much of work outsourced to a jointly owned company, Xergi.
- Draws on capital and expertise from Denmark.
- Includes elements of commercial viability of municipal company and public-private partnership.
- Result profitable company with significant carbon reduction in Woking area (19% since 1990).

‘Alternative’ models of ownership

- Why has the Woking ESCo worked?
  - Political support
  - Core demand from council itself
  - Integrated energy management strategy
  - Subsidy elements
- Scope for more of these:
  - Other examples: Southwark, Aberdeen, Wick, Southampton Millbrook, Southampton City, Barkantine.
- Mayor of London has target 60% CO2 reduction by 2025
  (Greater London Authority, 2007)
- All new UK houses zero emission by 2016.

‘Alternative’ models of ownership

- Regulatory barriers to emergence of ESCos:
  - Long term customer contracts difficult
  - Need for separate public supply licences (generation, distribution and supply)
  - Low exemption thresholds from above
  - Fear of stranding private company assets
  - No right to buy private assets at RAB price (as in US under local monopoly franchise, Hughes, 2002)

‘Alternative’ models of ownership

- The new public ownership:
  - is not a return to SOEs;
  - allows investment using social discount rate;
  - would integrate supply and demand;
  - involves public engagement and appropriate voting rules;
  - is focussed on solving complex market failures;
  - internalises local planning issues;
  - provides route to decentralise achievement of central government policy objectives;
  - competes with private provision.

Challenges for regulation

- Competitiveness focus of economic regulation has to be more broadly interpreted if we are serious about climate change because competition in generation less significant for price and quality variation (see SDC, 2007)
- Currently several agencies and government departments have duties towards electricity sector
  - in UK these include BERR, Defra, Ofgem, Carbon Trust, Energy Savings Trust (see Helm, 2005)
- 'war, depression and scandal all damage public confidence in market institutions and therefore might promote SOEs again in the right circumstances.' (Foreman-Peck, 2003, p.932)
  - Is climate change sufficiently serious to challenge private company model?

- Unless regulated private natural monopoly model of networks delivers in the new environment it will be challenged.

Conclusions

- In future electricity network regulation needs to:
  - recognise RPI-X at end of useful life.
  - be more serious about use of competition.
  - create buy and sell side to negotiations.
  - encourage competition in ownership forms.

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