



UNIVERSITY OF
CAMBRIDGE

Electricity Policy
Research Group

The Future of Network Regulation

Michael Pollitt
Judge Business School

*CRNI Annual Conference, Brussels
20th November, 2009*



Background

- UK RPI-X@20 review (Ofgem, 09):
 - Customer Engagement
 - Sustainability
 - Scale and scope of innovation
- New Zealand Input Methodologies (Commerce Commission, 08):
 - Price-quality regulation for networks
- Focus on electricity and gas networks, but lessons for/from water, rail and telecoms



Plan

- What do we know about network regulation?
- Why is network regulation necessary?
- Themes in Future Regulation:
 - Negotiation
 - Tendering
 - Access Terms
 - Innovation
 - Unbundling and Ownership
- Role of Regulator/Governments



Lessons from network regulation?

- Incentive regulation +ve (Jamasb and Pollitt, 07)
- Unbundling +ve (Pollitt, 08a)
- Privatisation +ve (Jamasb et al., 04)
- Competition and regulation related (Green et al., 06)
- Quality can improve if incentivised (Ter-Martirosyan, 03)

- Easy to get it wrong, sometimes badly
 - (e.g. Netherlands, New Zealand) (Nillesen et al., 07; Bertram, 06).



- Rising investment requirements
- Growing concerns about fossil fuel supply
- Increasing intermittent renewables on system
- Rising fuel poverty
- Climate change policy tightening substantially
- Adaption to reality of climate change



Why regulate Networks?

- The extension of competitive segments
- The need for innovation (regulatory holidays)
- Franchise competition benchmark (Demsetz, 68)
- Networks and „elite power“ (Acemoglu and Robinson, 05)



Challenges to Design of Regulation

- Appropriate international variety
- Standards of competition
- Trust in competition / competition policy
- Poverty, rationality and choice
- Attitudes to security of supply



Themes in Future Regulation

- Five can clearly be identified:
- More use of negotiation
- Extension of auctions
- Attention to access terms
- Innovation in/across networks
- Role of unbundling and ownership

Negotiations



More use of Negotiation

- Core questions:
 - Is creation of buy side for network services possible?
 - What facilitates sensible/timely negotiation?
- Experience (e.g. Doucet and Littlechild, 06; Littlechild, 07; Littlechild et al., 08):
 - Successful in Canada, US and Argentina
 - Used in Airports in UK, New Zealand and Australia
 - Under consideration for water, electricity and gas in UK
- Transferability:
 - Clear in electricity and gas transmission
 - Market structure changes likely to be necessary in energy distribution



More use of Negotiations: Issues

- Ensuring appropriate representation
 - Representing future consumers and entrants
 - Who has right to speak for consumers?
- Role of regulator
 - Provider of information
 - What happens when parties fail to agree?
- Learning over time
 - Good lessons from NEB in Canada

Auctions



UNIVERSITY OF
CAMBRIDGE | Electricity Policy
Research Group

www.eprg.group.cam.ac.uk

Extension of Auctions

- Core questions:
 - Minimising build cost
 - Inducing new entry and innovation
- Experience (Littlechild and Skerk, 2008):
 - Extremely successful in Argentina transmission
 - Widely used for transport systems and public services
- Transferability:
 - Already advanced proposals for Offshore transmission auctions in UK
 - Facilitation: large new network investments required



Extension of Auctions: Issues

- Costs of tendering process:
 - This would seem to limit Demsetz model
 - However blocks of works can be tendered
- Incentives for risk management important:
 - Risks of project failure may be higher
 - Special purpose vehicles harder to regulate
- Numbers of bidders a concern:
 - Relies on quality of competition policy

Access Terms



Attention to Access Terms

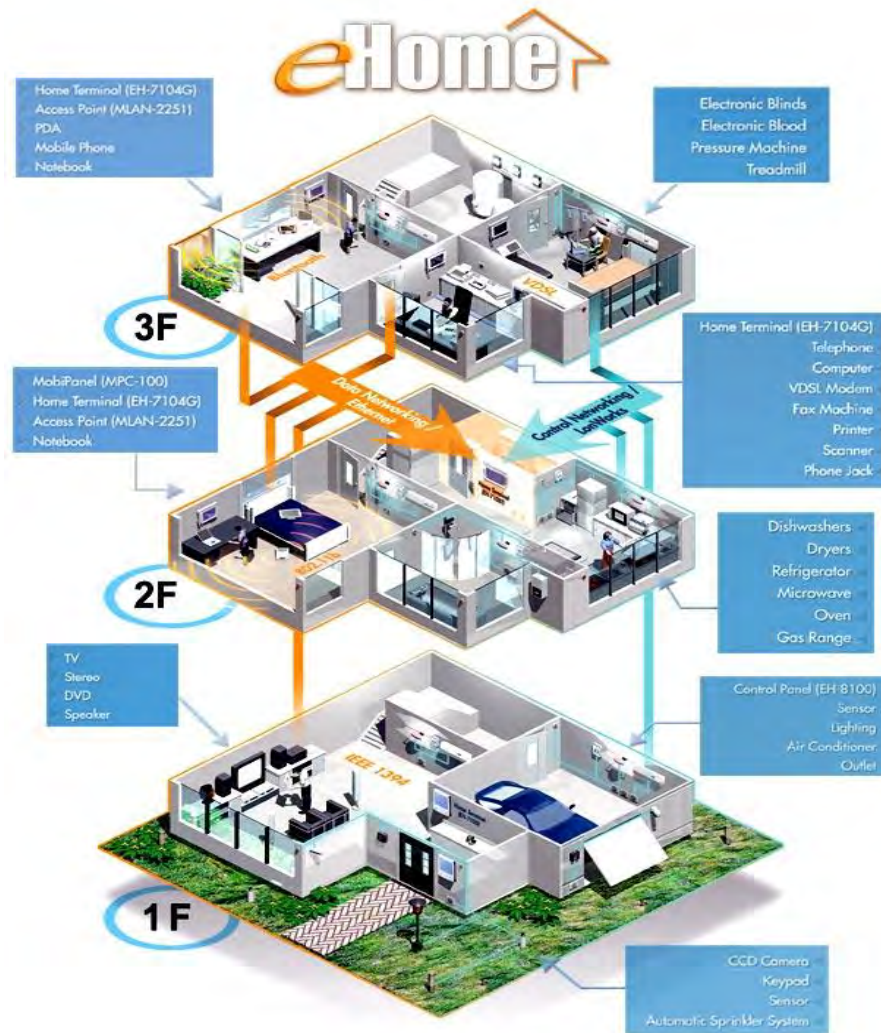
- Core questions (Jamassb et al., 05):
 - Encouraging efficient new connections
 - Elimination of barriers to experimentation
- Experience (Pollitt, 09):
 - Extremely successful in fixed line telecoms
 - Good experience emerging in water in Scotland
 - New unbundled products encourage innovation
- Transferability:
 - Local wire unbundling proposed for electricity distribution
 - Water service competition being extended



Attention to Access Terms: Issues

- Simplicity vs efficiency:
 - Nodal pricing theoretically efficient but complicated
 - May increase risks for small entrants
 - Need to handle impact of lumpy investment
 - Elasticities/price effects too small?
- Price differentiation may be politically difficult
 - e.g. Transmission Access Review in the UK

Innovation



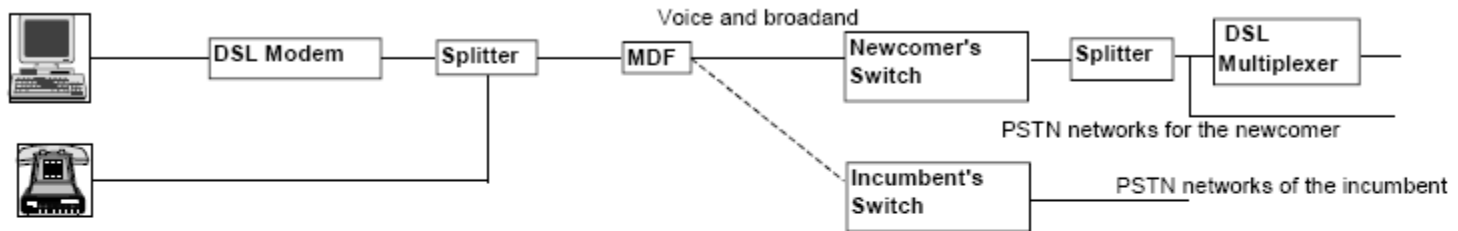
Innovation in/across networks

- Core questions:
 - How to encourage innovation in use of networks?
 - How to incentivise incumbents to facilitate new business models?
- Experience (Hausman and Sidak, 07; Cave, 09; Jamasb and Pollitt, 09; Pollitt, 09):
 - Extremely successful in telecoms
 - Currently however innovation in other networks low
- Transferability:
 - More R&D and experimentation is required
 - Need to change business model e.g. from MWhs to MBits

Innovation in/across networks: Issues

- How to increase innovation?
 - e.g. Low Carbon Networks Fund
 - How much, who can do it?
- How to incentivise networks to co-operate?
 - Failure of RPZ scheme in UK
- Who owns customer information?
 - Regulation of smart meter information

Unbundling



Role of Unbundling and Ownership

- Core questions:
 - What do new challenges mean for optimal degree of integration?
 - What is the role of public and cooperative ownership?
- Experience (Pollitt, 2008a, 09):
 - Unbundling in electricity and telecoms successful
 - Ownership unbundling sometimes necessary
 - Public/co-operative ownership reduces need for regulation (e.g. in New Zealand)
- Transferability:
 - Energy distribution networks might require ownership unbundling
 - Municipal ownership of „last mile“ might allow reduction of regulation

Role of Unbundling and Ownership: Issues

- More unbundling could work?
 - ISO/ITO
 - DSO/IDO
 - Smart meter data ownership
 - Last mile separation e.g. via OpenWire
- More bundling might work?
 - Competitive Joint Venture model (Keisling, 09)
 - Municipals/ Cooperatives rights to buy wires
- To what extent should ownership market decide?



Role of Independent Regulator

- This will have to evolve.
- Consider role in:
 - Negotiations
 - Auctions
 - Access Terms
 - Innovation
 - Unbundling



Role of Independent Regulator

- Agent of competition authority
 - Reliance on competition implies closer relationship
- More responsive to market requirements
 - 5 year price control review too inflexible
- Core independent analysis provider
 - More of real-time monitoring role



Role of Government

- Specifies High Level Outputs
- Subsidy and levy setter
- Responsible for security issues
- Standards setter and arbitrator



International Issues

- Cross border investments raise seems issues e.g. international interconnectors
- Collaboration important e.g. on benchmarking companies
- Role of EU in forcing change e.g. via Directives and Competition Policy



Conclusions

- Network regulation needs to evolve to meet new challenges at *reasonable cost* and with appropriate levels of *customer engagement*.
- Several big themes already present.
- Telecoms leading the way, with convergence in regulation possible.
- Extent of use of competition and reliance on market mechanisms will continue to be the distinguishing feature of national policies.

References

- Acemoglu, D., Robinson, J.A. (2005), *Economic Origins of Dictatorship and Democracy*, Cambridge: CUP.
- Bertram, G. (2006), „Restructuring the New Zealand Electricity Sector 1984-2005”, in Sioshansi, F.P. and Pfaffenberger, W. (eds.) (2006), *Electricity Market Reform: An International Perspective*, Oxford: Elsevier. pp.203-234.
- Cave, M. (2009), *Independent Review of Competition and Innovation in Water Markets: Final Report*, London: DEFRA.
- Commerce Commission (2008), *Regulatory Provisions of the Commerce Act 1986 Discussion Paper 19* December, Auckland: Commerce Commission.
- Doucet, J. and S.C. Littlechild, (2006), *Negotiated settlements and the National Energy Board in Canada*, EPRG Working Paper, No.0629.
- Demsetz, H. (1968), „Why Regulate Utilities”, *Journal of Law and Economics* 11, 55-56.
- Green, R., Lorenzoni, A., Perez, Y. and Pollitt, M. (2006), *Benchmarking electricity liberalisation in Europe*, EPRG Working Paper, No.0609.
- Hausman, J. and Sidak, J.G. (2007), *Telecommunications Regulation: Current Approaches with the End in Sight*, Mimeo.
- Jamasb, T. and Pollitt, M. (2009), *Electricity sector liberalisation and innovation: an analysis of the UK patenting activities*, EPRG Working Paper, No.0901.
- Jamasb, T. and Pollitt, M. (2007) "Incentive regulation of electricity distribution networks: lessons of experience from Britain." *Energy Policy*, 35(12): 6163-6187.
- Jamasb, T., Mota, R., Newbery, D. and Pollitt, M. (2004), *Electricity sector reform in developing countries: a survey of empirical evidence on determinants and performance*. EPRG Working Paper, EP 47.
- Jamasb, T., Neuhoff, K., Newbery, D. and Pollitt, M. (2005), *Long-term Framework for Electricity Distribution Access Charges*, EPRG Working Paper, No.0505.



References

- Keisling, L.L. (2009), *Deregulation, Innovation and Market Liberalization*, Oxford: Routledge.
- Littlechild, S.C. (2007). "Bird in hand: stipulated settlements and electricity regulation in Florida," EPRG Working Paper, No. 0705.
- Littlechild, S.C. and E.A. Ponzano (2008). "Transmission Expansion in Argentina 5: the Regional Electricity Forum of Buenos Aires province." *Energy Economics*, 30(4): 1491-1526.
- Littlechild, S.C. and C.J. Skerk (2008). „Transmission Expansion in Argentina 1: the origins of policy", *Energy Economics*, 30(4):1367-1384.
- Nillesen, P.H.L. and Pollitt, M.G. (2007) "The 2001-2003 electricity distribution price control review in the Netherlands: regulatory process and consumer welfare." *Journal of Regulatory Economics*, 31(3): 261-287.
- Nillesen, P. and Pollitt, M.G. (2008), *Ownership unbundling in electricity distribution: empirical evidence from New Zealand*, EPRG Working Paper No.0820.
- Ofgem (2009), *Regulating energy networks for the future: RPI-X@20 Principles, Process and Issues*, Ref.13/09, London: Ofgem.
- Pollitt, M. (2009), *Does Electricity (and Heat) Network Regulation have anything to learn from Fixed Line Telecoms Regulation?*, EPRG Working Paper No.0914.
- Pollitt, M.G. (2008a), „The arguments for and against ownership unbundling of energy networks", *Energy Policy* 36(2): 704-713.
- Pollitt, M. (2008b), „The Future of Electricity (and Gas) Regulation in Low-carbon policy world", *The Energy Journal*, Special Issue in Honor of David Newbery, pp.63-94.
- Ter-Martirosyan, A. (2003). *The Effects of Incentive Regulation on Quality of Service in Electricity Markets*. Department of Economics, George Washington University, Working Paper, March.

