THE UK MODEL OF UTILITY REGULATION

A 20<sup>th</sup> ANNIVERSARY COLLECTION TO MARK THE ‘LITTLECHILD REPORT’ RETROSPECT AND PROSPECT

Proceedings of a joint LBS Regulation Initiative, CRI and City University Business School Conference

Chaired by Professor John Cubbin and Professor Ralph Turvey
held on 9<sup>th</sup> April 2003 at
The Cass Business School, City University, London

Edited by
Ian Bartle

Desktop published by
Jan Marchant

CRI PROCEEDINGS 31

© The University of Bath                All Rights Reserved
ISBN
THE UK MODEL OF UTILITY REGULATION

Ian Alexander
Ian Bartle
Chris Bolt
Martin Cave
David Currie
Antonio Estache
Stuart Goodwin
Jose-Luis Guasch

Stephen Littlechild
Hans-Martin Niemeier
Pippo Ranci
John Smith
Jon Stern
Lourdes Trujillo
Maria Vagliasindi

UNIVERSITY OF BATH
SCHOOL OF MANAGEMENT
The University of Bath School of Management is one of the oldest established management schools in Britain. It enjoys an international reputation for the quality of its teaching and research. Its mission is to offer a balanced portfolio of undergraduate, postgraduate and post-experience programmes, research and external activities, which provide a quality of intellectual life for those involved in keeping with the best traditions of British universities.
Centre for the study of Regulated Industries (CRI)

The CRI is a research centre of the University of Bath School of Management. The CRI was founded in 1991 as part of the Chartered Institute of Public Finance and Accountancy (CIPFA). It transferred to the University of Bath School of Management in 1998. It is situated on the 8th floor of Wessex House (North), adjacent to West car park.

The CRI is an interdisciplinary research centre investigating how regulation and competition are working in practice, both in the UK and abroad. It is independent and politically neutral. It aims to produce authoritative, practical contributions to regulatory policy and debate, which are put into the public domain. The CRI focuses on comparative analyses across the regulated industries. CRI activities and outputs include:

- Regulatory statistics, information and analysis
- Discussion papers and Occasional papers
- Regulatory Briefs, Reviews and International series
- Research Reports and Technical papers
- Seminars, courses and conferences

Direct links with regulated industries, the regulators, the academic community and other interested parties are an important feature of the work of the CRI. The CRI is non-profit making. Its activities are supported by a wide range of sponsors.

- BAA
- CIPFA
- Department of Trade and Industry
- Environment Agency
- National Audit Office
- NERA
- National Grid Transco
- Network Rail
- OFWAT
- RSM Robson Rhodes
- Royal Mail
- Thames Water
- United Utilities
- Wessex Water

Further information about the work of the CRI can be obtained from:-
Peter Vass, Director-CRI, School of Management, University of Bath, Bath, BA2 7AY
or
CRI Administrator, Jan Marchant, Tel: 01225 383197, Fax: 01225 383221,
e-mail: mnsjsm@management.bath.ac.uk
and from the CRI’s web site, which includes events and the publications list.
http://www.bath.ac.uk/cri/
PREFACE

We are pleased to publish the proceedings of the joint conference on *The UK Model of Utility Regulation - A 20th Anniversary Collection to Mark the ‘Littlechild Report’ - Retrospect and Prospect* held by the London Business School Regulation Initiative, the Cass Business School of the City University, and the CRI. The contents of the proceedings have been grouped in four parts, which highlight the particular themes of the conference.

We wish to thank all of the contributors to this set of proceedings for their papers, but also those who spoke at the conference and participated in the debate, but who are not represented by papers in these proceedings. The Introduction provides a link between the conference itself and this set of proceedings. The programme for the conference is included as an *annexe* for information. One background paper was submitted which complemented Jan-Peter Heida’s presentation, but given its technical nature is published as a separate paper. It is available with copies of the proceedings. We are also grateful to Professor Stephen Littlechild and HMSO for their permission to reprint his 1983 report, Regulation of British Telecommunications’ Profitability.

John Cubbin  
Cass Business School  
City University, London

Jon Stern  
Associate Director  
LBS Regulation Initiative

Peter Vass  
Director  
CRI

July 2003

The Regulation Initiative
London Business School

The Regulation Initiative at the London Business School is the major UK research programme analysing the future of the regulatory framework for the utility and network sectors in the UK and Europe. The Initiative, which was launched in January 1996, and builds on the established track record of London Business School, draws together a distinguished group of researchers at LBS, elsewhere in the UK and internationally. It is supported by a wide range of regulated companies, and has close links to the regulators and other interested groups. The Regulation Initiative sponsors and hosts a regular series of international conferences, seminars, workshops and other events. It is overseen by the Director, Professor Leonard Waverman, and two Associate Directors, Professor Ralph Turvey and Jon Stern.

City University

City University, based next to London's financial district, specialises in ‘business and the professions’. Nearly one half of its 10,000 students are postgraduate and come from 153 countries. The University offers an MSc in Economic Regulation and Competition which provides specialised training in the concepts and skills involved in the regulatory process and competition policy, as well as giving a grounding in the legal background and the technical side of financial analysis employed in the field. For details visit: http://www.city.ac.uk/pgrad/00000246.htm
CONTENTS

Preface iii
1 Introduction 1
  Ian Bartle
PART 1
The Littlechild Report and subsequent developments
2 What the Littlechild Report actually said 7
  Jon Stern
3 The birth of RPI-X and other observations 31
  Stephen Littlechild
4 The Littlechild Report: price control and
  competition in UK telecommunications 51
  Martin Cave
5 What have we learnt in UK utility regulation
  over the last 20 years? 57
  Stuart Goodwin
PART 2
Current issues in UK utility regulation
6 The future of RPI-X and the implications for
  utility investment in the UK 65
  Chris Bolt
7 What we have learnt: a comparative perspective
  of water and rail 87
  John Smith
PART 3

The UK model and developed OECD economies

8 The UK model and its influence on EU countries
   Pippo Ranci

9 Price cap regulation of German airports - should German airport policy follow the Littlechild approach?
   Hans-Martin Niemeier

PART 4

The UK model and developing and transition economies

10 Price caps, efficiency pay-offs and infrastructure contract renegotiation in Latin America
   Antonio Estache, Jose-Luis Guasch and Lourdes Trujillo

11 Regulatory challenges: lessons from the UK model for transition countries
   Maria Vagliasindi

12 The UK model and developing and transitional economies: common issues and misconceptions
   Ian Alexander

Appendix (not available in pdf version, hard copy only)
Reprint of the 1983 ‘Littlechild Report’
   Littlechild S (1983), Regulation of British Telecommunications’ Profitability, Report to the Secretary of State, London: Department of Industry

Annexe: conference programme, 9th April 2003
1 INTRODUCTION

In the 20 years since its origins, the British model of utility regulation has become established as an international paradigm. Britain can claim to have set an example to the rest of the world, with other developed nations, and an increasing number of developing countries, following similar paths. Although it drew to some extent from the US experience of regulation, a distinctive model of regulation has arisen in Britain.

Salient features of the model are independent regulatory agencies with a high profile director general (although a recent trend is to have a chairman, chief executive and a board), the RPI-X price cap mechanism to control monopoly power, and the promotion of competition. First applied to the telecommunications sector, the principal features of the model have been adopted in other sectors, including electricity, gas, water and transport. Many features of the model have been drawn on and adapted in many other countries.

The extent of cross-sectoral consistency and widespread international adoption appear to indicate that the model arose from an ideal blueprint of privatisation, liberalisation and regulatory reform. This is somewhat surprising in a country used to ‘muddling through’ in public policy, and appears to be a distinctive departure from traditional practice. There was, however, no single overall blueprint for reform, rather, there were a number of interconnected policy innovations which originated in the early 1980s. One of the most salient innovations was the proposals for the control of monopoly power of British Telecom contained in the Littlechild Report of 1983. In the subsequent twenty years the model has been developed and refined, but many of the original features remain. It therefore seems timely to assess the development of the British model, and particularly the significance of the Littlechild Report.
This volume presents the proceedings of the conference held on 9 April 2003 which brought together a number of experts to reflect on the origins of the British model, particularly the Littlechild Report of 1983, to consider its development and some current issues, and to consider the extent to which other countries have learned from the model. The report itself is not widely available and we are pleased to reprint it in its original form as an Appendix to these proceedings.¹

Part 1 of the volume looks at the place of the Littlechild Report within the origins of the British model and the subsequent developments in the 1980s and 1990s. In the first paper Jon Stern focuses on some myths and truths of the report, and in so doing situates the report within the broader origins and developments of the British model. Whilst noting some retrospective surprises, and its over-optimism about the development of competition, Stern sees the report as a landmark in the development of British utility regulation. In the second paper Stephen Littlechild revisits his notes and delves into his memory to outline the development of the report and the birth of RPI-X. He proceeds to discuss some of the lessons learned from experience and to defend some of the limitations of the report, such as the lack of consideration of network access, which were due to the limitations of the proposals for the privatisation of British Telecom.

This is followed by a paper by Martin Cave, who focuses on the unrealised aspiration in the Littlechild Report that competition would soon lead to a reduction of regulation. While problems such as network access in telecoms have proved difficult, he argues that RPI-X has proved to be a highly effective policy instrument, and that there have been distinctive, albeit slow, moves to competition and the reduction of price control regulation. Stuart Goodwin follows by focusing on the lessons learnt in the practice of utility regulation, particularly from the price control reviews in the water industry in the 1990s. He

¹ We are grateful to Professor Stephen Littlechild and HMSO for their permission to reprint the report in these conference proceedings.
argues that while incentive regulation undoubtedly works, there is scope for improvement by reduction of price control review complexity, sharpening incentives, reinforcing trust between the regulator and regulated, ensuring consistency and establishing better appeal mechanisms.

**Part 2** moves on to some of the key contemporary issues in utility regulation. Chris Bolt considers recent developments and future possibilities of the RPI-X mechanism. He notes how the development of utility regulation has moved a long way from the intentions of Littlechild in 1983. There still remain some unresolved issues and multiple objectives, such as regulation of network monopolies, defining the scope of competition, and recognition of the legitimate role of government. All of these issues, if left to drift, could have significant implications for investment in the regulated industries.

John Smith takes a cross-sectoral perspective on rail and water regulation, and asks why the reform of the rail industry is generally perceived to have failed. He notes that both industries are complex network industries and were contentious privatisations but there were also some important cross-sectoral differences, which could have contributed to the problems in the railways. Amongst his conclusions are the complexity of rail restructuring, lack of clarity of the regulated framework, inadequate information on the regulated assets, and problems of defining the appropriate role for the government in a heavily subsidised industry.

**Part 3** looks at the influence of the UK model on other developed economies. Pippo Ranci considers the influence of the UK model on other EU countries using the energy sector as an example. He argues that while the UK provided a precedent which strengthened the arguments of the reformers in other EU countries, the lessons learnt from the UK have been limited. This is partially due to the ‘national champion’ ethos whereby European countries want to maintain strong national energy companies. In addition, concerns about the environment and
security of supply have meant many policy makers on the European continent have been guarded about liberalisation, and reforms to date have been modest. Hans-Martin Niemeier follows with a paper that considers whether German airports should be regulated with the price cap mechanism. He concludes that although price cap regulation which is inadequately set up could have problems, such as credible commitment for investment, for certain airports with strong market power, price cap regulation is the most appropriate mechanism to adopt.

Finally, Part 4 of the volume looks at the influence of the UK model on developing and transition economies. Jose-Luis Guasch considers the utility industry reforms in several Latin American countries in the light of the British model. Price cap regulation has been adopted in many cases but a key difference is the widespread use of concession contracts rather than full privatisation. The reforms have successfully increased private sector participation and there are efficiency improvements, but there is a poor record in passing efficiency savings to the consumer. Maria Vagliasindi looks at the lessons from the UK model for the transition economies of central and Eastern Europe and the former USSR. The experience of the UK (both positive and negative) has indicated that privatisation needs to be preceded by strong regulatory authorities. In many transition economies inadequate regulatory institutions have been established, meaning there are inadequate incentives for investment, and consumers do not gain benefits of efficiently managed utilities. A similar theme is pursued in the final paper of the volume by Ian Alexander. While the adoption of UK model mechanisms, such as price control, is rejected in some developing economies, with the right political, institutional and legal environment incentive based mechanisms can be successfully implemented.

There were other presentations at the conference in addition to those submitting papers. In the keynote address, David Currie set out some of the main issues in the establishment of a new regulatory regime for communications. He outlined some of the
organisational issues in setting up Ofcom, the new regulatory office, notably the separation of the chief executive and chairman, setting up a separate board, and the integration of a number of previously separate regulatory agencies. He also discussed a range of regulatory issues which will be central to Ofcom, such as regulation for competition, content regulation and radio spectrum management. He stressed his ambition to move to co-regulatory approaches where possible. Ofcom will certainly have very clear regulatory objectives but he would like to encourage debate about how to achieve them in ways that run with the grain of the industry’s commercial needs.

Lynne Kiesling lamented the lack of learning in the US electricity sector from the UK. The US electricity industry retains its traditional use of rate of return regulation, rather than price control, which UK experience indicates is better at promoting competition. She argued that very different institutional and industry structures constrain cross-national lesson learning. In the US there is a complex industry structure, a two-layered regulatory structure, and a legacy of close relationship between the utilities and the regulators, all of which prevents thorough-going reform of the kind effected in the UK. Jan-Peter Heida assessed the influence of the UK model on the regulation of the Dutch energy industry. He showed that it has had a powerful influence with the adoption of the \textit{ex ante}, RPI-X regulatory approach. Problems, such as poor comparison of the asset bases of companies and inadequate frameworks for investment, have been encountered but measures have been taken to overcome them.
2 WHAT THE LITTLECHILD REPORT ACTUALLY SAID

Jon Stern

Introduction

‘The’ Littlechild Report is the 1983 report to the secretary of state for industry entitled ‘Regulation of British Telecommunications’ Profitability’ and published in February 1983. There is another Littlechild Report, published in 1986, entitled ‘Economic Regulation of Privatised Water Authorities’. In this paper, I will primarily concentrate on the more famous 1983 report, except where the 1986 report provides interesting commentary or contrasts.

The 1983 Littlechild Report must be one of the most famous but least read economic papers. It was written in under ten weeks in November 1982 to January 1983 and published in February 1983. The reason for its fame is its recommendation of RPI-X price cap regulation of British Telecommunications, as opposed to rate of return regulation. This recommendation was accepted by the UK government, not only for the privatisation of that company, but also for the privatisation of all subsequent utilities. Indeed, a similar form of regulation has since been adopted in many other countries around the world, not least in the USA, the heart of rate of return regulation. The reason for it being so little read is that its original print-run was very small (a few hundred) and it has long been out of print. Surprisingly, it has not been widely reprinted and is not available in electronic form. It is therefore reprinted as an Appendix to these conference

Acknowledgement
This paper has benefited greatly from comments by Stephen Littlechild on a previous draft. The views expressed in it are, however, the responsibility solely of the author.

Jon Stern, London Business School and NERA
proceedings and we can only hope that the twentieth anniversary of its publication will see it become more widely available and read as well as cited.

In this paper, I will discuss the 1983 Littlechild Report, its origins, its message and its influence and compare some key issues with what was said in the 1986 Littlechild Report. I am explicitly looking back with hindsight, with the intention of being able to identify trends that are likely to affect the future as well as discussing concerns of the 1980s.¹

The 1983 Littlechild Report – myths and truths

The single person regulator

Until recently, the UK model of utility regulation was known for having regulatory offices headed by a single person, the director general. This is sometimes associated with the 1983 Littlechild Report.

This association is false. The original government inclination was to give the responsibility for regulating the (partially) privatised British Telecommunications (BT) to the Office of Fair Trading (OFT). However, Sir Gordon Borrie, who was director general of the OFT at that time, argued that this was too big a task for OFT: firstly, that OFT did not have the staff; and, secondly, that continual monitoring (as would be required for telecom regulation) was not OFT’s normal role In the end, the government decided to establish an Office of Telecommunications (Oftel), to be headed – like the OFT – by a director general. The 1983 Littlechild Report was written against the background of the 1982 Telecommunications Bill, which

¹ Companion papers in this volume by Chris Bolt and Martin Cave discuss in more detail developments since 1983 and the future outlook both with RPI-X and in telecoms.
provided for Oftel and a director general. The report was commissioned to advise on how Oftel should regulate BT’s profits (note that Littlechild (1983) consistently refers to the acronym OFTEL in capitalised form. The organisation has long been known as Oftel – logo form. Henceforth, I will use the latter).

**Inventing price cap regulation via the RPI-X formula**

It seems to be widely believed that the Littlechild Report invented the RPI-X formula. This is partially rather than wholly the case. Paragraph 13.5 of the 1983 report states that the original idea emerged earlier in the discussion of the ‘Buzby Bond’. As we shall see, this is something of an oversimplification. Nevertheless, the key point about the 1983 Littlechild Report was that it recognised how the idea could be used for regulating the prices (and hence the profits) of BT’s monopoly services while preserving its incentives for improving efficiency.

The Buzby Bond was part of an attempt by BT while state owned to explore the feasibility of issuing a bond on the London corporate bond market. The proceeds of the bond would be used to fund BT’s investment programme, particularly in the new System X digitalised exchanges. The government (and more specifically, the Treasury) rejected the notion of the Buzby Bond on the grounds that there would be no genuine transfer of risk away from the public sector. However, the decision not to proceed with the Buzby Bond and its rejection by the Treasury and the government was a major step on the road to the privatisation of BT.²

The Littlechild Report states that it was suggested that “the bond prospectus would include a clause stating that BT’s prices should not increase by more than RPI-X, where X was a specified number”. Stephen Littlechild realised that this suggestion represented a concept with much wider applicability and that it could be used as the basis of regulation of BT’s prices and profits. He therefore seized on it as an alternative to US-style rate of return regulation. Apparently, this realisation took place in the week before the report was submitted!

The key sentences from paragraph 13.5 of Littlechild 1983 are as follows:

“This idea [an RPI-X price cap] could be adapted to present circumstances, by incorporating a condition in BT’s licence requiring it not to increase tariffs on monopoly services by more than RPI-X per cent, i.e. to reduce these tariffs by X per cent in real terms. There are several details to be settled: to which services should tariff reduction apply? Should the guarantee apply to each service separately or to a basket of services? At what level should X be set?”.

**Price cap regulation as a temporary necessity**

The 1983 Littlechild Report is frequently cited as arguing that price (or profit) regulation of utilities need only be temporary. This is absolutely true for telecoms, but the 1983 Littlechild Report, although very strongly pro-competition in general, did not consider or make any recommendations for other utilities.

The whole thrust of the report is that sufficient competition could emerge in telecoms within five years or so to allow abolition of the price cap at that point. Indeed, it is very noticeable there is

---

3 See Littlechild (1983), paragraph 13.5, p34.
4 Reported by Stephen Littlechild at the 9 April 2003 conference. See Littlechild paper in this volume for a fascinating discussion of this episode and for the involvement of others in the late emergence of RPI-X.
no discussion at all in the report about how X might be reset. This is in contrast to the 1986 report on price cap regulation of the water industry where Littlechild was obliged to confront the issues of probable ‘permanent’ price cap regulation. We will discuss this contrast in a later section.

As an interesting footnote to the temporary/permanent regulation issue, it is worth noting that Littlechild 1983 quotes the projected costs of Oftel at £1.5m per year (£0.5m on regulatory arrangements) and staff requirements of around 50. Oftel’s last annual report quotes reported expenditure in 2001-2 of £17m and the employment of 230 staff. Given the explosion in telecom output over the last twenty years, this is still under 0.5% of UK telecom industry turnover. However, it is a substantial real increase and clearly much more than would have been anticipated or desired in 1983. And now Oftel is to be merged with the Independent Television Commission, the Radiocommunications Agency, the Broadcasting Standards Commission and the Radio Authority to form Ofcom.

The Littlechild 1983 report and its background

**Background**

In the early 1980s, when BT was privatised, the telecom industry was massively different from what it now is. The business of the industry was confined to fixed line voice telephony. Mobile, electronic data transmission and cable telephony were still some years away with internet use a decade away. However, the industry was rapidly entering a digital world with the arrival of digital exchanges and the major investments associated with them.

In spite of the example of the break-up of AT&T in the US, it was decided not to split up BT before privatisation. This would
have greatly delayed the privatisation, not least because the lack
of separate accounting data would have necessitated several
years of operation to get financial results on which to base
flotation of the separate elements of BT. However, such a delay
was unacceptable to the government since the privatisation was
driven in large part by the need to get BT’s investment
programme off the PSBR (Public Sector Borrowing
Requirement) together with other short-horizon political and
electoral concerns.

Mercury was the only licensed competitor to BT and a relatively
small player. Hence, the issue of how to handle BT’s dominant
position was crucial and economic regulation was seen as the
way of stopping BT from abusing its dominant position and also
from preventing the development of competition. Economic
regulation with clear criteria was also demanded by investment
banks and others involved in the flotation to ensure potential
investors so that they would participate in the share issue.

As the BT privatisation was the first, it was done relatively
cautiously. Only 51% of the company was sold in the 1984
privatisation. In addition, ministers (the Secretary of State for
Industry) retained the power to issue licences, in consultation
with Oftel, rather than giving the powers to the regulator. They
also retained the right to issue directions to Oftel. However,
these were essentially ‘fail-safe’ powers which were little used in
practice thereafter (apart from ministerial use of the licensing
power to preserve the BT-Mercury duopoly until 1991).

The immediate background to the Littlechild Report was that,
during 1982, an inter-departmental working group chaired by the
Department of Industry (DoI) had proposed a form of maximum
rate of return (MRR) scheme for BT. This MRR proposal was
similar to US-style rate of return regulation, but, as we shall
discuss below, with some interesting incentive additions.

The MRR proposal was strongly opposed by Alan Walters who
was the economic adviser to Margaret Thatcher, the then Prime

12
Minister. He was a staunch opponent of US-style rate of return regulation and claimed that the MRR proposal “had many of the characteristics of a 100% marginal tax rate”. Instead, he argued for an output related profit levy (ORPL). The ORPL was intended to remove the incentive on BT to behave as a standard monopolist ie, to restrict output and raise prices. Hence, the ORPL was intended to give BT an incentive to increase output but this raised other problems considered in Littlechild 1983 (eg, the incentive on BT to increase output by behaving in a predatory manner towards emerging competitors). Alan Walters’ proposal, in turn, attracted considerable puzzlement and scepticism, but as the Prime Minister’s trusted adviser, his views could not be ignored. Stephen Littlechild was therefore commissioned in October 1982 to:

- work up a more detailed version of the ORPL;
- evaluate both schemes;
- consider variants;
- make recommendations.

The final report was to be prepared by mid-January 1983 and was published in February 1983.

**The regulatory options considered and the evaluation criteria**

Initially, Littlechild had two options to choose between: the inter-departmental working group’s MRR and an outline version of the Walters’ ORPL scheme. Very importantly, all the Littlechild comparisons were made against a base case of no ex ante regulation of profits or prices ie, just leaving BT and telecoms to ex post competition policy oversight.

The evaluation criteria used in the Littlechild Report were:

---

(i) protection against monopoly (and BT’s abuse of its dominant position);

(ii) encouraging efficiency and innovation (static and dynamic);

(iii) minimising the burden of regulation;

(iv) the promotion of competition;

(v) maximising the flotation proceeds.

Interestingly, criterion (iv), the promotion of competition, was not in the list of objectives for the report as given to Stephen Littlechild in the terms of reference. In fact, this issue became the main focus of the report. Evaluation criteria (i), (ii) and (v) were included as objectives, as was “facilitating the operation of BT plc as a commercial organisation after privatisation” but this last was not explicitly included as an evaluation criterion. Criterion (iii), minimising the burden of regulation, was also not explicitly included in the terms of reference. In all cases, the five options were ranked against one another on a comparative basis derived from a qualitative appraisal. Hence, the final summary rankings, with five options, reported scores of 1-5 for each option on each criterion.

In carrying out his evaluation, Stephen Littlechild argued that protection against monopoly abuse was the critical requirement which had to be satisfied – this followed its listing as the first objective in the terms of reference. Failing to deal with this issue was the key problem with the ‘no regulation’ base case and with the ORPL (which also had other difficulties as indicated above). Maximising the flotation proceeds was in the terms of reference but was not a critical criterion for the report.

In the initial evaluation, the MRR was rejected because it was scored badly on all the criteria except protection against monopoly (very badly on the burden of regulation and the

---

6 For the full terms of reference, see Littlechild (1983), pv.
promotion of competition). The ORPL was also scored badly on these criteria (and very badly on flotation proceeds). Comparing the ORPL and the MRR, Littlechild concluded that “... the choice would be between a scheme that is largely unknown and a variant of one that is known to be unsatisfactory. Neither can be recommended”.7 The base case of no *ex ante* regulation was far superior on all the criteria – except for the critical one of protection against monopoly. Hence the need for variants.

The first variant option considered was a (high) profits ceiling. This got fairly short shrift. Stephen Littlechild argued that, if the ceiling were set high (eg, at around twice the expected cost of capital), it would provide little protection against monopoly abuse. But, more importantly, he argued that there were strong political economy reasons why the ceiling would be pushed towards the expected cost of capital – in which case it becomes a crude rate of return method of regulation with even more problems than traditional, standard US-style rate of return regulation.

The second variant considered was the ‘local tariff reduction scheme’ or RPI-X price cap as we now know it. As we have seen, this was the proposal that Littlechild came up with in the last week of his work. This he scored highly on all the criteria – particularly on efficiency and innovation, financial proceeds and (most importantly) on protection against monopoly. It was this last that gave it the edge over the base case of no *ex ante* regulation. But, on my reading, it is clear from the report that the abolition of *ex ante* economic (or at least prices or profits) regulation was regarded by Stephen Littlechild as the long if not medium-term goal for regulatory policy and the OFT.

**Proposed RPI-X coverage**

It is not often realised but the 1983 Littlechild Report recommendation for RPI-X was for a restricted set of services

---

and not for all BT services or even all BT national services. The Littlechild proposal was for confining price cap regulation to a tariff basket covering BT’s business and residential rentals and local call charges only. (Note that, in 1983, these services would have made up a substantially higher proportion of the average domestic bill – and of BT’s revenues – than in 2003). Littlechild was clear that non-local (trunk) calls and international calls should be excluded from price cap regulation to help foster competition.  

In contrast, the inter-departmental working group MRR scheme covered all these BT services with proposed different maximum rates of return for local, trunk and international calls. In the event, RPI-X was adopted but covering a wide basket of BT services and not just the limited set of services recommended in the Littlechild Report.

Competition, regulation and RPI-X

The potential speed of development of competition in UK telecommunications

The 1983 Littlechild Report is rightly associated with a strong advocacy of competition. In addition, it is clear that the development of competition was seen as the way in which the economic regulation of BT would be made temporary. There are a number of statements that can be quoted from the report on these lines. The following, from paragraph 4.11, is perhaps the most forthright:

“Competition is indisputably the most effective – perhaps the only effective means – of protecting consumers against monopoly power. Regulation is essentially the means of preventing the worst excesses

8 See Littlechild (1983), paragraph 13.7 and 13.8, p34-35.
9 See Littlechild (1983), paragraphs 7.3 to 7.6, p14-15.
of monopoly; it is not a substitute for competition. It is a means of ‘holding the fort’ until competition arrives”.

Curiously, the report does not discuss what kind of competition was expected to develop in telephony. The implication that I draw is that it was primarily facilities based competition (ie, competition via network investment by competitors to BT rather than just service competition over BT’s network) that was intended as the main focus.\textsuperscript{10} Given the major problems that there have been in developing facilities based competition (at least in the residential and small business markets), it must be questionable how realistic it was to expect effective competition to develop rapidly, which is why the report provided for the possibility of continuing RPI-X even if the hope was for substantial and early development of competition. In fact, only cable has provided such competition on any scale so far at the local level for other than large businesses and that has been a largely urban (and heavily loss-making) activity which only got going in the 1990s.

In his contribution to this volume, Stephen Littlechild points out the Thatcher government decision to maintain a BT-Mercury duopoly until 1991 (and until 1997 on international calls) as a major reason why competition was slow to develop. It is correct to point to the importance of the duopoly policy and Stephen Littlechild may well be correct in his conjecture that the duopoly policy was a major impediment, but it is not absolutely obvious. In particular, it is at least debatable whether, how much more and how much more rapidly telecom competition would have developed in the absence of the duopoly policy.\textsuperscript{11} Facilities based

\textsuperscript{10} The report, however, made a strong plea to allow the unrestricted resale of BT’s - and Mercury’s - circuits which presages the development of competition based on other companies retailing BT wholesale services. See eg, paragraph 14.8 (6), p37.

\textsuperscript{11} The costs and benefits of this probably unsuccessful policy is a topic that might well be worth analysis in the light of what we have learnt since about encouraging competition in telecoms. A thesis topic for someone?
competition to the incumbent main telecom companies has been slow to develop in the US and many other countries besides the UK; indeed, it has been in retreat over the last few years – and certainly since the stock market downturn of 2000. The local loop unbundling saga is even less encouraging.

The result of these difficulties has been that competition for small customers in the UK has developed increasingly via the resale of BT ‘wholesale’ services viz internet, broadband and the planned retailing of BT line rental service from autumn 2003. In consequence, for clear competition policy reasons, Oftel has been clearly (if somewhat reluctantly) pushed into substantive regulation of many of BT’s wholesale services – in large part because of pressures from competitors complaining against margin squeezes and other claimed examples of anti-competitive behaviour by BT.

It may be that creating effective competition in telecom services (other than from fixed v mobile voice telephony) is intrinsically harder than developing effective competition in electricity generation and supply or in natural gas. This could arise because of the much stronger synergies between network and services in telecoms which makes it intrinsically less attractive – and harder – to separate natural monopoly and service elements from other output elements than in electricity and gas.\(^\text{12}\)

The counter-argument is that it should be easier to generate competition in telecoms because of the rapid rate of innovation and growth. These, however, require large amounts of investment and expertise in marketing higher value added services as well as in physical investment. In normal times (ie, apart from periods of capital market hype like the later 1990s), this is likely to favour large firms – and incumbent telecom firms – over new entrants. In particular, at least so far, market leader firms with considerable network and brand value power seem to

be able to retain and possibly extend their positions (e.g., BSkyB, the BBC and their equivalents in other countries as well as BT).\(^\text{13}\)

One note of interest is that Littlechild in his 1983 report was very strong in its advocacy of:

- tough non-discrimination clauses in BT’s licence to prevent predatory behaviour against competitors (paragraph 13.15);

- a requirement that BT should be required to publish its tariffs (paragraph 13.16).

As noted, these are requirements that would not be desirable on competition policy grounds in ‘standard’ markets but were advocated here (and again by Stephen Littlechild in his 2002 discussion of mobile call termination rates). The failure to impose such requirements was a major reason why nineteenth century UK railway regulation was such a failure.\(^\text{14}\)

**The record on competition in UK telecommunications and the duration of price cap regulation**

My view is that the 1983 report conveys the message to the reader (at least this reader) that price cap regulation of BT was expected to be a temporary phenomenon that could be dropped after about five years or so. At that point, the report seems to

\(^{13}\) Mobile telephony and some internet, broadband etc shows oligopolistic markets with more players and, typically, no single firm dominating. The question is which model will prevail, particularly for telecom and broadcasting services involving fixed network services. Will the latter’s monopoly power prove to be temporary and superseded by firms with new, superior technologies?

suggest – or at least hope – that competition could (and would) have developed sufficiently to return to standard competition policy oversight, at least for profits and prices – and presumably also for quality where licence conditions for BT were deemed necessary at least while price cap regulation was in place.\(^{15}\)

In fact, the explicit statement in the 1983 report discussing this issue is very judiciously worded. Much of the rest of the report is very direct if not positively outspoken for an official government published report. But, in this case, the relevant paragraph (paragraph 13.14) is carefully drafted so as not to commit hostages to fortune. It is worth quoting in full:

“In any event, an automatic reference to the MMC [Monopolies and Mergers Commission] after, say, five years seems appropriate. By that time the extent and strength of competition should be apparent, and it may be appropriate to extend or restrict the scope of the ‘monopoly basket’; to change the value of X or to rebase the calculation; to abolish the tariff reduction scheme altogether or to impose additional constraints”.

However, as we have noted above, there is no discussion at all about resetting the formula and paragraph 13.20 (in defence of RPI-X as implying a low burden of regulation) states that:

“The DGT does not have to make any judgements or calculations with respect to capital, allocation of costs, rates of return, future movements of costs and demand, desirable performance, etc”.

But, this is only correct if the RPI-X price cap is a one-shot temporary scheme. Hence, the logic of the 1983 report is that RPI-X could only have been abolished if sufficient competition

\(^{15}\) Relatively little was said about quality standards in Littlechild 1983 at least compared to what was included in Littlechild 1986 on water quality recommendations and conditions.
were to have developed in UK telecoms within the first five years after the privatisation of BT. The report was very clear that rapid and substantial development of competition was highly desirable but was careful not to commit itself as to when this might be. However, my reading of it is that the time required to develop effective competition, and hence the duration of price controls, was seen as of the order of a number of years (eg, 5-10) rather than as a number of decades. The slow development of competition in key areas, particularly at key bottleneck points, is presumably why BT still faces residual price cap regulation for retail services to small consumers and substantive regulation for some wholesale services and network access price elements. As we discuss further below, the slow elimination of cross-subsidies is another important reason why retail price cap regulation has continued for so long – the Littlechild 1983 price cap was designed to encourage a much more rapid unwinding.

**Price cap and rate of return regulation where \( x \) is regularly reset:**

*Are they opposite sides of the same coin?*

My view (which I think is the conventional view) is that price cap regulation and rate of return are opposite sides of the same coin – at least for utilities (or elements of utility service) which face regular periodic reviews eg, every three or five years. Since price/profits regulation has not withered away even for telecoms, that, in practice, means for the monopoly network elements of all UK privatised utility service industries.

There are, though, some clear differences between price cap and rate of return regulation. I would argue that price cap regulation is inherently more forward looking and more focussed on incentives.\(^{16}\) Conversely, rate of return regulation is inherently more backward looking and needs specific additional

mechanisms incorporated to encourage efficiency (as have increasingly been developed in the US since around 1980).

At the limit, (eg, with annual reviews as occur in many transition and developing countries) both price cap and rate of return collapse to being simple cost-plus pricing.\textsuperscript{17} In this context, it is worth noting that the DTI MRR rate of return scheme discussed in the 1983 Littlechild Report provided for an annual review of whether or not BT had made excess profits with rebates to overcharged customers on a sliding scale from 52.5-75%.

Of course, Littlechild 1983 is famous for advocating price cap regulation as a ‘superior substitute’ to rate of return regulation and quite different from it. Littlechild 1986 seems to take a different view. The later report discusses RPI-X in the context of the permanent regulation of a localised natural monopoly water industry rather than the hoped-for temporary price cap regulation of telecoms and BT. The key passage is in paragraph 10.20 which reads as follows:

\begin{quote}
“In deciding how far to revise X … the economic regulator needs to examine the company’s production methods and investment programme. He must ascertain the scope for cost and price reductions through increased productivity and efficiency, and the need for capital expenditure. He needs to predict the consequences of X on what the company will do, how it will do it, how consumers will be affected and how others will react…. So permanent regulation is more complex than temporary regulation”.
\end{quote}

Similarly, the first sentence of paragraph 10.21 reads “\textit{It should now be evident that rate of return considerations are necessary implicit in setting and resetting X}”. Stephen Littlechild has pointed out that this sentence and the rest of paragraph 10.21 were written to make it clear that the chosen level of X must

\textsuperscript{17} Except for countries with annual rates of inflation of around 20% or more.
allow investors in utilities an expected, risk adjusted rate of return comparable to what they could expect from other investments. But, this seems to me to recognise that the incentive effects of RPI-X for improving efficiency and reducing costs only arise for repeated reviews if companies are given a strong expectation of what they can expect regarding the (risk-adjusted) rate of return. In consequence, many of the information requirements and debates at regulatory review are common to both methods (eg, on cost of capital and regulatory asset base definition and measurement).

The 1989 Rand Journal article by Beesley and Littlechild goes further in admitting that RPI-X and rate of return can converge for repeated regulation of monopoly facilities eg, of electricity transmission networks or other natural monopoly facilities. Moreover, Stephen Littlechild’s contribution to this volume seems to me, however reluctantly, to recognise this outcome as well as to explain why it has happened.

That, though, is not the end of the story. Characteristically, Stephen Littlechild concludes his contribution with how he is exploring other means by which we may be able to do away with the need for price regulation by a regulatory agency of even the most natural monopoly-like element of utility services. I, and other readers, may or may not be convinced by these arguments. It is, however, important that they continue to be made by him and others since we can all, I hope, agree that economic regulation should be relaxed and terminated unless the benefits from it continue to exceed the likely costs – dynamic as well as static.
UK price cap regulation following the 1983 Littlechild Report

UK telecommunications price regulation following the 1983 Littlechild Report

As we now all know, RPI-X regulation was introduced for BT to accompany its privatisation in 1984. However, its coverage was significantly broader than Littlechild recommended. Indeed, the eventual form chosen seems to me to have introduced some major features of the inter-departmental working group MRR scheme into the Littlechild proposals.

The key difference from the recommendation in the Littlechild report was that price regulation was imposed on national and many international calls as well as on local calls and line rentals. This followed the inter-departmental working group’s recommendation for the MRR coverage. Littlechild had recommended confining RPI-X to local calls and line rentals only.

Another important difference relates to the speed of price rebalancing via the abolition of cross-subsidies. The inter-departmental working group had recommended differential rates of return for the different businesses, which, as Littlechild pointed out, implied a continuation of the cross-subsidies eg, from international and trunk calls to local calls. The policy outcome was a single RPI-X ‘tariff basket’ formula for all services but one in which the rate and speed of rebalancing between services (and between domestic call charges and line rentals) was heavily constrained. This continued for a long period whereas Littlechild seems to have envisaged rather more substantial and earlier rebalancing, particularly from competitive entry into the national and international call business.

It was also the inter-departmental working group that recommended an Oftel review of BT’s performance and licence
at regular five year intervals. This recommendation (including review and revision of the price caps) was introduced for BT and has since been followed for all the other privatised and regulated utilities. As we have seen, Littlechild had recommended a review by the MMC after five years, essentially to establish whether sufficient competition had developed to allow the RPI-X cap to be modified or abolished.

Since 1984, price cap regulation has, with minor exceptions, gradually been withdrawn for BT retail services, particularly international and then national calls, but most of the change has taken place in the 1990s – and particularly the later 1990s and, since 2002, there is only a residual ‘fail-safe’ price cap on household retail call charges. Similarly, price regulation has – at least in recent years – been withdrawn from most network access price elements, with the exception of access termination charges. Following the 2001-2 Oftel review and the subsequent Competition Commission referral decision, mobile termination charges are still regulated, as are many of BT’s wholesale service products.

This is far from what was intended or expected in the 1983 Littlechild Report but arises from the slow and relatively limited development of facilities-based competition, particularly until the development of cable (and to a lesser extent of mobile) from the mid-1990s. The slow development of competition occurred for a number of reasons of which the decisions of politicians and Oftel to accept only a gradual rate of price rebalancing for social and other reasons has been a significant one – as opposition to withdrawing similar cross-subsidies has been in the US and other countries.

---

19 Littlechild opposed price cap regulation of mobile termination charges in his 2002 IEA paper, Regulators, Competition and Transitional Price Controls: A Critique of Price Constraints in Electricity Supply and Mobile Telephone - at least until it was clear that there was no feasible competitive solution. For further details and for a more detailed exposition of developments in UK telecom regulation, see the paper by Martin Cave in this volume.
General UK developments on RPI-X regulation

We could not have known it then, but we now all know that the UK government not only introduced RPI-X regulation for BT, but successive governments, Labour as well as Conservative, have used it for regulated elements of all subsequent privatised utilities (gas, electricity, water, railways, airports); for partially privatised utility services (air traffic control); and state owned entities (the Post Office).

There are, however, some fascinating difficulties concerning conflicts of interest and incentives in extending the ‘regulator with price cap model’ to industries where the government has a significant ownership stake in the regulated company and is heavily involved in the appointment of the company board and management as well as appointing the regulatory decision makers – as has occurred with the Post Office. Similar problems arise where the industry is heavily long-term dependent on public subsidy – as occurred with Railtrack. This regulatory model with price caps has survived a major shock over air traffic control services (NATS), post 9/11. However, it failed over Railtrack and its experience during the two and a half years that it has so far been in place in postal services has been more than somewhat fraught.

It is very noticeable, though, that the way that RPI-X has evolved for the other industries as well as for telecoms is very different from the original conception – and very contrary to the nice, simple formula in Littlechild 1983. Price cap formulae have become a lot more complex, starting with the RPI-X+K formula for the water industries. Current price cap formulae now tend to be multi-parameter, have intercept adjustments, glide paths, etc. In addition, there are typically several price caps per industry – including in telecoms.

This was not what Littlechild 1983 or Littlechild 1986 intended or hoped for in the industries those reports considered. Indeed,
for the water and sewage privatisation, Littlechild 1986 advocated:

- a *single X* (in a simple RPI-X price cap) for all water supply *and* sewerage services per company (paragraph 11.7);

- a *single uniform X* for all 10 water authorities (paragraph 12.1-12.6).

The latter was recommended subject to a number of conditions set out in paras 12.12-12.17 but was the clear recommendation eg, in the executive summary. Neither of these was implemented. Indeed, the development of separate price caps for water supply and sewerage plus different Xs for each regulated company based on yardstick competition was the start of the growth in the complexity of price cap formulae.

The 1983 Littlechild Report and its influence

*Retrospective surprises*

With the benefit of hindsight, there are a number of surprises in the 1983 report – some positive and some negative. The major ‘positive surprise’ is the early recognition (1983) in paragraph 14.8 of the potential of emerging technologies for competition to fixed line telephony from cable, radio (mobile radio and cellular), satellite etc. (Littlechild’s paper in this volume suggests that these, and other proposals in paragraph 14.8, were largely due to Bruce Laidlaw and Jonathan Solomon). To a 21st century reader, the main ‘negative’ surprise relates to the absence of any mention or discussion of:

- the distinction between BT’s network services and products (calls etc);
• the BT ownership, management and business structure and unbundling;

• network access and interconnection terms and prices and the basis on which they should be set or regulated.

For a 21st century reader, the likelihood of developing effective competition in telecoms hinges on the setting of fair network access terms and prices, including the basis on which the regulator sets, approves or arbitrates on them.

In his contribution to this volume, Littlechild explains that the absence of discussion of these issues relates primarily to the decisions that had already been taken to privatise BT as a single entity and to maintain a BT-Mercury duopoly for some years after privatisation. Also, BT and Mercury had in 1983 agreed terms of access that were acceptable – even if disputes on this issue erupted sharply a few years later.

The role and importance of access charges to BT’s network clearly grew during the 1980s – and particularly the 1990s – as competition developed. Littlechild was far from alone in the early 1980s in not anticipating how important pricing of access to incumbent network operators would be for the development of competition in telecoms.

**The influence and importance of the Littlechild 1983 Report**

The Littlechild Report is primarily quoted for two things:

• the invention and promotion of RPI-X price cap regulation;

• the suggestion that price cap regulation need only be temporary because sufficient competition could develop so that it could be removed relatively quickly.
The Littlechild Report

On the first, as we have seen, RPI-X was partially rather than wholly ‘invented’ by Littlechild, but it was his foresight and understanding that led to it becoming so important a ‘general’ concept for utility regulation. It was not, as he had hoped, a way of banishing rate of return issues from telecom and other utility regulation but it was crucial in leading economic regulation to be much more forward looking and to pay a lot more attention to competition and incentives.

On the second, Littlechild’s optimism was not borne out by events. It is the case that his recommended pro-competition policies were not adopted but how far the outcome on UK telecoms competition resulted from prior and subsequent policy and regulatory decisions is far from clear and remains highly debatable. After all, it is still the case that economic regulation for telecoms has not been withdrawn in the UK or anywhere else in the world. Given the more difficult position of potential entrants following the 2001 and after collapse of the share prices of telecom companies (and particularly the glamorous new entrants of the 1990s), it seems to me more likely than not that some price/profits regulation of telecoms will be here 40 years after the 1983 Littlechild Report and not just 20 years after. My judgement is that it will take major cost reducing technological advances permitting substantial new entry to lead to the potential abolition of such regulation over the next 20 years.

Nevertheless, the importance of the 1983 Littlechild Report is very considerable. The Littlechild Report was and remains a crucial, landmark document. After its publication, the world of utility regulation economics and policy-making would never be the same again. It can be described as like ‘a brick in the pond’ in the sense that it was a major force that created lots of waves.

Until the Littlechild Report was published in 1983, the world of regulatory economics and policy seems to have been a relatively small group, clustered around discussion of the US regulatory system and rate of return regulation. Since 1983, that closed world has been opened up and any country – developed,
developing, transition or whatever – now considering the introduction of utility reforms routinely discusses a much wider array of options for economic regulation. Such discussions include, not just the traditional US model or the UK RPI-X model, but combinations, variants and new possibilities. It is because of this opening-up of the discussion of regulation together with the need to relate regulatory requirements to competition, competition policy and incentives that the 1983 Littlechild Report has been so important.

How much Stephen Littlechild is personally responsible for these developments cannot be reliably estimated but his 1983 report certainly caught the direction of the times and spurred many creative responses. That is why it was and will remain an important historical document.
3 THE BIRTH OF RPI-X AND OTHER OBSERVATIONS

Stephen Littlechild

Introduction - the birth of RPI-X

I am grateful to the organisers of this conference for providing the opportunity to look back at ‘how it all came to pass’ and to review the subsequent development of utility regulation in the UK and overseas. As requested, I will focus my remarks on Jon Stern’s interesting paper and on what we have learned over the last twenty years. Several commentators have noted the time pressure under which my report was prepared. It was commissioned on 28 October 1982 for delivery on 14 January 1983, which allowed 10 working weeks (allowing for Christmas!), but a draft report was required by 17 December, after only six weeks. In view of this conference, I have looked again at the notes I made as I carried out this work. In fact, the timing was even tighter, and RPI-X never made it into the draft report.

Jon Stern has summarised the work of the interdepartmental working group chaired by the Department of Industry (DoI), and the objections and alternative scheme put forward by the Prime Minister’s economic adviser (Professor Alan Walters). At a meeting on 20 October 1983, the Secretary of State for Industry (Patrick Jenkin) and Professor Walters agreed that the Telecommunications Bill should be drawn up on the basis of the

Acknowledgement
I am grateful to Jon Stern for stimulating discussions and to Bruce Laidlaw and Peter Gist for further information included in footnotes below (correspondence 29 and 30 May, respectively).

Stephen Littlechild, Honorary Professor, Birmingham University Business School; Principal Research Fellow, Judge Institute of Management Studies, Cambridge
THE BIRTH OF RPI-X

working group proposal. However, the secretary of state remained attracted by Professor Walter’s scheme (because it was designed to encourage further efficiency, increased output and lower prices to customers), and would not wish to forego the possibility of it providing the basis for a regulatory regime at this stage. It was agreed that I should be asked to investigate and report on the scheme in more detail. Malcolm Bradbury of the DoI telephoned me on 22 October and we arranged a meeting on 28 October, at which the task was explained and we agreed the substance of the terms of reference and the timetable. “That gives you ten working weeks”, he said, “but we have to budget for a maximum of 20 to 25 working days”. For my part, too, I had two lecture courses and tutorials to give and a university department to run (not to mention the family and Christmas … ).¹

I had a series of meetings with interested parties to understand their points of view. It became clearer in my mind why neither of the proposed options was attractive. Unfortunately, I could not immediately think of anything better, other than a variant of the working group scheme that I called the profit ceiling scheme. The deadline of 17 December arrived, and without enthusiasm I submitted my draft report. It was basically the report as it finally appeared, but without the final chapter on the local tariff reduction scheme. RPI-X had not yet been born: this was Hamlet without the Prince. The interested parties read the draft report and we discussed it at a large meeting on 5 January 1983 and later at the Treasury. But I was not satisfied that this was the best we could do. Nor was Professor Michael Beesley, with whom I had discussed the issue throughout. We debated the matter that evening and discussed the alternatives including some form of price control.

The next day, 6 January, I met again with BT’s merchant bank adviser, Michael Valentine of Warburgs. My notes show that,

¹ In the event, it took 26 days to prepare the Draft report by 16 December. The contract was finalised on 21 December allowing for a maximum of 35 days. The total came to 38 days, so the DoI got three days for free. There was a further day putting final touches to the published version.
rather than discussing the pros and cons of my draft report and
the profit ceiling scheme, we looked again at what the economic
and political constraints on BT really were. Michael Valentine
had previously drawn my attention to the Buzby Bond that had
provided for an RPI-2% cap on BT’s tariffs.² I had already tried
this out on others.³ We now explored this possibility further. My
notes read: “Control on local prices and rentals - but currently
[operated] at a loss, or less than average profit. To rebalance
would look like profiteering. [Could apply] RPI-2 to all services
(basket of tariffs). Need some reduction in real terms for
residential rentals and local calls”. After further discussion with
BT’s chief economist Jeff Wheatley, I had lunch with Michael
Beesley. He said that he had come to the conclusion that however
much we disliked price controls, a price cap would be better than
a variant of rate of return control in this instance. I said that was
the conclusion I had come to as well. Later that day I met Alan
Walters. He had some concerns about my interim
recommendation, notably the need to clarify the proposed remit
of the Monopolies and Mergers Commission, which he thought
should be limited to competition issues rather than the public

² Paragraph 13.5 of my report says “When the ‘Buzby Bond’ was under
discussion, the proposal was that BT’s prices should not increase by more
than RPI-X per cent, where X was a specified number”. (p. 14). In fact the
Buzby Bond discussion (at least publicly) always used a specific number
(2%) rather than a general RPI-X constraint. I assume that I described the
previous arrangement in terms of RPI-X in order to assuage fears about
the novelty of what I was proposing. Bruce Laidlaw suggests that this
account of the Buzby Bond exaggerates its similarity with RPI-X. “… the
key points are that BT would have remained in public ownership (and
hence its price increases subject in practice to prior Government
approval), that RPI-2 was to operate as much as a floor as a cap (the
return on the Bond being linked to profits) and that agreement on the
terms for the bond was never achieved (the Buzby Bond never
happened)”.

³ For example, I see that on 23 December, during a phone call with
Malcolm Bradbury, we discussed the possibility of imposing a price
reduction of 2% pa especially on rural phones.
THE BIRTH OF RPI-X

interest.\textsuperscript{4} He suggested the report recommend further work, presumably on his own proposed scheme. But my notes say that we also discussed ‘guaranteed tariff reduction scheme’.

I must have discussed the issue with Professor Jack Wiseman by telephone that evening. My notes show that he saw disadvantages in both Alan’s scheme and the profit ceiling in terms of discouraging competition (the disadvantages of rate of return were taken for granted). He would have preferred greater reliance on competition authorities without a particular regulatory scheme, and suggested several possibilities. But he appreciated that something more tangible was needed. Then my notes say “RPI+2%. Don’t like it - greater efficiency has to account for it but may be some slack for 5 years. Best of bad lot”. Presumably the notes should have read RPI-2 rather than RPI+2, and Jack was presumably wondering how to justify the choice of 2\%, or indeed any real price decrease, without discouraging competition. But ‘best of bad lot’ was my view too. The next day, 7 January, I talked with Malcolm Bradbury and Bruce Laidlaw. For the first time in my notes there appears the now-familiar term RPI-X\%. I see we even discussed numbers for X. “Agreed 5% performance target – 3.7% and 4.8% achieved. Buzby Bond RPI-2% agreed. Consumer protection requires 3 or 4\% -- 5% too harsh?” ‘Agreed’ here refers to performance targets that had been set for BT in previous years, to which it had agreed.\textsuperscript{5} We also discussed distributional issues. “RPI-X Scope:

\textsuperscript{4} The draft report envisaged automatic reference to the MMC if BT exceeded the profit ceiling three or more years in a six year period. No doubt Alan’s remarks encouraged me to include the discussion of the role of the MMC in section 14.7 (3), emphasising competition issues and concluding with the suggestion that “the ambiguous phrase ‘public interest’ would be better omitted”. I see that my submitted report used the word “mischievous” rather than “ambiguous”, so wiser counsel obviously prevailed.

\textsuperscript{5} “The 5% performance target related to a target reduction in unit cost, calculated as the annual difference in total cost (computed in current cost accounting terms) divided by an index of output (based on the total number of call minutes). BT’s long run record (1976-83) was 2.8%.” (Bruce Laidlaw).
include call box charges (politically important) – loss making though reflects shaky cost allocation?"

I deduce from all this that RPI-X as a scheme of control in its own right, as an alternative to schemes involving maximum rate of return, output-related profit levy or profit ceiling, was ‘invented’ between 5 and 7 January 1983. That left one week in which to write it up in a plausible way, test it against the specified criteria, conclude that it was the best available option, and make some further recommendations. An even more hairy timetable than originally envisaged. Of course, it left no time to explain to all the interested parties what had happened to the draft report and what RPI-X was all about. Fortunately, Alan Walters and BT’s merchant bankers considered it better than a profit ceiling, the department’s merchant bankers considered it workable, it was politically defensible and indeed attractive, and it carried the day. 

The rest, as they say, is history!

6 Unfortunately the government considered it necessary to extend the scope of the basket in order to get an attractive level of X. “A great merit of the local tariff reduction scheme as originally proposed was that it dealt simultaneously with restraint of monopoly and the rebalancing problem, which was political in nature. As implemented, RPI-X covered prices that were in excess of cost as well, and so a separate, subsidiary control was required to provide adequate reassurance to residential consumers (initially in the form of an exchange of letters between the Minister and the Chairman!). Later, on Michael Beesley's suggestion, the use of residential consumption patterns in the construction of the controlled tariff index [the median bill calculation] enabled a single RPI-X control applicable to all telephone prices to cover both economic and political concerns”. (Bruce Laidlaw).

7 Not everyone was happy. “Mr Orme [shadow industry minister] also said that the opposition saw the sticky fingers of Professor Alan Walters, the Prime Minister’s economic adviser, all over the Littlechild report. He said that it would result in a flood of imports into this country and would cause confusion as to who was responsible for phone repairs”. Another comment was “Anyone who can make Professor Walters look like a wet must be quite unique: a hangover from the nineteenth century”.

35
THE BIRTH OF RPI-X

The contribution of Alan Walters

The report draws attention to then-recent examples of moves from profit regulation to price regulation. I have elsewhere acknowledged the important contribution of Michael Beesley. Although the role of Alan Walters is in a sense more obvious in the report, I should like to say a few more words about it. I learn for the first time that Michael Beesley may have alerted Alan Walters to the importance of this issue. Alan soon voiced his concerns about the maximum rate of return approach. For example, in June 1982 he wrote:

“… the maximum rate of return method has been used extensively in the United States. Research has shown that it resulted in considerable waste of investment, as the utility companies increased the denominator of the rate of return to earn margins considerably above other comparable assets. Over capitalisation, typical in public sector and publicly controlled industries, was the widespread consequence.

---

8 For example, paragraph 14.5 refers to replacing rate hearings by escalator clauses in the US, and the MMC’s proposed ‘cost less 1.5%’ price cap on contraceptive sheaths.
10 Michael Beesley had been involved in telecommunications since his 1981 report Liberalisation of the use of BT’s network. When the Bradbury [working group] proposals were put to Ministers, Michael alerted Alan Walters and requested a meeting at No 10. We both went and discussed the papers (which by now Alan Walters had called for) and what to do about the proposal. My recollection is that the meeting was in two parts - in the first we discussed the prospects for competition and the rebalancing issue, in the second we discussed alternative price control schemes. Michael and Alan agreed that “you can never defeat a candidate without another candidate” and the Alan Walters ‘output related profit levy’ was discussed as an alternative. But I don't recall a price cap being mentioned at this point”. (Peter Gist).
The imposition of a maximum rate of return has many of the characteristics of the tax rate which is fairly low until the maximum rate is achieved, then it becomes a hundred per cent. We all know the consequences of that sort of tax system on cost control and enterprise”.

On 1 October Alan Walters responded to the working group report. His first point had immediate impact. “Except for some vague talk about ‘flexibility’, DoI has not met the powerful criticism that 100% tax rates are deadly; they are the stuff that socialists are made of”.

He went on to express concern that the DoI scheme would require a large bureaucracy, comparable to those doing similar jobs in the United States, and that this would benefit mainly the accountants, economists and lawyers. It would require frequent monitoring of costs and efficiency, and it would also need an allocation of joint costs, which in most cases would have no substantive basis at all.

The meeting with the secretary of state was held on 20 October to discuss the issue. DoI circulated a note of the meeting under the heading ‘BT privatisation: regime to prevent excessive profits’. Professor Walters responded with “a couple of minor points for the record” but he began as follows:

“But first may I say that I did not see the title of the meeting in terms of ‘Regime to prevent excessive profits’. I was concerned to find a regime that would maximise freedom, induce the greatest efficiency, keep prices low to the consumer, and expand the telephone system in a profitable way. In short, I should have said the main thing is to find a regime so that BT are induced ‘to do better”.
He then added another sentence (apparently afterwards): “I agree, however, that the concern of your officials was properly represented by your title”.\(^\text{11}\)

This is the first time I have looked back at these notes for twenty years. They indicate that Alan Walters did more than engineer an opportunity to reconsider the approach to utility regulation in this country, important though that was. He was initiating and taking forward at the highest level a discussion of the aims and principles of privatisation and regulation. He was suggesting what the underlying themes of that new approach might be. His remarks that I have quoted capture well the views held by those (like Alan, Michael Beesley and myself) who were at that time seeking to develop both the intellectual basis for privatisation and the practical implications in terms of policy.\(^\text{12}\)

Alan clearly identifies how this approach differed from ‘conventional’ economic thinking. It did not see the aim in negative terms (‘prevention of excessive profit’) or in terms of maintaining or securing a particular distribution of income. Nor did it attach great weight to the allocative efficiency criteria of conventional welfare economics. Rather than taking costs as given it attached greater weight to improving efficiency. It saw competition as a means of providing choice to customers

\(^\text{11}\)“We civil servants were under instruction to find a method of preventing a privatised BT making monopoly profits. The presumption was that this method would be rate of return control, but we were not limited to that. By the way, the time we were given to produce our scheme was from late July to early September, ie, about eight weeks. I recall that Malcolm Bradbury went off on holiday for a month and left the problem with me (I was secretary of the inter-departmental working group). At that time of year, and in the time available, I couldn't do what I usually did with difficult questions - ask Michael Beesley and Peter Gist for a paper - but had to produce one myself. I have a vivid recollection of the moment, one hot August afternoon in discussion with a colleague, Alan Dobbie, when I thought up the first version of what your report calls the working group scheme”. (Bruce Laidlaw)

\(^\text{12}\)Immediately after my report was published, Michael Beesley and I wrote up some more general ideas in Privatization: Principles, Problems and Priorities, Lloyds Bank Review, No 149, July 1983, pp1-20.
(thereby ‘maximising freedom’ to all parties). Competition was also a means of discovering and providing the goods and services that customers wanted. Customers would share in the benefits of these improvements – via lower prices and greater output to reflect the greater efficiency and greater customer-orientation of the industry. This was to be achieved by carrots (profitable expansion) rather than by sticks (100% tax rates), and by the market (plus limited regulation where necessary) rather than by government.\(^{13}\)

### Beyond traditional discussions

Jon Stern says that the report was a ‘brick in the pond’. I thought at first he meant that it sank without trace. At the conference he explained that “the brick in the pond set many hares running”, which may or may not clarify the phrase. What he also says is that “regulatory economics was massively opened up beyond the traditional discussions of the US system and would never be the same again”. I’m not sure that the report can claim all the credit for this, but it is true that regulatory discussions have not been the same since the adoption of RPI-X in the UK. This is the case in at least two senses.

First, as Jon says, the options between which policy choices are made are no longer limited to nationalisation versus traditional US rate of return. A recent article by Ai and Sappington shows just how much the US regulatory scene itself has changed.\(^{14}\) Until, and including 1985, all 50 states for which they publish data used rate of return regulation in the telecommunications

---

\(^{13}\) After my notes on the main 5 January meetings appears the comment, “Involvement of politicians more serious than monopoly for nationalised industries - great merit to get regulation out of secretary of state’s hands”. This was probably not a sentiment expressed at the meeting itself, and more likely arose in discussion with Alan or Michael.

sector. By 1987 ten states had shifted to rate moratoria and three to earnings sharing. By 1993 the number of states using rate case moratoria had declined to five, and the number using earnings sharing had grown to 22. By 1999 the number of states using these two methods had declined to one each, with only 12 using rate of return regulation. What had replaced these approaches? Price cap regulation had, which grew from one state in 1990 to 35 in 1999.

Second, the criteria against which policy options were to be appraised changed radically. For one thing, there was more appreciation of the practical and policy imperatives that were reflected in the report’s terms of reference. If a major policy innovation (utility privatisation) were to be carried through successfully, it was necessary to carry the consumers and voters, and the potential investors, as well as the economists.

However, the revision of criteria went beyond this, in terms of the language and thinking of economists themselves. ‘Optimal pricing and investment policy’ practically disappeared from view. Resource allocation remained a consideration, but not the conventional static perspective. Cost and demand functions were no longer taken as given. Much more attention was given to the scope for, and means of achieving, efficiency improvements – that is, shifting the production possibility frontier rather than simply moving along it. And that in turn led to a focus on information and incentive mechanisms. If the regulator does not know everything, how best to discover what can be achieved, and to implement possible improvements? To a greater extent than hitherto, dynamic considerations such as innovation began to play a significant role in the appraisal of alternative policies.

I had long been conscious of these issues in terms of the Austrian and subjectivist approaches to economics. No doubt that was why I sought Professor Jack Wiseman’s view. I think it was around this time that I was pleasantly surprised to find that
Michael Beesley, too, shared this sympathy. An agreeable consequence of the report was to find regulatory economics generally shifting in the same direction, albeit without explicit reference to Austrian economics.

Retrospective surprises: network access

Jon Stern suggests that as well as certain positive “retrospective surprises” in the report were certain negative ones: no distinction between BT’s network and product services, no discussion of BT ownership and structure and unbundling, and no discussion of network access issues.

The explanation is quite simple. The government had already ruled out most of these possibilities, or at least changes to the competitive structure that would have made them relevant. For example, it is well known that ministers and advisers had been keen to restructure BT before privatisation. However, they had concluded that the accounting and financial records did not allow sufficient cost and revenue attribution to particular businesses to make flotation possible in a practicable timescale.

Another possibility was new entry. Network access issues, and the distinction between network and product services, depend for their importance on the possibility and desirability of competition across the network, and the need for regulatory measures to ensure this. At this time, however, the government had already announced a new competitor Mercury, and during the course of the report’s preparation BT and Mercury announced their agreement on terms of access to BT’s network. Mercury’s access thus seemed not to be a problem (at least, at that stage – later

---

15 See for example, the Introduction and Postscript to his Privatization, Regulation and Deregulation, Routledge in association with the Institute of Economic Affairs, London and New York, 2nd ed, 1997.
THE BIRTH OF RPI-X

Mercury was to complain about the arrangements).  

The difficulty was that, in order to encourage Mercury to enter and to expand rapidly across the UK, the government had conceded that there would be no other entrants for the time being. Moreover, in our view the government was in danger of conceding more than would be desirable in terms of the details of the “duopoly policy” that was then in course of clarification.

Consequently, a key aim of the report was to try to ensure that the government did not give away too much in the forthcoming statement. The report sought to draw attention to the variety of ways in which competition could be promoted (or alternatively could be stifled if the government was not careful), quite apart from direct competition across the network. I asked Bruce Laidlaw for suggestions, and he and Jonathan Solomon largely

---

16 “At the time of your report, the terms of interconnection between BT and Mercury were based on BT's standard retail charges so no separate regulatory problem of pricing network access existed. Moreover, the presumption was that Mercury would build its own long distance network and interconnect with BT only at local level, termed Level 3 interconnection under the 1982 agreement. So the local tariff reduction scheme was very well-targeted at the prices of most concern to Mercury. Having said that, it is true that we did not really appreciate interconnection issues fully then. Indeed, while the department wanted very much to fix the interconnection problem prior to privatisation, we failed and it was left to Professor Carsberg [DGT] to resolve (in September 1985)”. (Bruce Laidlaw).

17 “While, by the time of the report, the government had assured the Mercury partners that only it would be licensed as a national telephone network in competition with BT, the duopoly policy was not actually formulated until November 1983. In particular, the scope for cable TV and satellite operators to enter the telephony market was still being debated throughout 1983. Jonathan Solomon and I were the chief protagonists of liberalisation; from my papers it seems that as early as January 12 I had proposed offering BT concessions on price regulation in return for more rapid liberalisation. The key point is that the report set boundaries for the subsequent policy discussion on both price control and competition”. (Bruce Laidlaw).
put together the list of seven possibilities that subsequently appeared in paragraph 14.8 at the end of the report.\footnote{These were (1) Allowing cable companies and others to compete with BT and Mercury (2) making more spectrum available (3) greater use of satellite (4) shared use of private networks (5) ending BT’s first instrument monopoly (6) shared use and unrestricted resale of BT circuits (7) allowing Mercury to compete on international business. In the report as originally submitted there were only five possibilities, but during a phone call to finalise publication of the report (while I was at a conference in Australia) Bruce suggested two more possibilities that ended up as (3) and (5). I see that we also beefed up the wording relating to one or two other possibilities. For example, my original suggestion at the end of (1) was that “Those nationalised industries owning suitable rights of way should not be discouraged from participating”. This became “Nationalised industries and other companies owning suitable rights of way should be encouraged to participate”.}

In short, the priority at that stage was not to work out the details or even possibility of access charges, but to ensure that there was even the possibility of competition. The government was responsive to these suggestions, at least in principle, and “announced five new initiatives to promote competition” at the same time as announcing its acceptance of the RPI-X recommendation.\footnote{The five measures were: ending BT’s first instrument monopoly (my 5), ending BT’s monopoly over the maintenance of call routing apparatus (not in my list), easing restrictions on Mercury’s supply of international services (my 7), reducing restrictions on resale (my 6), and entitling competing networks to interconnect with BT’s networks in return for non-discriminatory access fees that would help to cover BT’s costs of providing emergency services and any losses on call boxes and rural services (not on my list). Press Notice, Department of Industry, 7 February 1983.} However, the time it took to implement even these measures meant that competition was slower to grow than
THE BIRTH OF RPI-X

it might have been, and RPI-X has lasted longer than anticipated.20

Learning from experience: prices and profits

The aim in proposing RPI-X as a local tariff reduction scheme was to assure customers that they would be protected in the areas deemed most sensitive: prices of local calls and the level of rentals. The assumption was that if these prices went down in real terms, and if competition were able to reduce the price of long-distance calls (and improve quality of service and variety of competitive services on offer), then customers would be satisfied.

A similar approach was taken in later utility privatisations. However, it gradually became apparent that customers and the general public, or at least ‘the media’, cared not only about the prices that they paid but also about what the companies were

20 “Politically, it was essential that the announcement on regulation be combined with further liberalisation. The original list of measures we put up to Mr Baker was, I recall, your published list plus interconnection. He then invited BT's response, and they immediately struck out the two added to your report between submission and publication. After much argument, we ended up with the five measures announced. Those announced were effectively put on the agenda for more detailed examination (in the case of interconnection, this examination lasted for more than two years); those not announced were held over for further consideration, not rejected”. (Bruce Laidlaw) “Rebalancing had been identified as an inevitable consequence of competition stemming from the liberalisation of the use of leased circuits - Michael Beesley's argument (not surprisingly perhaps) had been that this was a price worth paying for innovation and lower prices in long distance services. However, when asked, Mercury was not at the time in favour of unrestricted resale of BT circuits which it saw as more of a threat to its business than an opportunity. Although Mercury subsequently changed it mind, BT remained dead against the possibility of further competition in voice telephony services - the evolving VANS regime was the result”. (Peter Gist).
getting. In BT’s case the concerns were the underpricing of shares at flotation, increases in profits afterwards (hence the need to increase X at the review), poor quality of service at one period (which was not directly regulated), and too rapid rebalancing (prices for residential users rose in real terms. In the utility sector generally there was resentment at the profits enjoyed by the companies and investors, the share price and salary increases, and the lucrative share options enjoyed by the directors.

Regulators of course had to deal with this. They did so by introducing markedly more severe RPI-X price caps and by promoting more effective competition, both of which gave customers an increasingly good deal. However, many people urged regulators to modify or abandon RPI-X, and to consider various forms of earnings sharing. It was said that if companies did earn unduly high profits, either through superior efficiency or perhaps through a price control set inadvertently laxly, this would enable customers to share in the benefits immediately rather than later, which would deflect criticism of the regulatory framework.

UK regulators generally saw more difficulties than advantages with this sort of approach. To some extent they felt that it was too late – the problem was associated primarily with price controls set by governments at flotation rather than with controls set subsequently by regulators. More importantly, it would be more difficult to implement such an approach than the proponents recognised. For example, rather than payment to customers being automatic, it would take time for the regulator to sort out the complex cost allocations potentially underlying the determination of profits. There was also concern that such an approach (a 50% profits tax?) would severely reduce incentives to efficiency, and undermine the principle on which UK regulation had successfully been based.

The US had no such previous history, and as noted many states did try earnings sharing schemes. But experience also showed some of the difficulties of earnings sharing there, and most of
these states moved on to price caps.\textsuperscript{21} I myself have recently examined developments in Florida, where there is a Consumer Advocate as well as a Public Services Commission.\textsuperscript{22} The Consumer Advocate found increasing difficulty in agreeing the level of the utility’s reasonable costs in an earnings-sharing regime. Eventually, he agreed with the utility to change the form of regulation to the sharing of revenues instead, and the Commission agreed. This change alone has led to significant immediate and continuing price reductions to customers. In effect, Florida (like many other US states) has arrived by a different route at a similar system of utility regulation as in the UK.

**Price caps and rate of return**

Economists have devoted many pages of journal articles to examining the relationship between price caps and rate of return. Jon Stern quotes my 1986 report as saying that rate of return considerations are necessarily implicit in RPI-X. Yet I wonder whether rate of return need have played as great a role in RPI-X as it has in fact done.

The purpose of the statement in my 1986 report was a limited one. The Department of Environment was worried that a permanent RPI-X regime might discourage the investment that was a central objective of the privatisation. My purpose in the section in which the cited words appeared was to reassure investors on this score. The regulator, in resetting X, would need to have regard to the fact that investors had other options available and would therefore need to ensure that the level of X offered a rate of return at least comparable to what investors

---

\textsuperscript{21} See the evidence above that the number of states with earnings sharing mechanisms grew from zero to 22 then fell back to one.

could get elsewhere (for a comparable risk and requirement to be efficient and innovate, etc).

When the time came for me to reset X in the electricity sector, I had to consider how to do this. Some regulators have been less concerned with the details of how X was calculated, and more concerned to find and propose the toughest value of X that they could. If the companies took time to agonise over whether or not to accept the regulator’s proposal, they regarded this as a sign that X had been set at the right level.

I myself was less attracted by this approach. I could see it had merits for a consumer advocate, but less so for a regulator with duties to balance the interests of consumers and investors. But neither did I at all like the prospect of introducing an explicit rate of return approach that I had been instrumental in trying to avoid.

I have mentioned elsewhere the alternatives we explored at Offer. Michael Beesley as economic adviser took the lead in seeking to develop a method based on future cash flows, profits, earnings and earnings growth, share prices and so on. But I found it difficult to accept that a regulator should be so explicit in determining or influencing share prices, for example. My regulation and business affairs director, Geoff Horton therefore sought to marry as much as possible of this ‘forward-looking’ thinking with a more conventional - or at least more explicable and defensible - approach incorporating a return on existing capital (we did not call it regulatory asset base while I was there!). Over time, this has led to the kinds of explicit (‘building block’) calculations that nowadays accompany the resetting of X in the utilities sector.

---

THE BIRTH OF RPI-X

The point I want to note here is the pressure on regulators to explain their calculations. Quite apart from any personal preferences of my own (and later statutory obligations), there were substantial pressures from investors and others leading in the direction of a more explicit rate of return approach in the electricity and water sectors.

First, in telecommunications and gas, the RPI-X control could plausibly be seen as temporary (both were potentially competitive sectors, with the competition to British Gas coming from electricity as well as other gas companies that could and did lay their own pipelines). The main constraint on investment policy could plausibly be seen as coming from the increasingly competitive market, not from a price cap. In contrast, in the network parts of electricity and water the RPI-X constraint was seen for all practical purposes as permanent. Consequently investors had to worry not so much about whether the companies had correctly judged the market, but about how the regulator would set and reset X.

Second, whereas BT and British Gas were the only RPI-X regulated companies in their sectors, there were a dozen such companies in the electricity sector and over 40 in water. These companies, and their managers and investors, were acutely conscious of their relative performance. In consequence, it was of the utmost importance to them to know the basis on which the price controls would be set. They needed to satisfy themselves that they had not been treated unfairly or discriminated against, they wished to explain to interested parties why the regulator had set these controls, and they wanted to position themselves as advantageously as possible for future reviews.

Both these factors meant that we could not have an informal unexplained basis for resetting X in the electricity and water sectors. We had to have an explicit method, and it had to be uniform across companies. A regulatory asset base seems to have become the most straightforward method. At the first price control reviews of the distribution companies, Offer may not
have explained the setting of X in as much detail in as some would have liked (though others were more concerned about the level of X). Nevertheless, I think the explanation was more explicit and more detailed than the previous resetting of X in telecommunications and gas, even though later price control reviews were much more explicit in all sectors.

But do we need to stay with this method of setting X for ever, or even with this kind of price control? There is great pressure for uniformity across companies in setting price controls, and this has disadvantages as well as advantages. For some time I have been suggesting that it might be possible for customer groups to negotiate directly with regulated utilities as to the levels of X. More generally, they could negotiate for whatever kind of control they prefer, whether on price or earnings or revenue, and with what basis of sharing and for whatever duration. Some of this is already happening in Florida, but that is another story. At least, as Jon Stern points out, the RPI-X approach developed twenty years ago in the UK has helped to open up the possibilities of innovation in the utility regulatory framework, as well as within the utility industries themselves.
THE BIRTH OF RPI-X
4 THE LITTLECHILD REPORT: PRICE CONTROL AND COMPETITION IN UK TELECOMMUNICATIONS

Martin Cave

Introduction

Stephen Littlechild’s path-breaking proposals for what became known as price caps (a more compelling name than his ‘tariff reduction scheme’) were – famously – first applied in the UK telecoms industry.\(^1\) He then devoted himself largely to other sectors, notably as Director General of Electricity Supply.\(^2\) But what has happened to the model and scope of regulation in telecoms in the twenty years since 1983? Has that period taken the course Littlechild apparently foresaw in 1983?

As the title of the report (1983) suggests, its proposals were designed to regulate BT’s profitability. In fact, Littlechild’s analysis recognised that “the main purpose of regulation is to protect domestic and small business subscribers against BT’s dominant market position”. Moreover, “competition is by far the most effective means of protection against monopoly” (paragraph 1.5).

The report also foresaw a diminishing role for regulation, and noted that “for the immediate future, BT’s market power does

\(^1\) Littlechild S (1983), Regulation of British Telecommunications’ Profitability, London, Department of Industry.

\(^2\) More recently he has returned to writing about telecommunications, but this time about mobile telephony – see below.
seem particularly acute in the case of rentals and local calls” (paragraph 6.11). When the tariff reduction scheme emerged as the winner in the report’s evaluation of options, it applied only to line rentals and local calls. Competition from Mercury was considered to provide adequate protection for national calls, combined with an anti-discrimination condition designed to protect users of routes where BT did not face competition.

Despite Littlechild’s desire to restrict price control to access lines and local calls, BT’s first price control covered national calls as well. Moreover, controls were introduced on leased lines, and in 1991 - on international calls; the latter being necessary, in Oftel’s view, in the light of the slow development of international competition except for large business customers. Table 1 shows BT’s retail price controls for 1984-2002, together with the percentage of BT’s business covered by price controls.\(^3\)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Price control</td>
<td>RPI-3</td>
<td>RPI-4 ½</td>
<td>RPI-6 ¼</td>
<td>RPI-7 ½</td>
<td>RPI – 4 ½</td>
</tr>
<tr>
<td>% coverage</td>
<td>49</td>
<td>55</td>
<td>67</td>
<td>64</td>
<td>22</td>
</tr>
</tbody>
</table>

A further major complication was supplied by the policy decision in 1984 to impose a separate constraint of RPI-2 on BT’s access lines. At the time, the line rental was significantly below cost, but a sharp increase would have harmed many households and been unpopular. The separate cap lasted for more than ten years, and continued indirectly thereafter. The resulting unbalanced tariff seriously affected the pattern of competition (households were not attractive customers), and had ramifications for wholesale prices.

Decontrol of retail prices only started in 1997, by deregulating prices for business and high-spending residential customers, and

\(^3\) Cave M (1997), The Evolution of Telecommunications Regulation in the UK, European Economic Review 41, 691-699.
took a major step forward in 2002. By 2001/2, BT’s share of lines had fallen to 82%, and of call revenues to 61%. But it was increasingly recognised that, in telecommunications, if competitors had access to network services at appropriately regulated prices, retail price control might be redundant, as competitors could buy, package and resell BT’s services. Accordingly the current retail price control is of a ‘safeguard’ nature – designed not to track costs directly, but to provide fall-back protection if competition fails to work.⁴ Oftel envisages that such competition in residential markets will increasingly take the form of the leasing by competitors of BT’s lines (the ‘wholesale line rental product’), and its resale to customers, together with calls supplied by the competitors. In the spring of 2003, firms such as Carphone Warehouse were attaching high hopes to such products.

We have therefore finally seen retail competition providing ‘protection over an increasing range of services,’ as predicted in 1983. One suspects this took place much more slowly than Littlechild contemplated in 1983. In the report, he did not discuss how price controls might be reset, although he did propose a review by the Monopolies and Mergers Commission after five years (paragraph 13.14).

Because the 1983 report focussed on retail price control, it failed to consider the issue of interconnection, wholesale or network prices on which controls in the UK now predominantly focus. Oftel first determined interconnection prices between BT and Mercury in 1985, on a fully distributed historic cost basis. In the 1990s network charges were re-determined on the basis of a forward-looking long-run incremental costs, for a much greater number of unbundled network services. In 1997 BT’s network charges control was recast in price cap form, covering about one half of network services – the remainder being seen as competitive. Amongst the price-regulated services, call termination is fundamental. It is argued that the caller, who pays for the calls, has no choice but to require her operator to buy

⁴ Oftel (2003), Protecting Consumers by Promoting Competition.
termination on the callee’s network. It is therefore necessary to regulate termination charges not only on the historic monopolist’s network, but on all networks. This provides the justification, on the ground of market power, for some form of regulation of all termination services under the new regulatory arrangements for electronic communications services coming into effect in Europe in July 2003.

What can we now make of the Littlechild Report and its impact on UK fixed telecommunications, with the benefit of 20 years’ hindsight? Other contributors to the volume discuss the role of the price cap in general, and I confine myself to expressing the view that RPI-X has been a remarkably effective policy instrument, even though the problems of maintaining it for long periods have been considerable. As for the development of competition in fixed telecommunications, the most notable point is that it took so long. The government’s duopoly policy, which limited the market to two firms, BT and Mercury, between 1984 and 1991, restricted competition in the early stages. But even subsequently the massive sunk costs involved in building networks have left competitors such as cable companies weakened, until recently fragmented, and facing powerful competition in both telecommunications and broadcasting markets. As shown in the last three years, when competitive networks throughout Europe have been hard hit, the growth of competition is not necessarily irreversible. People used to say that ‘internet time’ passed four times as quickly as ordinary time. ‘Fixed competition’ time has sometimes appeared to pass four times as slowly. Retail price deregulation has largely been achieved in the UK, but only after a long struggle.

Finally, the issue of termination charges comes up in Littlechild’s most recent contribution to the telecommunications debate, which deals with mobile telephony, among other subjects.\(^5\) What should be the response of regulators to the high

---

price of call termination on mobile networks, leading to expensive fixed-to-mobile calls in particular; this occurring in an industry with a fairly competitive (according to some, highly competitive) outgoing calls market?

Littlechild recognises the dilemma created by the fact that each mobile operator has a monopoly on call termination to its own customers, but argues that, if regulation is considered necessary, it should not be via a severe tightening of controls on termination charges, which would have long term disincentives to innovation and competition, and make it more difficult to remove controls in the future (p81). Instead he proposes action to increase competition in termination services, using new technological developments, and a non-discrimination approach which requires mobile operators to charge other operators no more than they implicitly charge themselves when terminating a so-called on-net call on their own networks. In other words, the price of such a call should at least cover the mobile termination charge paid by fixed operators and the operator’s other costs of providing an on-net call, including origination and retail costs.

The goal is to force the operator to lower its termination charge in order to keep its on-net call charges low. The risk, however, is that all operators if placed in a similar situation might choose instead to raise their on-net call prices rather than lower termination charges. In the event, the Competition Commission proposed the tightening of controls on termination charges impugned by Littlechild.\(^6\) As with the fixed sector, regulators in mobile telephony have maintained controls for longer than Littlechild expected or thought appropriate. Initial indications suggest that Ofcom, which takes over regulation of the sector in December 2003, may have more sympathy with Littlechild’s arguments for the earlier abandonment of price controls than Oftel has shown over the past twenty years.

\(^6\) Competition Commission (2003), Vodafone, O2, Orange and T-Mobile.
5 WHAT HAVE WE LEARNT IN UK UTILITY REGULATION OVER THE LAST 20 YEARS?

Stuart Goodwin

Introduction

Thank you for the opportunity to provide a contribution to this conference. I would like to briefly make a few points having had the benefit of working at Ofwat for the 1994 price review and at Thames Water for the 1999 and now the 2004 reviews.

Regulation works

My first point is that the incentive based model of economic regulation has widespread support from government regulators and the regulated. This is quite an achievement and is in part due to how it has been implemented. In practice, we have a hybrid of yardstick regulation and rate of return regulation. In the fourteen years since privatisation the water industry has been transformed:

- water of record quality is supplied to 99% of the population;
- a huge environmental programme has been successfully delivered;
- around £50bn of investment will have been made by 2005;
- service levels have been transformed;
- companies’ costs have tumbled as efficiency has improved.

As Sir Ian Byatt identified in his final speech as director general of Ofwat:

Stuart Goodwin, Economic Regulation Manager, Thames Water
“Over the 15 years (to 2005) the annual average household bill will have risen by some £38. Quality improvements will have accounted for an increase of £99, while other improvements and the growth of supply will have accounted for an increase of £22. Offsetting these, efficiency improvements will have accounted for a decrease of £83”.

However, some might say that, given the loss of investor confidence in water shares, not all of this decrease resulted from genuine efficiencies, but was part of a smash and grab raid by the regulator in the 1999 price review. So, not everything in the regulatory garden is wonderful and I would like to pick out five examples of lessons for the future. These comments should be seen in the context that regulation has worked well, but that is not to say we cannot make it better.

Regulatory complexity

In their enquiries into the 1999 water price review, the Competition Commission suggested the regulatory regime had become too complicated. “Precision is disproportionate to the degree of estimation required”. They proposed a simpler regime. For the current price review, we seem to have ended up with a shorter process but a more onerous one, both for companies and for the regulators. Companies effectively have to submit three business plans in August of this year and a final plan in April 2004 – several tens of thousands of numbers in prescribed tables.

The regulator’s normal response to a challenge of his approach by companies is to ask for more data. Aspects of the regime are never dropped but just made more complex. Companies, too, are guilty, as their response to losing out, due to regulatory discretion, is to want everything pinned down – usually requiring more data. We seem to be in a downward spiral of more and more detail and more and more complexity. My plea, therefore, is for a radical rethink, after the current price review, to get back
to the original concept of light touch, incentive based regulation, which is hands off between review periods, to enable companies to concentrate on delivery.

Incentives

We have an incentive based regime, but as that regime has become more complex, these incentives have been blunted. Some incentive mechanisms are so complicated or are insufficiently clear or change retrospectively that companies are not sufficiently influenced by them. Examples include:

• The treatment of capex spend in both 1994 and 1999 meant that many companies made legitimate business decisions to invest, only to find that spend was capped retrospectively and does not earn a return – ever.

• Some incentives are inadequate. For example, current mechanisms offering incentives for outperformance of regulatory assumptions mean that companies benefit for the first 5 years then outperformance is returned to customers. Customers receive 80% of the overall benefit. The 20% company share provides inadequate incentives as the savings become more difficult to achieve. If the regulatory allowances are set too low, there is no incentive only a stick; 20% of nothing is nothing. Even a 100% share of nothing is nothing.

• Some incentives are perverse. The overall performance assessment is a weighted basket of service measures, which can be used to make price adjustments for the best and worst performing companies. But its incentive properties are weak. There is no certainty that any price adjustments will be made, because the assessment is relative not absolute. It also gives companies the incentive to improve the cheapest measures,
UK WATER REGULATION

which are generally those which customers are not willing to pay for and do not value.

My plea, therefore, is for much greater recognition of the incentive properties of the regime:

- in the outperformance mechanism;
- in setting efficiencies on expenditure allowances;
- and with greater clarity and transparency and no retrospection.

I am pleased to see increasing recognition of this issue by Ofwat.

The regulatory regime

As the regulatory regime develops, the scope for change should lessen. We should have greater regulatory stability with less regulatory risk. But there seems to be a five year lag in the development of the regime. Looking back at both the 1994 and 1999 reviews, then:

- Ofwat makes proposals for change;
- companies make representations on unsatisfactory aspects;
- Ofwat has generally maintained its position once it has gone public;
- the Competition Commission and others comment in their post review enquiries;
- companies repeat their representations;
- Ofwat’s approach changes for the better for the next review, ie, five years too late.

Some examples include:

- the backward not forward looking approach to maintenance funding – famously described by the Environmental Audit Committee as ‘intellectual neglect’;
• ‘Growth in demand is self-financing’ – but not when most customers do not pay by volume;
• ‘Leakage reduction to the economic level is self-financing and should not affect customers bills’ – some leakage reduction may be cheaper than building new resources, but it is not free and must be paid for;
• depreciation allowances capped at forecast expenditure levels – now accepted that capping is not valid where companies’ assets are not in steady state.

These are not the only factors that have led to a climate of mistrust:

• investors don’t trust the regulatory process;
• the regulator does not trust companies;
• companies do not trust the regulator.

It has also led to cries of gaming on both sides. Again we have a downward spiral, which needs to be broken.

I have to say that in the current review there is some evidence of a willingness to work together to break this downward spiral and a willingness to improve the regulatory methodology before the numbers handle is turned, not after it. My plea, therefore, is continued cooperation between the regulator and the regulated to develop a regime, with the aim of creating a world-class sustainable water industry, which will provide best value to customers now and in the future. The industry is too important to both the UK public interest, and increasingly internationally, to be part of a complex regulatory game of seventeen dimensional chess with a bit of poker thrown in for good measure.
UK WATER REGULATION

Regulatory risk

One of the findings of a recent investor survey undertaken by Water UK was that regulatory risk is perceived to be the biggest business risk faced by water companies. It is a major factor in the current loss of investor confidence. Some of the key aspects of regulatory risk are the judgements made at price setting, not just on the headline cost of capital but also on capex allowances, efficiencies, depreciation allowances and the like. An increasing factor in the future will be uncertainties and how these are dealt with:

- at price reviews;
- between price reviews;
- at the following price review.

Examples include:

- the Water Framework Directive;
- lane rental;
- rating revaluation;
- discharge licences;
- lead pipe replacement.

All these factors are material to companies’ prices.

Current mechanisms for dealing with uncertainty include interim determinations, logging up, and ultimately the shipwreck clause, but these are not comprehensive and leave a gap to be funded in the cost of capital, though no specific allowance for regulatory risk is proposed by Ofwat. My plea, therefore, is for a clear transparent mechanism for dealing with change which demonstrably enables companies to finance their functions but which treats companies equitably and consistently. I am not convinced that leaving this in an industry wide cost of capital achieves this as companies are affected differentially by these factors.
Appeals against regulatory judgements

The Better Regulation Task Force (BRTF) report on the Economic Regulators supported companies’ view that appeals to the Competition Commission are a ‘nuclear option’. Judicial review is too limited to be an effective remedy. This view is supported by the fact that only two companies appealed against the 1994 water determinations and only two more against the 1999 determinations. There has been a similar lack of appeals in the electricity industry.

In response to the BRTF’s concerns, Water UK, the Electricity Association and Lattice Group commissioned a study by Oxera and Norton Rose on ways of improving appeal rights relating to price reviews and other regulatory decisions. The final report made a number of very sensible proposals and these have been widely publicised. My plea therefore is:

• for a clear escalation process within Ofwat for appeals both on methodologies and on decisions;
• that, during and after a price review, there is a more streamlined appeal mechanism to an independent body on Ofwat’s methodology and decisions;
• on other regulatory decisions there is scope for appeal on the merits of the case (not the current limited grounds);
• there are amendments in legislation to secure these improved appeal rights.
6 THE FUTURE OF RPI-X AND THE IMPLICATIONS FOR UTILITY INVESTMENT IN THE UK

Chris Bolt

Introduction

“Practice, which is evolving rapidly, continues to outstrip theory”.2

As someone who has been closely involved in the development of regulatory practice for at least 15 of the 20 years since the Littlechild report, I find it hard to argue with David Newbery’s assessment of the way in which regulation has developed. The textbooks tend to rationalise practice, rather than guiding it.

In saying this, I am mindful of Keynes’ warning that “Practical men, who believe themselves to be quite exempt from any intellectual influences, are usually the slaves of some defunct economist”.3 However, I believe that there has been a clear intellectual framework underpinning emerging practice in UK utility regulation. And I certainly do not want to imply that any of the eminent economists involved in developing it are ‘defunct’!

1 These are the personal views of the author, and should not be taken as an indication of the basis on which he will exercise his functions as PPP Arbiter.

Chris Bolt, PPP Arbiter
So what is that framework? Has it developed to a point where there are no further intellectual issues to be resolved? And if, as I shall argue, it has not, how might it evolve further to ensure that the investment which is widely seen as necessary to modernise utility networks is funded and delivered efficiently?

Practical experience of RPI-X

The ‘popular’ view of the Littlechild Report on BT was that it introduced a new form of regulation (price control as opposed to the US approach of rate of return regulation), and that this has formed the basis of UK utility regulation. As discussed below, this view is too simplistic – and not least because the extent (and duration) of price control for BT was more extensive than envisaged by Littlechild himself. But the view has underpinned much of the debate about the operation and effect of RPI-X over the last 20 years.

The merits of RPI-X are easily summarised, as for example by Beesley and Littlechild in their 1989 review article. In essence:

- it is less vulnerable to ‘cost-plus’ inefficiency and over-capitalisation;
- it allows greater flexibility for company to adjust prices within the basket (and no control outside basket);
- it is simpler to operate by the regulator and company.

Once adopted for BT, an RPI-X form of control was adopted for all major subsequent privatisations, but increasingly becoming in effect a control on total revenue rather than a basket of prices. For the water industry, for example, privatised in 1989, the so-called tariff basket effectively controlled almost all the revenue of the licensed utility business.

As it become the key element of the regulator’s toolkit, it is not surprising that RPI-X also became the focus of criticisms of
regulation. As the 1990s progressed, there were a series of enquiries and reports on regulation, culminating in the utility review announced by the president of the Board of Trade, Margaret Beckett, very soon after the Labour government returned to office in 1997. At the heart of that review was the concern that regulation had not been as effective as expected, at least in the distribution of the gains. Industrial customers and company executives were seen as having benefited at the expense of domestic consumers. Taken together with concerns about what many saw as the opaque nature of regulatory decision-making and the increasing personalisation of regulation, some commentators suggested that there was a crisis of legitimacy, requiring fundamental overhaul of both the institutions and practice of utility regulation in the UK.\(^4\)

The outcome of the 1997 review was, perhaps surprisingly, limited in the changes it introduced. Indeed, in respect of the regulatory framework overall, the resulting legislation did little more than establish an authority in place of a director general in gas and electricity, with some changes to its statutory duties.\(^5\) In particular, there was an endorsement of RPI-X: “\textit{RPI-X price regulation provides strong incentives to efficiency. We do not therefore see a case for moving away from RPI-X as the basic system of regulating prices}”\(^6\) (DTI 1998).

So although regulators regularly assess the merits of RPI-X against other forms of control at each price control review,

\(^4\) This reached its peak with the BG price review in 1996 and 1997, which gave rise to claims by the company that the regulator, Clare Spottiswoode, was undertaking ‘the biggest smash and grab raid in corporate history’.

\(^5\) During the passage of the Bill, the water and telecoms sectors were removed from its scope; rail was never included. Given that subsequent legislation has not brought the duties of other regulators into line with those applying in energy, the Act has arguably increased regulatory uncertainty – the opposite of what was intended.

\(^6\) This conclusion was however qualified by adding the proviso “\textit{if this is the system regulators choose in future}”. DTI (1998), A Fair Deal for Consumers: Modernising the Framework for Utility Regulation, Department of Trade and Industry, March.
equally regularly the merits of RPI-X are restated. But in reality, Littlechild’s 1983 model of a simple control of a relatively narrow basket of prices has changed almost out of recognition. Modifications considered have included:

- making more extensive pass through arrangements, moving close to a rate of return control;
- supplementing or replacing price controls with profit sharing arrangements or with market mechanisms to determine allowed revenue;
- using specific price indices rather than a general RPI index (or conversely using the GDP deflator as a more appropriate measure of general prices);
- modifying the balance between ‘tariff basket’ and ‘revenue yield’ aspects of the price control formula;
- changing the scope of the control – either to widen it (as with international call charges for BT) if the initial scope is considered too narrow, or to narrow it as competition develops;
- changing the duration of the control, to improve the balance between medium term incentives and perceived equity;
- supplementing the price control with incentives to improve service standards, as with the information and incentives project in Ofgem;
- modifying the arrangements under which additional efficiency savings are passed back to consumers.

The Annexe to this chapter reviews some examples of developments in regulatory practice in respect of RPI-X.

---

7 Again, the water industry is a good case study. Price limits were initially set for 10 years, with the option for either party to seek a review after five years. This was changed in 1999 to a fixed five year period. Now, as part of the 2004 review, Ofwat is consulting on extending the control to 10 years.
So what’s the intellectual framework?

These changes take the RPI-X formula a long way from both the form and intention of the control on local telephony charges proposed by Littlechild in 1983. While the changes are generally in the direction of rate of return control, this is not the case with them all.

As discussed elsewhere in this volume, Littlechild’s 1983 report on BT did not consider the mechanics for re-setting price controls. Indeed, in another 1983 paper, he and Michael Beesley explicitly recognised that in potentially competitive sectors RPI-X was best seen as a one-shot game:

“[RPI-X] ‘holds the fort’ until competition arrives, and is inappropriate if competition is not expected to emerge. It is a temporary safeguard, not a permanent method of control. The one-off nature of the restriction is precisely what preserves the firm’s incentive to be efficient … Repeated ‘cost-plus’ audits would destroy this incentive and, moreover, encourage ‘nannyish’ attitudes towards the industry”.

But what about those sectors – particularly utility networks – where competition was unlikely to develop quickly, if ever? By 1989, prompted no doubt in part by Michael Beesley’s involvement in water privatisation as economic adviser to the Secretary of State for the Environment, the assessment was extended to consider these situations.

“Where there is less prospect of a shift in technology and only one firm in the industry, as with the electricity and gas transmission grids, … the grounds

---

THE FUTURE OF RPI-X

for preferring RPI-X are least strong … In water, gas and electricity distribution, there is a strong reason for preferring RPI-X initially [but] in practice an RPI-X regime may gradually become indistinguishable from that of rate-of-return regulation”.

So the idea that RPI-X for network utilities was a form of forward-looking rate of return regulation was already present by 1989. That is not to say that it is – or will at some point become – indistinguishable; so long as a significant part of revenue is the outcome of a medium term assessment, rather than more frequent pass-through arrangements, the two models will be distinct. So the framework adopted by UK regulators in practice appears to have the following features:

- defining potentially competitive markets and withdrawing from price regulation;
- using comparators for regional monopolies – with an associated framework for assessing mergers;
- improving market incentives to determine the appropriate outputs for national networks, and perhaps most importantly, if price control and rate of return regulation are not to become indistinguishable;
- developing clear principles for risk allocation within an ex ante rate of return model for networks.

Unresolved issues

At first sight, such a set of principles appears straightforward. But if this is true, why is there still so much discussion – and disagreement – about whether regulation is delivering the public interest benefits expected of it?

---

The limits to competition and markets

One important area of dispute surrounds the circumstances under which competition can be relied on to protect consumers, allowing price controls to be removed. Ofgem’s decision to remove all supply price controls for gas and electricity from April 2002 was, for example, strongly criticised by the consumer body energywatch for failing to protect the interests of groups such as those using pre-payment meters. However, as Callum McCarthy has said very clearly in defending Ofgem’s position, “there is an unrealistic view that competition should make everyone a winner”.\textsuperscript{10}

Leaving aside this disagreement about the tests to be used in determining whether competition in a market is effective, there are more fundamental differences of view about whether regulation should promote competition in all circumstances or whether there should be some sort of cost/benefit test to determine whether (to use the phrase introduced into the rail regulator’s statutory duties by the 1999 Transport Act) competition is “for the benefit of users”.

With that sort of test, there could be a number of arguments against promoting competition in certain markets.\textsuperscript{11} For example, the costs of ensuring effective competition may be high. Markets may require extensive monitoring and enforcement of conduct to ensure that market power is not abused – which may of itself undermine the operation of that market. Efforts to prevent mis-selling in energy supply, and Ofgem’s attempts to introduce the market abuse licence condition (the ‘good behaviour’ clause) for electricity generators are two instances of situations where there have been doubts about the effectiveness of general competition law to protect

\textsuperscript{10} McCarthy C (2003), interview with Callum McCarthy, Financial Times 31 March.
\textsuperscript{11} The experience of the bus industry after deregulation in the 1990s is one obvious example.
against abuses, but equally concerns about introducing stricter competition tests into licences.

On the benefits side, competition in one market may reduce consumer benefits in a related market. For example, some have argued that the promotion of metering competition in gas and electricity as an end in itself removes incentives on suppliers to develop ‘smart meters’ which may bring significant consumer and environmental benefits in terms of overall energy use.\(^{12}\) In the absence of an agreed analytical framework for this question, it is perhaps not surprising that government has stepped in – for example in proposing statutory limits on competition in the water sector.

Another area where the analytical framework remains unclear is in respect of mergers. While there are specific statutory provisions covering water mergers, which attach particular weight to the ability to use comparisons in setting price limits, this is not the case for energy distribution companies.\(^{13}\) So although Ofgem has developed a non-statutory ‘tariff’ of revenue reductions to be applied when distribution companies merge, the implied regulatory penalty from losing a comparator in electricity (where the number of comparators is already less than in the water sector) is an order of magnitude smaller than that implied by Ofwat’s assessment. Both cannot be right.

There are also questions about whether market mechanisms can be relied on to bring forward the appropriate level of investment in networks, in particular to ensure that energy networks provide

\(^{12}\) Similarly, measures to make it easier to switch supplier are claimed by some to be undermining the development of ‘energy services’ offerings by suppliers, because of the inability to protect any up-front investment by requiring consumers to enter into a medium term contract.

\(^{13}\) The origins of this policy lie in the advice given by Michael Beesley at the time of water privatisation. Beesley M (1988), Mergers and Water Regulation, in Privatisation, Regulation and Deregulation, Michael Beesley (ed), Institute of Economic Affairs, 1992. It is worth noting however that Beesley’s rationale for the restrictions on water mergers was rather different to that finally incorporated in the legislation.
sufficient capacity to support security of supply.\textsuperscript{14} Although it is too early to draw firm conclusions on the basis of actual operation of the auctions, early signs are that they do not provide meaningful longer term signals to inform investment plans, although they clearly do provide the basis for shippers to contract for capacity on a longer term basis for part of their requirements.

\textit{Regulating network monopolies}

Even for the network utilities where ex ante price/revenue regulation is seen as a long-term feature, there are continuing technical disagreements about the appropriate basis for calculating controls – even though there is now broad agreement on the appropriate building blocks. Prompted also by a desire to respond to criticisms about lack of transparency, regulators have developed a much more detailed statement of their approach to setting price limits.\textsuperscript{15}

One consequence of this is that there can be unintended (and sometimes un-noticed) differences of approach between individual regulators. While consistency (either over time or between sectors) is not an end in itself, some of the differences seem hard to rationalise, and clearly affect the assessment by investors of the riskiness of investment in the different sectors.\textsuperscript{16} For example, aspects of recent price control reviews where there have been differences of approach between different regulators,

\textsuperscript{15} For example, Ofwat’s Framework document for the 2004 Periodic Review, Ofwat (2003), Setting Water and Sewerage Price Limits for 2005-10: Framework and Approach, 27 March 2003, identifies 57 ‘key issues’ where it has considered changes to the methodology used at the previous review.
\textsuperscript{16} Particularly notable in this respect was the decline in the share price of the Lattice Group when, as part of the 2002 review of Transco’s price control, Ofgem consulted on whether to adjust the regulatory value – with the recovery when it announced its decision to maintain the previous value.
or between the sector regulator and the Competition Commission on appeal, include:

- the rules for rolling forward the regulatory asset base, and the formality of any procedures for ‘logging up’ (and down);\(^{17}\)
- the basis for determining the level (and accounting treatment) of capital maintenance;
- assessment of the ‘common’ components of the capital asset pricing model, such as the risk free rate and risk premium;
- handling of additional efficiency savings – in respect of opex and capex – in price controls for the subsequent period.\(^ {18}\)

More fundamentally, the different bases on which cost allowances are set demonstrate that there is no consistent framework for trading off the desire to maintain incentives to deliver promised outputs and to continue to increase efficiency and the effect this has on the cost of capital. Thus the allocation of risk between companies and customers seems on occasions hard to rationalise in terms of a cost benefit test.\(^ {19}\) As discussed below, this has obvious effects on investment. Failure to treat the level of operational risk as an output in its own right also means that on occasions cost savings do not reflect efficiency but increased risk.\(^ {20}\)

\(^{17}\) Otherwise known as the regulatory value or regulatory asset value. Regulators and companies apparently cannot even agree on the terminology!

\(^{18}\) Disagreements between companies and their regulator cannot, for obvious reasons, be regarded in the same light!


\(^{20}\) As shown for example by the Camelford incident in the late 1980s, when the reduction in manning levels at water treatment works contributed to chemicals being added incorrectly to drinking water supplies.
**Handling multiple objectives**

The unresolved issues considered so far might be regarded as essentially ‘technical’ – best left for economists to resolve. But this would perhaps be unrealistic, in part because the disagreements are in some cases not about the economic analysis but about objectives. For example, are decisions on tariff structures about efficient incentives (on companies and consumers), and therefore for regulators to determine as part of their review of price controls, or a matter where social considerations are relevant?  

For some, there was little doubt that regulation had multiple objectives. For example, Dan Corry argued as early as 1994 that:

“There will always be good reasons for retaining regulation … Because we are explicit about having multiple objectives, it is very unlikely that one policy instrument – a price cap for instance – will be sufficient … Regulation must remain ever-alert and ever-changing”.  

Given a multiplicity of objectives, it is tempting to suggest that complaints about regulatory process and the failure to give reasons for decisions are more about disagreement on objectives (sometimes implicit rather than explicit) than anything else.  

But while there is little disagreement about the right – and indeed [21 As early as 1990, Ofwat recognised the tensions, suggesting that the relevant criteria for developing charging policies in water included incentives, fairness and comprehensibility, Ofwat (1990), Paying for Water: A Time for Decisions.  
23 A good example was in the Prime Minister’s foreword to the energy review in 2002, where he indicated that “securing cheap, reliable and sustainable sources of energy supply has long been a major concern for governments”, PIU (2002), The Energy Review, Performance and Innovation Unit, Cabinet Office, February.
THE FUTURE OF RPI-X

duty – of an elected government to determine policy, or of the importance of regulators remaining independent if private finance is to be tapped to fund investment, it has been far more difficult to develop a governance model which incorporates these features. Either regulators are seen as ‘too’ independent, or ministers are seen as intervening in ‘operational’ matters.24

The implications for investment

Failure to resolve fully these technical and policy issues has a potentially significant impact on investment in UK utilities. At the very least, it increases the financing cost of investment; at worst, it results in under-investment – which is likely to impose costs on consumers in terms of reduced service standards which exceed the financial costs of modest over-investment.

Reasons why this might be so include the following:

• the specification of the outputs to be delivered under the ‘regulatory contract’ may be incomplete; companies may therefore be unclear whether investment will be allowed in the regulatory value set at the next review;

24 In his most recent publication Corry D (2003), The Regulatory State: Labour and the Utilities 1997-2002, Institute for Public Policy Research, Dan Corry himself recognises that the interaction between government and regulators “has only recently begun to be properly confronted”, and that “in truth it has to be a bit of a messy relationship: it needs intelligence and understanding on both sides”. The point is also considered by John Swift (2003) in his Memorandum to the House of Lords Constitution Committee, “A regulator who takes no account of Government wishes or concerns as to the future of ‘his’ industry is acting irresponsibly. Regulatory independence is not tainted by discussion or consultation with government: rather it is enhanced through greater knowledge of the concerns of those elected to represent the public”.

76
because capital assets have a long life, but returns are set on a period-by-period basis, there is uncertainty about long term remuneration;

in particular, as market mechanisms and incentive arrangements are extended, there may be a lack of clarity about which investment is funded from market revenues and which is funded through a traditional price control;

the allocation of risks between companies and customers is unlikely to be completely specified;

the basis on which regulators assess allowed returns on capital may not adequately reflect the terms on which capital can be raised from the financial markets.

The potential mismatch between the basis on which regulators determine allowed returns and the criteria used by financial markets in assessing alternative investment opportunities is perhaps the most important factor affecting future investment in utility infrastructure. This is all the more significant given the sizeable investment programmes required in energy, water and telecoms to modernise existing networks.

The most obvious difference is the emphasis placed by regulators on the capital pricing asset model (CAPM), and the greater emphasis on financial indicators by investors and rating agencies. Even within CAPM, there are still differences in approach between regulators on some of the ‘common’ parameters, such as the risk premium. There is also no clear analytical framework for assessing the risk characteristics of different regulatory regimes and objectively assessing the impact this has on the beta (the overall measure of risk) for the company or industry in question. There seems perhaps to be more consistency between allowed returns on capital than might be expected given the difference in, for example, the scope and definition of mechanisms to adjust price limits between reviews in the different sectors and the implications this has for the risk being
THE FUTURE OF RPI-X

borne by investors. For example, while Ofgem has indicated its willingness to consider ‘in-period’ price control adjustments for major cost shocks (most specifically in the comfort letter it sent to Transco at the end of the most recent price review), the fact that it is not bound to do so in the same way that Ofwat is through the interim determination mechanism of itself adds to uncertainty. Although this may be diversifiable risk in CAPM terms, there seems little doubt that investors take account of such factors in assessing the merits of investment in different utility sectors and companies.

Problems are increased by the trend towards highly geared structures in the water sector. This emphasises the tension between using ‘optimal’ financing assumptions – treating variances from this optimal position as reflecting differences in financing efficiency on the part of different companies – and the need to address financeability directly. Differences in the approach to tax by different regulators is one manifestation of this issue. A key question, yet to be properly answered, is how regulators trade off the apparent short term ‘efficiency’ in capital structures which results from gearing up against longer term robustness. Unless RPI-X is to transform into ex post rate of return control, this issue will need to be addressed consistently if access by companies to capital markets is to be on a level playing field.

Whatever assessment a regulator may make of the longer-term optimal gearing of a utility, individual companies cannot disregard short term market sentiment. A different example concerns the use of indexed forms of long term debt – an apparently sensible approach by utilities whose incomes are also indexed. But the experience of BG Group in 1999 showed very clearly that, whatever the theoretical attractions, market appetite for this sort of funding is limited. Initial plans to borrow an additional £1.5bn (to increase gearing to a still modest 55% or so) in indexed form had to be changed, with acceptable pricing only being available for £0.5bn in that form. The remainder was raised in fixed and floating nominal terms.
Regulators rightly start from economic models of appropriate returns and a desire to maintain medium term incentives through an ex ante form of rate of return control. But unless they can develop financial frameworks which bridge the divide with investors’ desires to understand and control risks, the result will either be inadequate investment or financial structures which may turn out to be unsustainable. The utility sector has shown that, with an equity buffer, ownership and management changes can occur where a particular company faces difficulties. But the market for corporate control may not operate effectively once companies are highly geared, with extensive covenants and other controls imposed by lenders. Without the access to public funding available to Network Rail, the consequences of financial shocks on investment and customer service could be severe.

Possible future developments

If, as argued above, regulation of the network utilities in practice has multiple objectives, it is fundamental to establishing a sustainable regulatory framework that there is an effective means of determining and articulating those objectives. There is a real sense in which privatisation switched funding from public to private sources, but left key decisions on the development of the utilities in the public sector – whether in London or Brussels.

But while the continued need for a public policy framework for the key infrastructure networks is generally accepted, this is sometimes seen as pointing to a division of responsibility between government and regulators in terms of policy and delivery. In reality this is too simplistic. If an attempt is made to make a rigid divide between policy and delivery, the risk is that even more unsatisfactory outcomes will result – as perhaps has occurred with the banning of disconnections for non-payment of water bills, or the statutory restriction on the extension of competition.
THE FUTURE OF RPI-X

So, if it is accepted that the key utility networks are inevitably public-private partnerships, and that regulation has multiple objectives, how might the framework develop in future? Without making any firm predictions, developments in three main areas would seem to be needed:

- revised institutional structures which recognise the legitimate role of government in establishing policy frameworks and, for essential networks, some service standards. This may be accompanied by changes in the role of consumer bodies, and a narrowing of the focus of the regulators to questions of efficiency and financing;

- greater alignment of the analytical framework for assessing competition in utility markets and other markets, with a presumption of competitive delivery of services and merger tests which are consistent across sectors – which will also require some alignment in approaches to determining efficiency targets for monopoly networks;

- more explicit consideration of the costs and benefits of different risk allocations and of changes in the scope of incentives to improve performance.

Taken together, developments in these three areas could have significant implications for both the cost of capital and basis of opex and capex allowances in future price controls.

Some initial comments on the LUL PPP

Although this is not the place to assess the London Underground Public-Private Partnership (LUL PP) agreements in any detail, it is perhaps worth considering how far the form of those agreements avoids some of the problems identified above, both in terms of the incentive structures and funding structures.
The key features of the PPP agreements are:

- a 30 year contract;
- 7½ year periodic reviews to re-set the charges based on the concept of costs incurred by a ‘notional infraco’ – one that operates in an ‘efficient and economic manner’ and ‘in accordance with good industry practice’;
- enforcement of delivery through normal contractual channels;
- an independent arbiter to give guidance on any aspect of the contracts and to determine specific disputes in respect of the key funding arrangements, on the basis of ‘public interest’ duties set out in legislation.

A number of the provisions represent alternative ways of dealing with the regulatory issues considered in this paper. These include:

- a clear emphasis on whole-life asset planning through a long term, output based contract;
- with a single buyer (London Underground), the use of normal contract enforcement mechanisms to ensure delivery of outputs, with modifications to planned outputs also dealt with through the contract;
- performance incentives which are intended to reflect passengers’ valuation of service failures;
- an independent arbiter to deal essentially only with the financial aspects of the contract.

On the other hand, many of the regulatory issues discussed above remain, and the differences with other utility sectors may be less significant than at first sight appears:

- long-term rolling licences also incentivise long term planning, without the problems of a fixed contract period;
- the existence of periodic reviews in the PPP means than there is still a need to balance short and long term incentives;
- inability to assess all risks means that there is also a need for an ‘extraordinary review’ process;
THE FUTURE OF RPI-X

- the approach to assessing whether Infracos are performing in an economic and efficient manner raises many of the same challenges as for traditional utility sectors;
- the possible need to raise additional finance emphasises the need for consistency across all infrastructure industries in assessing financeability and returns.

So while there are features of the PPP agreements which are worthy of further consideration as possible developments of the framework for other utility networks, they do not solve all the problems outlined in this paper. We can expect that practice will continue to evolve; and it is premature to write the definitive textbook on how to regulate.
Some examples of developments in the RPI-X framework

The tariff basket for water companies

In the case of the water industry, the initial definition of the tariff basket sought to address the problems created by the two very different bases of charging in the industry – by reference to the former domestic rateable values and by volume – and the expected trend towards metering. But the way this was done produced the odd result that, with certain not implausible assumptions about switching, every individual tariff component could be increased at a rate greater than allowed by the headline price control, and the company would still be compliant with that control. Needless to say, this did not add to the credibility of the control with consumer groups or local politicians!

Changes were made to the formula to remove this anomaly. But as a result, the control failed to deal so well with the implications of voluntary metering programmes, which at the 1999 review were then made a ‘notified item’, and a possible basis for interim adjustment of the K factor. Subsequently, a number of companies sought such interim adjustments when the assumptions made at the time of the periodic review turned out to be incorrect.

There was, therefore, a trade-off between the credibility of the formula and the extent to which it could deal with changes in assumptions between five yearly reviews; the outcome was to move further towards a rate of return approach with increased interim adjustments.25

25 Ofwat propose to extend this further at the 2004 review, by making the operation of this ‘notified item’ symmetrical.
THE FUTURE OF RPI-X

Another change to the formula, arguably more consistent with the original Littlechild model, was to exclude certain large user tariffs where these were introduced as a reason to competitive pressure. Previously, any reductions in charges to large users could be recouped by increasing charges to captive consumers.

**Regulatory commitment: Railtrack**

Much has been made of the limitations of the five year review period adopted for most price regulated utilities, and the impact this has on long-life investment decisions. Companies have argued that the absence of any regulatory commitment undermines their ability to commit to long-term investments, even if these have been implicitly endorsed at the time of the previous price review. For their part, regulators point to their inability to ‘fetter their discretion’ by giving longer term commitments.

Although a Railtrack example is perhaps not ideal to illustrate how practice has developed, the Office of the Rail Regulator did give Railtrack a written indication of the approach that it would be minded to adopt in respect of specific major investments for a fifteen year period. While this was not an absolute commitment, it was sufficiently bankable to be referred to in Railtrack’s flotation prospectus. It is perhaps ironic that a legally qualified regulator should be prepared to fetter his discretion in this way, when economist regulators have generally not been willing to do so.  

---

26 Thameslink 2000 and the West Coast Main Line upgrade.  
27 John Swift QC. In his recent evidence to the House of Lords Constitution Committee, for its inquiry into regulatory accountability, Swift noted that “A number of regulators felt themselves constrained that they could not say anything before they took a decision. Usually they had taken some very bad legal advice about fettering their discretion: “We cannot say anything in case it fetters our discretion”. That would be worrying too much about fettering of discretion” (Swift 2003).  
28 The only other example of which I am aware was by Ofwat in respect of specific IT investment by North West Water.
Such a development introduces a longer term element into price controls. But while this may assist efficient longer term funding for well developed projects, it clearly does nothing to help promote efficient investment if the underlying costings are as poorly developed as were Railtrack’s.

**Improving service delivery: targets, incentives and penalties**

From the early days of RPI-X, there were concerns that price control might encourage cost cutting at the expense of service delivery. So it is not surprising that regulators have developed service measures to sit alongside price controls. In some cases, these have been made an explicit part of the regulatory ‘contract’, with price control adjustments where service levels fall well below those assumed in setting prices – as for example happened with Yorkshire Water during the drought of 1996. In other cases, separate enforcement action has been considered to remedy perceived defects in performance, in particular where the service failures amount to licence breaches.

More recently, Ofgem has incorporated financial incentives into electricity distribution company price controls, with a small amount of revenue dependent on whether a company’s performance exceeds or falls short of the industry norm. However, given that there is no explicit link between the size of the financial incentive and either the costs to the company of changes in service standards or the consumer valuation of those changes, and the difficulty of observing how behaviour has changed in response to the incentives, it is too early to judge the effectiveness of this approach.

---

29 These concerns first came to a head around 1987 in respect of the number of BT’s public telephone boxes that were out of order at any one time.
THE FUTURE OF RPI-X

Determining investment levels

Particularly over the past few years, there has been widespread criticism of RPI-X as encouraging ‘asset sweating’ and failing to give adequate incentives to investment. At the same time, Ofgem in particular has sought to develop alternatives to the traditional ‘planning’ approach to determining investment in network capacity, based on auctions to determine market demand for capacity.

For example, the most recent price control for Transco’s national transmission system introduced long term auctions for entry capacity, with associated financial incentives on Transco to provide additional capacity where the auctions revealed demand for it. Ofgem also extended the existing short-term incentives in respect of the system operator functions to cover Transco’s own costs. These system operator incentives are based on sharing variations from a target level of costs between the company and customers, subject to caps and collars. These developments were described by Ofgem as “an important development in the RPI-X form of price control” – claiming at the same time that they would benefit all parties.30

---

7 WHAT WE HAVE LEARNT: A COMPARATIVE PERSPECTIVE OF WATER AND RAIL

John Smith

Introduction

This paper compares the experience of privatisation and the UK model of regulation in two sectors – water and rail. The two sectors share a number of similarities:

• both were unpopular and contentious privatisations at the time;

• companies in both sectors have remained network monopolies with limited introduction of competition – despite the stated intentions of the government;

• both industries have been used to pursue the government policy goals

However, a decade or more after privatisation, perceptions of the success of privatisation and regulation in the two industries are very different.

Water has successfully delivered a £50bn capital expenditure programme covering infrastructure renewals, capital maintenance, provision for growth and quality enhancements to the environment and drinking water supplies. The result has been improved customer service standards, cleaner rivers and

Acknowledgement

I am grateful to Robin Pratt for comments and suggestions on an earlier draft. Responsibility for remaining errors and omissions is mine.

John Smith, previously Director of Regulation, Railtrack
bathing waters and re-established public confidence in the quality
of tap water. Recent research conducted for the industry’s
regulators in connection with the 2004 periodic review indicates
high levels of customer satisfaction with both tap water supply
(87%) and sewerage services (81%) and, despite real increases in
water charges since privatisation, around two thirds are satisfied
with value for money.

In contrast, despite some successes, notably in generating traffic
growth, rail privatisation is perceived to have failed. The most
conspicuous example of this is the failure of Railtrack and its
replacement in 2002 by Network Rail, a ‘not for dividend’
company limited by guarantee. In the period since the Hatfield
accident in October 2000, the industry has suffered both a
general decline in service performance and sharp increases in
costs that now threaten future development of the network. The
Strategic Rail Authority (SRA) has also found it necessary to
provide additional financial assistance to a number of train
operators, and to postpone and redefine its plans for refranchising
passenger services. Government growth aspirations set out in the
2000 Ten Year Plan are having to be revised downwards. The
vision of a market-based railway network with decreasing
reliance upon government subsidy has been lost, while New
Labour’s replacement vision, of a planned and integrated
network capable of moving traffic from the roads to rail, has yet
to be realised.

The question this paper attempts to answer is why the experience
of the two sectors has been so different. In doing so, it focuses
on a number of comparative dimensions:

- the purpose of privatisation;
- the scale of industry re-structuring involved;
- the nature of the public sector inheritance;
- the regulatory regime and the way RPI-X has been applied;
- government public interest objectives – and the way these
  have been pursued;
public acceptance and how this has been reflected in the response to incidents;
comparative levels of risk – and the implications;
independent regulation and the impact of public subsidy.

The purpose of privatisation

Although all privatisations shared some common features, in the context of a Conservative government seeking to disengage from running industries, there were some distinctive drivers for the two privatisations.

The water industry had been re-organised in the 1970s with the establishment of 10 regional water and sewerage authorities for England and Wales, based on the principle of integrated river basin management. The new structure replaced a fragmented industry based on local water boards and municipal sewerage operations. In the 1980s, the industry began to express frustration at the effect of Treasury financial controls on borrowing and the late Sir Roy Watts, then chairman of Thames Water, initiated a campaign for privatisation. Water subsequently became part of the wider Conservative programme for privatising state-owned industries.

The original proposals for water privatisation in the late 1980s ran into difficulties. Water authorities were responsible for regulating discharges into rivers and estuaries by industry but were also major polluters in their own right through discharges from their own sewage works and overflows. Ministers came to realise that privately owned water companies could not retain their regulatory functions and developed the proposal to strip out these functions and place them in a new public body, the National Rivers Authority (later to be subsumed into the Environment Agency). At the same time, the government was coming under growing pressure from both Brussels and domestically to improve drinking water standards and environmental water
quality, notably for coastal bathing waters where government had made little progress in implementing the provisions of the 1975 Bathing Water Directive. At the same time, many sewerage works were breaching their consent limits.

Thus water privatisation became a process for ‘coming clean’ about the scale of investment needed to enable the industry to raise environmental and quality standards and obligations. Privatisation provided the mechanism of paying for those improvements, via customer charges (ie, K factors which include efficiency gains and quality improvements), which otherwise would have had to be financed from taxation or public borrowing. In effect, the process transferred the funding burdens and risks from the taxpayer to customers. As a consequence, average household bills increased by almost 40% in real terms in the first decade under privatisation.

In contrast, rail privatisation took place against the background of failures by successive governments to reconcile the tensions between the public demand to maintain the current size of the network (10,000 route miles) and pattern of services, given public resistance to closures, and the need to constrain the size of subsidy required to support the network. This was in the context of secular decline over many decades in rail’s share of the passenger travel market and absolute decline in the volumes of freight carried by rail. A series of government reviews into the ‘rail problem’ can be traced back over 40 years to the Beeching Report in 1963 and the analysis of the ‘branch line’ problem, following the failure of earlier attempts through the 1950s rail modernisation plan to reverse the decline through investment in the system.

The solution of the Conservative government in the early 1990s drew from experiences of telecoms, gas and electricity privatisation, but also bus deregulation. This led to the model of competitive franchising of socially-necessary passenger services, complemented by open access and on-rail competition for commercial services such as freight. This model involved the
separation of network infrastructure from train service provision. The government was determined not to repeat the perceived difficulties of introducing competition against vertically-integrated incumbents either in the franchised or open-access markets envisaged for rail.

By introducing private sector management skills and exposure to market disciplines for train service operators, the government hoped to disengage from day-to-day service provision and funding decisions in the rail industry. Through the competitive franchise process, under which successful bidders were to receive successively less support for a pre-specified package of socially-required services each year, government expected total support for the industry to fall successively from £2.1bn in 1996/97 to £0.9bn in 2002/03. During the evolution of its policy, the government then decided to privatise the network operator and infrastructure owner, Railtrack.

Thus the expectation was of a change from a permanently loss-making industry where the state carried full financial risk to one established on a commercial basis where the state would only make payments for non-commercial services in respect of the social and environmental benefits of such services. Over the long run, privatisation was seen as bringing considerable Exchequer savings, while socially-required services and public sector funding would be assured through medium term contracts. In this way most of the cost risks of the industry would be transferred to the private sector funders from the public sector, along with a significant proportion of shorter-term demand risks.

Thus, although the drivers of privatisation were distinctive, there was a common intention to move funding and risk from tax payer to customers. The difference was that the public sector was expected to retain a more important funding and specification role in rail, along with some controls over regulated (mainly commuter) fares. Nevertheless, the process was primarily a means of progressive disengagement with the prospect of reducing the burden of exchequer support.
In contrast, in water, the government transferred from taxpayers to water consumers and private investors the costs of financing heavy programmes of investment. These were needed to comply with mostly European quality standards which the government had been tardy in implementing – and would contribute to shedding the UK’s ‘dirty man of Europe’ image.

The scale of re-structuring

Water authorities in England and Wales were privatised in 1989, as regional monopolies, retaining their integrated structure but with pollution control functions transferred to a new public sector agency, the National Rivers Authority.

The re-structuring and privatisation of British Rail (BR) occurred from 1993/94 to 1995/96 and involved much more radical industry re-structuring. After protracted debate over the merits of integrated regional structures versus national separation of infrastructure from operations, the latter model was adopted. A national infrastructure operator - Railtrack- was established (initially in the public sector) with 25 passenger train operator franchises. In addition, there were 5 ‘open access’ freight operators. Franchise operators leased trains from one of three private train leasing companies (ROSCOs), to which the existing BR assets were transferred before the companies were sold to trade buyers. In addition, BR’s 13 maintenance and renewal units were sold off to private sector contracting companies.

In all, BR was split up into 100 separate business units with relationships defined through a complex contractual matrix, which was only completed just before the main flotation of Railtrack (which was a counterparty to the bulk of the contracts) was attempted:

- train operators had franchise agreements with the franchising director (Office of Passenger Rail Franchising (Opraf), later
to become the SRA) and in some cases passenger transport executives;

- train operators also had track access agreements with Railtrack which the rail regulator was required by law to approve;
- train operators also had (unregulated) train leasing agreements with the Rolling Stock Companies (ROSCOs), which the government approved;
- Railtrack in public ownership negotiated RT1A and RT1B contracts with outsourced maintenance and renewal contractors, when these contracting organisations were part of BR with the negotiations being ‘arbitrated’ by the government.

Crucially, these contracts were not ‘back to back’ as they were negotiated at different times, and agreed or determined by different parties. Railtrack’s maintenance contracts were particularly significant. They were determined on a ‘fixed price’ and not a ‘time and materials’ basis. This allowed the contractors discretion to determine what work to undertake; their main incentives to keep infrastructure properly maintained were provided in performance regimes, which the government capped in order to reduce contractors’ risks and facilitate their disposal to the private sector.

Much of BR’s engineering and asset knowledge was inherited by the contractors and not Railtrack, and many of BR’s engineers found themselves working for the contractors. Hence the industry’s specialist engineering knowledge was lost to the infrastructure operator, and the contractual structure made it difficult to acquire information on the exact nature and costs of the post-privatisation activities that were being undertaken on the network. In terms of re-structuring, water and rail privatisations were therefore at different ends of the spectrum.
The nature of the inheritance

Under investment had been a feature of both the water and rail sectors. In the public sector, water industry borrowing controls had constrained investment in renewing ageing water and sewerage infrastructure and there were apocryphal stories about buses falling into holes in the road caused by collapsing sewers. Equally, there was concern that privatised water companies might further neglect their underground assets.

As part of the process for establishing investment needs, the industry was therefore required to draw up asset management plans (AMPs). These were based on sample assessments of the capacity, condition and performance of each company’s operational assets and projected future expenditure requirements. As a result, the privatisation prospectus contained summary details for each company of the length of underground water mains and sewers and their current condition grade, together with plans for improving the condition and performance of critical assets. Companies were also required under their licence to maintain and update their AMPs.

In this way, the 10 year ‘K’ investment plans included provision to make good a backlog of investment on underground assets and improve their average condition in addition to the EU-driven quality enhancement programmes. To this end, government wrote off existing industry debt of £5bn and injected a ‘green dowry’ of £1.5bn.

No such systematic attempt was made in rail. In part, this reflected the late decision to float Railtrack, which created a need to derive knowledge of the whole network, and include it in a flotation process, in less than a year. Forward-looking engineering projections of renewals expenditure were undertaken in the run up to privatisation, but these were high level and based on poor asset condition knowledge within BR. This legacy was in part due to the historic need in BR under a regime of external financing limits (EFLs) to focus expenditure prioritisation on
safety-related renewals decisions taken locally, and not on efficient whole-life programmes based on a comprehensive national evaluation process.

Only in the case of stations was provision made for a national backlog programme of renewals (the station re-generation programme), as the condition of stations was perceived to be sufficiently poor to warrant new expenditure to enable Railtrack’s compliance with its lease obligations to train operators. Otherwise, there was little acknowledgement of the implications of past under-funding of the network for future expenditures: and while Railtrack was privatised on the expectation that expenditure would increase, the regulator had allowed no increase in revenues.

However, as shown recently in Network Rail’s first published business plan, the volume of track renewals on the network had declined in the final years under BR and in the early years of Railtrack from around 2.5% pa to less than 1.5%. (note, for the first two years of its existence, Railtrack as a public sector body continued to be subject to Treasury controls). The fatal flaw in the privatisation process was the inability adequately to quantify the impact of this under investment, and reflect it in the company’s allowed revenues and funding post-privatisation.

In the case of Railtrack, historic under investment was compounded by the loss of engineering knowledge through re-structuring and the lack of data on the condition of its assets. These factors were to become critical with the growth of traffic on the network in the first few years of privatisation (a 30% growth in passenger kms and 46% growth in freight tonne kms between 1995/96 and 2001/02) which exposed the fragility of the underlying infrastructure. The lack of knowledge was inevitably shared by the regulator, who provided significantly less funding through regulated charges than the company found necessary to spend in its first control period. Only now, seven years after privatisation, is the extent of backlog being addressed through the interim review of Network Rail’s finances.
UK WATER AND RAIL

The regulatory framework: the application of RPI-X

With water privatisation, the original ‘K factors’ were based on well-developed capital programmes for achieving compliance with drinking water standards, consent standards for sewage works and EU bathing water standards. The K factors were set for 10 years although there was provision for the regulator to call a periodic review after five years.

Against this background, there was considerable industry concern about the risks associated with implementing large capital programmes and the availability of resources in a tight construction market (as seemed likely from a late 1980s perspective). Consequently, the water company licence contained a number of provisions designed to limit risk to investors. These included the ‘relevant change of circumstances provisions’—including national movements in construction cost inflation - and the so called ‘shipwreck clause’ for ‘substantial adverse effects’ which allowed companies to seek interim reviews of K factors. In the event, with the recession in the early 1990s, construction prices fell, and it was the regulator who triggered an interim review to claw back gains for the consumer.

Further clarity on delivery of the capital programme was provided by the system of time-limited consents for sewage works and s.19 undertakings for breaches in drinking water standards. Companies were therefore very clear on their priorities for delivery in the first control period.

Ian Byatt, the first director general of Ofwat, had a clear vision of the sort of regime he wanted to establish and stayed in post to deliver his framework through successive reviews. The key to regulation was seen as the ability to compare the performance of 39 separate companies (the 10 regional water and sewerage companies plus 29 smaller water-only companies). A series of regulatory outputs were established covering factors such as
supply availability, sewer flooding incidents and customer response times. From 1990, companies submitted an annual return recording progress on delivery of their capital programmes and customer service measures. The regime encouraged companies to understand cost drivers and why unit costs - and customer bills - varied widely between parts of the country. Tariff policy and the extension of domestic metering were also important aspects of the regime in the early years.

In rail, the focus was somewhat different. Efforts were initially concentrated in establishing the contractual regime including the first generation of output-based track access agreements with franchise operators, all of which had to be approved by the rail regulator. Further elements of the contractual regimes included incentive schemes for performance (train delays) and possessions (engineering access to the network), along with access conditions and an arbitration arrangements for access disputes. At the same time, the structure and levels of track access charges was established for Railtrack as a public sector company, on the basis of BR depreciation estimates and internal trading costs. When he took over, the regulator cut these allowed revenues further on the basis of assumed efficiency savings. Only later, in the run up to flotation in 1996, were forward-looking estimates of renewal expenditure prepared, but despite showing higher spending requirements, no adjustment to track access charges was made.

The ‘Schedule 8’ performance regime became a key driver for Railtrack within the framework of otherwise loosely specified availability obligations set out in the access contracts. For with 90% of its track access income fixed with respect to train volumes, the principal opportunity for outperformance was in reducing train delays. In this, the company was conspicuously successful in its early years, reducing Railtrack caused delays by some 40% between 1996 and 1999. Train operators in contrast concluded their franchises with Opraf, a separate body, which negotiated sharp reductions in future fixed subsidy levels with them during privatisation. As a result, the operators were more incentivised to increase patronage and fare-box revenue by
marketing, fares policy and running extra services where they could, within the packages of access rights granted to them at privatisation. However, with resulting growth of traffic on the network, and increase in the incidence of infrastructure problems such as broken rails, the momentum of these early performance gains could not be maintained.

Railtrack’s original licence framework was limited in scope, having been developed for a public sector body: its prime regulatory controls were intended to be the operator-facing access contracts, so that private and commercial operators, and not the regulator, took the lead in enforcing delivery.

However, following the change of government, the regulator’s own direct powers over Railtrack through the licence were strengthened in 1997 through the addition of licence condition 7. This was designed to reinforce the company’s responsibilities for longer term ‘stewardship’ – maintaining, renewing and developing the network ‘in accordance with best practice and in a timely, economic and efficient manner’ so as to satisfy the ‘reasonable requirements’ of its customers and funders. These new “input” responsibilities were seen as being complementary to the pre-existing output obligations to, and performance incentives with, operators in the access contracts.

Using this new licence provision, the regulator subsequently introduced his own targets for train performance and track quality. However, the economic framework – including annual reporting, and the rules for remunerating enhancement investment – remained poorly specified and therefore became a key focus of the 2000 periodic review, which addressed both the level and structure of track access charges for use of the network.

Unlike his water counterpart, the rail regulator had no comparators for assessing relative performance, although during the course of the periodic review, there were some (largely unsuccessful) attempts at international benchmarking. Performance was instead measured over time within the control
period – by reference to the company’s ability to meet annual targets set for it by the regulator. In this way, the conventional model of RPI-X regulation became significantly modified for rail after 1997.

In contrast to water, the regulatory regime in rail was poorly developed for the first control period (CP1), with lack of clarity over what was to be delivered; a mismatch between levels of renewal spending and what the company was funded for in terms of access charges; and incentives which were poorly aligned with those of train operators. Similarly, in contrast to water, enhancement projects were poorly specified at the time of flotation with lack of clarity over both their costs and outputs. The attempt to address some of these shortcomings with a parallel annual regulatory framework of targets being superimposed on those set out in access contracts inevitably created tensions between the two sets of priorities.

Achieving public interest objectives

It will be clear from the above discussion that the original K investment programmes for the water industry were directed at delivering a range of public goods – with public health benefits from improvements in drinking water and bathing water quality and wider environment benefits. These were paid for by above average increases in water charges with average household bills increasing by 40% in real terms in the first decade under privatisation, before falling back after the 1999 review.

The water regulator (Ian Byatt), recognised in his approach to the first periodic review in 1994, that there were wider public policy issues concerning the pace of such improvements and customer ability to pay higher charges. He initiated ‘the cost of quality’ debate through a submission to ministers and established a quadripartite process involving the quality regulators to ensure a coordinated approach to determining investment priorities. It was left to ministers to make the high level tradeoffs between
(the pace of) quality improvements and customer affordability. This approach has been further developed in subsequent reviews and formalised through the issue of guidance by ministers on priorities and approaches to the periodic review.

As indicated previously, a major focus of rail privatisation, despite the much higher level of state funding of the industry, was originally one of government disengagement, although safeguards had to be introduced into franchise agreements to reassure passenger groups that service reductions would not take place. Similarly, certain key categories of fares (principally commuter fares) were regulated. However, the public interest objectives with rail privatisation were limited in scope, and primarily directed at service protection.

Service quality was to be improved through incentivising train performance through the Schedule 8 performance regime and allowing customers, through the fare box, to indicate directly to operators their responsiveness to enhanced service levels provided above the minima specified in the franchise contracts. Under the Schedule 8 regime, the causes of train delays were attributed to Railtrack and train operators and a scheme of liquidated damages ensured compensation payments between the parties in respect of the delays for which they responsible. The payment rates reflected loss of fare box revenue (through unreliable services) and the social value of passenger time losses. A parallel regime was put in place between operators and Opraf, acting on behalf of passengers and the public sector. This regime was not, however, aligned with the Schedule 8 regime with Railtrack, adding further to the tensions of misaligned incentives within the industry.

At the same time, although there were commitments to certain enhancement projects for developing the network, at the time of Railtrack flotation, these schemes (including West Coast Mainline and Thameslink 2000) were only at early stages of development.
In contrast to water, the Conservative government’s commitment to modernise and develop the railways in specific ways was limited: the intention was to allow operators to take the lead in specifying their investment requirements of the infrastructure operator, with Opraf (on behalf of the public sector) being given powers to contribute funding to schemes as a ‘top up’ where necessary. In the event, it only used these powers for one major scheme, Thameslink 2000, in order to facilitate flotation.

Utilities and New Labour

Although Labour had opposed each of the utility privatisations undertaken by the Conservatives, in the approach to the 1997 election they appeared to accept the privatisation inheritance in telecoms, energy, and water. However, they argued that these industries had been sold off too cheaply, so that shareholders had reaped excess rewards. A windfall tax on utilities would therefore be introduced to recoup some of these gains for taxpayers. A new Utilities Bill was also promised which would establish changes to the regulatory regime to put a new primary duty on regulators to protect the interests of customers and strengthen independent customer representation.

However, New Labour’s position on rail privatisation was more hostile and their transport policy represented a marked shift from that of the Conservative government. In a speech in March 1996 just before the election and Railtrack’s flotation, Clare Short, then shadow transport secretary, made it clear that the Labour Party were committed to developing an integrated transport system and making more use of the rail network for passengers and freight. However, they did not believe that increased investment and more intensive use of rail could be achieved within the structures proposed for a privatised Railtrack.

Should the flotation of Railtrack proceed, a Labour government would make good its commitment to a ‘publicly owned and publicly accountable railway’ by, inter alia, legislating to
strengthen the powers of the rail regulator to ensure that the network and its assets are managed in the public interest, and enhance his accountability to the secretary of state. The powers of the rail regulator were seen as central to the achievement of a Labour government’s objectives. Railtrack’s obligations (under the licence developed before flotation) to invest in the network were seen as insufficient. An amendment of Railtrack’s licence was proposed to ensure that Railtrack invested the amounts assumed by the regulator in setting access charges.

Later, by the time of the manifesto, Labour set out the proposal for a new Strategic Rail Authority (SRA) to provide ‘a clear, coherent and strategic framework for the development of railways to rectify the shortcomings of the privatised structure’ and to take forward its plans for developing the network. Its role was to provide strategic leadership in what was seen as fragmented industry.

As indicated above, in 1997 following the election the regulator duly agreed with Railtrack the new licence condition 7, giving him enforcement powers to require investment and other expenditure to be made. During the 1997-1999 period, Railtrack thus experienced a gradual increase in regulatory oversight.

Tom Winsor was appointed as the new rail regulator in summer 1999, with a public commitment to ‘tougher and more effective regulation’. He then embarked upon a major programme of regulatory reform – extending Railtrack’s framework of regulatory accountability through its licence; strengthening accountability to its train operator customers through new ‘model clause’ track access agreements; and setting a new financial and economic framework through the periodic review of track access charges, which had originally got underway in late 1997. He also adopted a tougher enforcement regime in relation to performance targets set by his predecessor under condition 7. Post 1999, the pace and profile of regulatory activity sharply increased.
Opraf was then renamed the Shadow Strategic Rail Authority in 1999 with Sir Alistair Morton appointed as its first chairman with a public commitment to increasing investment in the rail network. His prime intended vehicle for encouraging this investment was through concluding long-term deals with train operators by replacing the set of shorter term franchises put in place in the 1995-1996 privatisation period with 15-20 year franchises. He encouraged bidders to come forward with their own investment proposals (such as Virgin’s proposed new route for the East Coast Main Line), but it proved difficult to reconcile conflicting propositions within the public sector procurement framework. As a result, no such long-term franchise agreements were concluded during his tenure.

During this period, which coincided with Tom Winsor’s periodic review work, there was little effective coordination between the two bodies; this had to await the appointment of Richard Bowker as Sir Alistair’s successor in late 2001.

Continuity and change in government policy

For the water industry, the incoming Labour government marked no significant change of approach from its predecessor. The industry continues to play a key role in delivering environmental improvements and, as exemplified for the 2004 periodic review, ministers have provided extensive guidance to the parties on their overall approach and priorities. The overall impression is one of continuity and incremental change to both government policy and regulation.

Some changes have been introduced under the Labour government. Domestic disconnections for non-payment have been outlawed and the current Water Bill before parliament will create a board structure for Ofwat and extend existing provisions on competition. However, the industry now has a generally low
public profile and there have been few issues which have been politically contentious. The industry has delivered, and achieved high levels of customer satisfaction.

In contrast, for rail, the change in government also marked a significant policy shift. Instead of a policy of disengagement, the election of the new government marked a return to a more interventionist, centrally planned approach to the railways. This was given form, first through the Integrated Transport White Paper in 1998 and then through the 10 Year Plan for Transport in 2000. The later set out government plans to modernise the UK transport system through a mix of private and public investment. It included targets for growth in use of the rail network, 50% passenger and 80% freight over the subsequent 10 years, as well as targets for reduced congestion on the road system. Planned public investment was heavily skewed in favour of railways. As Professor David Newbery observed at the time, total planned rail investment of £49bn was three times that for strategic roads which carried 34% of all road traffic and 67% of freight.

On the face of it, these ambitious growth and expenditure targets were good news for the railway industry. In practice, they created unrealistic expectations and diverted attention and resources from the increasing challenges of managing the existing network with 30% additional traffic.

Railtrack was initially seen by the government as having a key role in expanding the network. It negotiated with the government a deal to secure construction of phase 1 of the Channel Tunnel Rail Link (CTRL) and was also approached by the government with a view to integrating the sub-surface lines of the London Underground with the surface rail network. Railtrack’s annual network management statements responded to

---

the government policy agenda and Sir Alistair Morton’s focus on investment in the industry, by setting out increasingly ambitious plans for developing the networking and relieving ‘capacity bottlenecks’.

However, the record on delivering upgrades on the network that were put in place at privatisation was poor. The flagship project to upgrade the West Coast mainline, the final commercial elements of which were negotiated with Virgin in 1998, ran into severe difficulties. The original proposed signalling technology had to be abandoned; projected costs escalated from £2.1bn to almost £13bn at one stage. Current estimated costs, following an SRA strategy review which significantly cut back the outputs of the scheme, are £10bn. The project exposed weaknesses in Railtrack’s asset knowledge; limited programme management skills; the lack of industry experience in managing output-based contracts; and, finally, the difficulties of upgrading a densely-used operational railway with multiple operators, in a contractual environment where the infrastructure provider was required to pay for engineering access to the network. In contrast, the strategy adopted by continental railways was generally to construct new high speed passenger lines rather than attempt to upgrade existing multi-user routes for high speed operation.

Given the perceived inadequacies of Railtrack, and the scale of the investment and funding agenda, Sir Alistair Morton first proposed the use of ‘special purpose vehicles’ to undertake upgrades on the network. He argued that Railtrack lacked both the project management and financial capacity to develop the network itself.

Following the Hatfield derailment and the consequent financeability problems experienced by the company, the government itself sought to redefine the company’s role. As part of a £1.5bn accelerated funding settlement agreed with the government and the SRA in April 2001, the company agreed a statement of principles with the government which, while endorsing the company’s role as national infrastructure operator,
marked a significant shift in emphasis away from development of the network towards asset stewardship and maintenance of the existing infrastructure. In future, all enhancement projects above a threshold would be subject to competitive procurement and taken forward through public/private partnerships.

Subsequently, with the escalating costs of maintaining the existing network, post Hatfield, and making good the backlog of renewals spending which is now acknowledged, the realistic scope for network enhancement has been much reduced. The government’s Ten Year Plan growth targets, along with its pro-rail integrated transport policy goals, now look unachievable. Its pro-rail transport policy has effectively backfired. Insufficient regard was paid to the legacy of under investment in the system, together with the costs, timescale and practical constraints on upgrading a densely used operational network within the contractual environment put in place at privatisation.

Public response to incidents

A good test of the public acceptability of privatised industries is the response to service failures or accidents. In this respect, the experience of the privatised water and rail industries has differed markedly.

The water industry experienced, pre-privatisation, a major contamination incident at Camelford in Cornwall. This involved aluminium sulphate entering the water supply and customers being made ill. The response of South West Water Authority in dealing with the consequences was strongly criticised at the time and the incident highlighted the risks associated with unmanned works. However, since privatisation, there has been only one serious incident involving the industry – the Yorkshire Water supply failure in 1995. Again, this attracted high media coverage

---

3 Statement of Principles agreed between Government and Railtrack: published April 2, 2001
which exposed weaknesses in the company’s contingency planning in drought conditions affecting much of the country in that year. The regulator launched an enquiry and required the company to forego part of their price increase for the following year. Pressure from consumers, the media and investors also led to the replacement of the board of Yorkshire Water. Critically, however, this was not seen as a collective failure by the industry. Indeed, neighbouring companies who maintained supplies for their customers during the drought, gained something of a ‘halo’ effect. Yorkshire were seen very much as the exception rather than the rule.

The position in the rail industry has been rather different. Since 1997, there have been a series of serious and well publicised fatal train derailments – Southall (1997), Ladbroke Grove (1999), Hatfield (2000) and Potters Bar (2002). These have been viewed both by the media and the public as a collective failure by the privatised industry.

The most extreme response arose in respect of the Ladbroke Grove collision in October 1999, the direct cause of which was a driver passing a red signal. However, the main opprobrium was laid on Railtrack, the network operator, who, ministers initially suggested, would be ‘stripped’ of its safety responsibilities. Allegations were made that the company had put ‘profits before safety’ and that the privatised network had become less safe than its predecessor, although subsequent evidence from the Health and Safety Executive (HSE) showed that, overall, the industry’s safety record had improved since privatisation.

Safety regulators and the Cullen enquiries, set up to investigate the Southall and Ladbroke Grove accidents, drew the inference that there was very low public tolerance of rail accidents. Consequently, investment in improved rail safety was justified even if this meant a very much higher implied value per fatality than used for investment in other transport modes. In effect, for a time, it became politically infeasible to ‘put a price on a life’ in
the industry: safety could not be traded off against economic considerations.

The experience of these accidents and the resultant follow-up enquiries (including those by safety regulators HSE/Her Majesty’s Railway Inspectorate (HMRI) and the transport police to establish causes and responsibility) has therefore created heightened levels of risk aversion in the industry, seen in the immediate aftermath of Hatfield when over 1000 temporary speed restrictions were imposed, and is a continuing contributory factor to the industry’s higher cost base versus the pre-privatisation era.

However, by its immediate response to Southall and Ladbroke Grove, the government itself served to undermine confidence in an industry which it was looking to play a key role in its integrated transport policy.

Levels of risk

A key purpose of privatisation, and more recent developments such as private finance initiative and public private partnerships (PFI/PPP) arrangements, is the efficient transfer of risk from the public to the private sectors.

In the UK, after more than a decade of privatisation, the water industry is viewed as low risk. As the regulator observed in his March 2003 ‘framework’ document on the periodic review:

“Business risk in the ….industry remains fundamentally low, both in absolute terms and relative to other industries. Water companies are effectively monopoly suppliers of an essential product and are likely to remain so for the foreseeable future. (They) have very predictable revenues and earnings. Changes in technology and the operating environment
tend to occur in a comparatively slow and gradual manner”.

There are other dimensions. Infrastructure risks are well understood and companies have generally good (although not always complete) knowledge of their assets. The companies are responsible for large capital programmes but these have been managed effectively and without large cost overruns. The industry has developed a good reputation for the reliability of its drinking water quality and the risks associated with lead and cryptosporidium are well understood.

In contrast, the rail industry is associated with a very much higher scale of infrastructure risk. The range of assets is much wider and knowledge of their condition has been much poorer, a situation made worse by the outsourcing of maintenance and renewal activity with the break-up of BR. Moreover, the consequences of asset failure can be catastrophic, as demonstrated by the Hatfield and Potters Bar rail crashes, caused in the former case by a broken rail. By contrast, collapses of water mains and sewers are rarely life-threatening.

Second, the risk of cost overruns on large capital projects has been shown to be much greater in rail as demonstrated by the West Coast mainline project. There are a number of reasons for this. Large rail upgrade projects on the existing operational railway are inherently complex in terms of planning the work around existing services (the contrast with the ‘greenfield’ Channel Tunnel Rail Link is marked); the situation on the West Coast Route Modernisation (WCRM) project was compounded by poor asset knowledge and technological risks from planned use of new ‘moving block’ signalling technology.

A third factor is contractual risk on output-based contracts. Railtrack signed an agreement with Virgin in 1998 committing itself to provision of train paths and journey times on the

---

upgraded route. In obtaining regulatory approval for the agreement, it then also had to make regulatory commitments on additional train paths for other operators. Calculating route capacity is a complex process requiring timetabling simulations.

Moreover, there was little previous knowledge of managing output-based contracts in the rail industry. Subsequent events demonstrated that the company had over-promised on the outputs that it could deliver from the project, and much of the subsequent cost escalation can be ascribed to attempts to deliver on output commitments that were only acknowledged to be uneconomic by the regulator and the SRA after significant time and expenditure had already been committed. The contrast in complexity with the water sector is marked.

The scale of risks also needs to be assessed in relation to the equity base. Railtrack’s initial RAB was set in line with the market valuation of Railtrack at flotation (essentially, what shareholders paid for the company) at £3bn. Its current (March 2003) value is £6.7bn. However, as shown in the regulator’s initial consultation document on the interim review, compared to other regulated utilities, the network operator’s regulatory asset base (RAB) is small in relation to the size of its annual expenditure (opex and capex) of £3.2bn. Hence the returns on capital of Network Rail (and previously, Railtrack) are more vulnerable to expenditure shocks than is the case for water companies or other utilities.

This can be exemplified in relation both to Hatfield and the West Coast project. The direct costs associated with Hatfield, which the regulator made clear had to be borne by shareholders, amounted to some £600m (equivalent to 20% of the initial equity value). The potential commercial and other risks of the WCRM were very much greater and had the potential to bankrupt the company.

---

By contrast, the water industry has a combined regulatory capital value of £30.5bn (2001/02) in relation to annual capital and operating expenditure of £5.6bn, an expenditure/asset ratio of 18%. Consequently, no infrastructure failure seems likely to carry risks of anything like the scale of Hatfield and no capital project in the water industry is as dominant as the WCRM project and carries commercial risks or the potential for cost overruns of anything like the same magnitude.

For cost risks to be successfully transferred to the private sector generally requires three conditions to be met:

- the private sector must be best placed to manage them;
- the risks must be relatively small or well understood in relation to the size of the equity;
- the government must be willing to see the business fail.

Arguably, none of these conditions was met in the case of rail, with its revenue and long-term funding managed by the government, and outputs specified by a range of public sector bodies. In its Statement of Principles (April 2001) agreed with Railtrack, the government sought to clarify its position on its approach to business failure. ‘The government stands behind the rail system but not behind individual rail companies and their shareholders, who need to be fully aware of the projected liabilities of the companies in which they invest and the performance risks they face.’ With the transfer of Railtrack, an equity-based company, to Network Rail, and the conversion of franchises into management contracts rather than investment vehicles, these risks are now effectively transferred back to the government via the SRA.

Indeed, recent developments have also thrown into doubt the ability of the remaining private sector players in the rail sector (franchise operators, ROSCOs and Network Rail’s private lenders) to take volume or demand risk. The original franchises
were bid on the basis of aggressive growth forecasts (and hence declining subsidy profiles for fixed public sector outputs). The recent flattening of rail demand after years of growth has forced a number of operators to negotiate short term management contracts with the SRA because of financial distress. The principal determinants of demand growth and revenues – like GDP growth, motoring costs, rail fares, motorway tolls and congestion charges, and the availability of additional track capacity - are outside the direct control of train operators.

Independent regulation and the impact of subsidy

In water, the secretary of state issues guidance to the regulator governing his approach to a periodic review. For the 2004 review, preliminary guidance was issued in January 2003. Running to 60 pages, it contains steers on the important issues to be addressed by the review. These include maintenance of the infrastructure, tackling perceived customer priorities, such as sewer flooding and further measures to improve the environment, to be balanced by considerations of customer affordability and value for money.

Economic regulation in the rail industry takes place in the context the public subsidy it receives and, more recently, where the national infrastructure operator is a debt-financed company limited by guarantee. The privatised industry was set up in a way that the subsidy for services required on social and environmental grounds was paid to train operators through their franchise agreements; they in turn paid, through track access agreements, the full financial costs (in fixed and variable charges) of the network capacity they used. Thus subsidy was paid only to the service providers for tightly specified services.

---

6 Initial guidance from the Secretary of State to the Director General of Water Services: 2004 Periodic Review of Water Price Limits (2003), DEFRA, January.
This situation changed as a consequence of the 2000 periodic review of track access charges where, at the request of the SRA, around 40% of Railtrack’s revenue requirement was paid in the form of direct revenue grants by the SRA, which thereby became the company’s largest customer. This changed the dynamic of the relationship between Railtrack, the regulator and government and opened up the possibility of direct negotiations between the company and the government/SRA when it ran into financeability problems following the periodic review and Hatfield. The company negotiated an agreement in April 2001 whereby around £1.5bn of the 2001-2006 revenue allowed for by the regulator from the review, which had originally been deferred into the 2006 RAB to meet SRA cash constraints, was, after all, to be paid in cash in the 2001-2006 period to which it related.

In the event however, this cash was not paid as intended and instead the company was put into administration later in 2001. At this point, the position of independent regulation was put into question with statements by ministers suggesting that the existing regulatory structure was to be streamlined with a probable merger between the SRA and ORR. However, ministers in 2002 reaffirmed their commitment to independent regulation with proposals to establish a statutory regulatory board. Subsequent guidance to the regulator requires him to have particular regard to SRA ‘affordability’ constraints; to ensure the SRA does not incur expenditure beyond its allocated budget, or which does not secure value for money. If, as a result of exercising his functions, this might occur, the regulator is required by the guidance to allow the SRA to consider amending its strategies or seek consent from the secretary of state for additional expenditure.

This, along with directions and guidance to the SRA, requires a more coordinated approach to periodic and interim reviews with the SRA now seen as responsible for determining outputs and having a role in challenging value for money. Recognising that the latter activity overlaps with the regulator’s core role, the two

---

7 Secretary of State Guidance to the Rail Regulator; September 2002
organisations are cooperating closely over the conduct of the interim review - in marked contrast to the more detached role played by the SRA in the 2000 periodic review.

It is perhaps surprising to find that, in the case of water, where there are no direct public expenditure implications, the regulator has been instrumental in establishing a role for ministers in making the high level tradeoffs between the pace of environmental improvements and increases in customer bills (nationally). In the rail sector, where the impact of a charges review impacts primarily on public expenditure, it remains to be seen how high-level tradeoffs are made between allowed revenues, outputs, and affordability/value for money, and the role that government plays in this.

In line with the regulator’s recent comments, the current structure of Network Rail may make it difficult for strong incentive pressures to deliver significant cost savings by traditional regulatory means: savings may instead need to be made through more direct cuts in services and network capability. On the basis of the scale of funding gap that has emerged since administration between the 2000 periodic review and Network Rail’s 2003 business plan, it seems likely also to involve an application to the secretary of state through the SRA for additional funding.

Conclusions

This paper raises two key questions:

- could the conventional plc equity model with RPI-X regulation have delivered for the railway industry what it achieved in water (and other privatised utilities) in terms of efficiencies and service standards?;

- how far was it the model of privatisation or its execution that was at fault in the case of rail?
Two points are worth noting in drawing conclusions on rail privatisation. First, there is evidence from recent work by Pollitt and Smith that, for the period up to Hatfield, the industry’s outputs (passenger and train miles, and freight tonne-miles) had risen sharply, performance was improving and costs per unit of output had been falling at the rate of 2.7% pa – better than what had been achieved under public ownership.\(^8\)

Had these trends continued – and Hatfield not occurred – the verdict on rail privatisation might have been somewhat different, although in hindsight it might be argued that the company was effectively living on borrowed time while it failed to get a proper grip of its inherited assets.

Second, the UK model of separating infrastructure from operations is reflected in EU rail legislation designed to liberalise the European rail industry and break up state monoliths. In significant respects, the UK railway system has provided the laboratory for testing these ideas – of competitive franchising, open access, track access charging and performance regimes. At the same time, there remains substantial opposition, particularly from integrated state railways in France and Germany to the Commission’s proposals – and experience in the UK has helped to discredit the fully liberalised model. However, other countries such as Sweden, have introduced aspects of these reforms more successfully, but in an incremental way over a longer period of time.\(^9\) The UK, by contrast, went for a ‘big bang’ approach.

Nevertheless, the comparisons made in this paper serve to highlight some of the reasons why rail privatisation failed and

---


\(^9\) However it should be noted that the state infrastructure authority, Banverket, has experienced significant project overruns, which have been instrumental in persuading the government to cut back sharply on planned investments, in an echo of the UK experience. The high-speed rail services introduced after separation did not involve significant infrastructure upgrade and hence the close coordination of investment delivery between infrastructure and train operators seen in the UK.
why water, although not unambiguously a success story, has fared much better. The prime purpose of water privatisation – to fund public health and environmental programmes through customer charges supported by the capital markets rather than through public borrowing – has to date been successful.\textsuperscript{10} In contrast, the aim of reducing public subsidy to the rail industry was only achieved temporarily, and the government now faces the prospect of a reversing trend of increasing industry support. The key conclusions are as follows.

- Radical industry re-structuring as part of privatisation tends to be high risk; in the rail industry, it required a complex contractual matrix (which produced a pattern of adversarial relationships between former colleagues used to close cooperation) and, against a tight timescale driven by the next election, had a number of structural flaws. These had their roots in the competing policy prescriptions favoured within government before the 1992 election, which were never satisfactorily resolved. In contrast, an incremental rail reform programme, with sustained and consistent government sponsorship, of the kind which Sweden and Japan adopted, has a better chance of success. In water, the major industry re-structuring and consolidation was carried out in the 1970s within the public sector.

- Successful privatisation of a network utility with a large and elderly asset base requires a systematic assessment of the assets, their condition and appropriate provision for any renewal backlog arising from past public borrowing controls. Without this (ie, some form of asset management plan)

\textsuperscript{10} In the period since privatisation, there have been changes to the ownership structure of the industry with a reduction in the number of water-only companies from 29 to 13. There have also been significant changes in financial structure with a big increase in the proportion of debt finance and the emergence of one company, Glas, fully debt-financed. Average gearing (measured by the ratio of net debt to net debt plus equity) reached almost 56\% in 2001/02 with a number of companies adopting highly geared structures – representing a major shift from the position in the early 1990s.
together with well-based expenditure projections, the businesses cannot be put on a sound financial footing. Even though K investment programmes were drawn up on the basis of assessments made using sample data on the condition and capability of assets, water privatisation was based on an honest assessment of infrastructure spending requirements. In contrast, there was a reluctance to acknowledge these issues in the case of rail where the public sector, not customers, was footing the bill.

- For rail, this problem was compounded by the decision to fully outsource maintenance and renewal activity on the network. Out-sourcing can leave the infrastructure operator without the necessary information for managing its assets and understanding its cost drivers – although it retains responsibility for managing the infrastructure risks. A number of water companies are now moving to out-sourcing, with Glas Cymru adopting a fully outsourced model for operating and investment activities. However, this is occurring after more than a decade in which companies have developed a sound understanding of their assets and the risks they were managing. Nevertheless, it remains to be seen how far risks can be successfully transferred in the water industry to contractors through out-sourcing.

- Clarity of purpose is essential for a regulated utility and this needs to be reflected from the outset in the regulatory framework. The water industry was privatised and funded through a charging regime to enable it to deliver a £25bn 10 year ‘K’ investment programme (at 1989 prices), with a regulatory framework which made clear the outputs it was expected to deliver. In contrast, Railtrack was provided with a poorly specified economic framework. The access charging regime was based on inadequate proxies for spending requirements; there was no well-defined capital programme and outputs were only incrementally retrofitted later in the control period, with competing commercial and licence obligations laid on the company. The company was
primarily incentivised to reduce train delays through a performance regime which provided the primary means of out-performing the regulator’s financial assumptions.

- The level of risks associated with the water and rail industries are very different. It is evident that the scale of infrastructure risks, together with the commercial risks associated with a complex contractual framework and the risks of cost overruns on large upgrade projects, was not properly understood with rail privatisation. Railtrack was particularly vulnerable to shocks and estimation errors because of the scale of its expenditure in relation to the size of its equity and its small regulatory asset base. In retrospect, there is the question of whether the scale of risks was too great for successful transfer to the private sector. Given the state of knowledge at the time, they probably were. In water, the risks were better understood and have proved easier to manage although environmental and economic regulators remain vigilant over changes in company structure which might involve companies taking undue risk.

- Privatisation works best in the context of a stable medium term financial framework with continuity in government policy objectives. This has largely been the case in water. In rail, the election of the new Labour government in 1997 involved a marked shift in policy away from a market-led approach back to a more interventionist centrally-planned approach which involved ambitious plans for growth and network development. These plans were insufficiently grounded in an understanding of the limitations of the existed underinvested network or the realistic timescales for expanding the network within a contractual and industry structure designed for different objectives.

- Rail privatisation, given that it occurred so late in the life of the Conservative government, involved significant political risk. The Labour Party were committed to returning the railway to an integrated whole and, using the regulatory
system to require Railtrack to pursue public interest objectives, including stronger powers of direction over the company’s investment spending. This involved a degree of control and direction over the company’s affairs – through regulation – quite different from that applying in water or other privatised utilities. Despite this, the Labour government were unwilling to stand behind the company, most notably after the Ladbroke Grove accident.

- The existence of subsidy has been used to legitimise government intervention, often of a short term reactive kind. This has been damaging to the rail industry. At the same time, the introduction of revenue grants from the government (via the SRA) to Railtrack created the climate where direct approaches to government were seen as the means of addressing Railtrack’s immediate financeability problems in 2001. The regulator has subsequently pointed out that his own interim review mechanisms for dealing with the problems in 2001 were effectively by-passed by both the company and the SRA/government.

- While the existence of multiple regulators is a feature of both sectors, there has been more effective coordination in the water sector together with an established role for ministers in periodic reviews. In rail, it has taken time for the respective roles of the ORR and SRA to be established and for them to adopt a coordinated approach. The SRA has taken over the strategic planning and development role originally envisaged for the infrastructure provider and now has a key role in determining outputs and value for money in interim/periodic reviews. An outcome from the current interim review for Network Rail could be an application to ministers by the SRA for additional funding.

- Competition has failed to develop to any significant degree in either rail or water. In water, competition has so far been limited to large industrial customers, although the Water Bill contains provisions for this to be extended. In rail, the
original vision of developing on-rail competition, through open access (a prime rationale for vertical separation, along with the ability to attract new franchise operators), has been lost partly because of concerns that ‘cherry-picking’ by open access operators would increase subsidy requirements by franchise operators; and also because of capacity constraints on the network.

- While competition is not essential for establishing the legitimacy of privatised utilities, there is limited public tolerance of failure when the sole provider of essential services moves to the private sector. This has been seen in the reaction to Yorkshire Water’s supply failure (1995) but also in reaction to rail accidents such as Ladbroke Grove where it was alleged that the privatised industry had put profits before safety.

- Finally, regulated utilities need to be established on a sound financial footing. In contrast to the water industry, Railtrack never had this. It was criticised for under-investing in the network at a time when its spending on renewals already substantially exceeded what had been allowed for in its track access revenues. The borrowing that it incurred ahead of the periodic review to finance this additional expenditure also had the effect of reducing its ability to raise more capital in times of crisis. Despite a 50% increase in allowed revenues in the 2000 periodic review, spending needs have continued to exceed allowed revenues by a growing margin. Only now, seven years after privatisation, is there acknowledgement of backlog renewal needs for the network as a consequence of historic under investment. However, the problem of determining efficient costs remains daunting given the shocks the industry has experienced and, in contrast to the water sector, the lack of effective comparators. The regulator has recently drawn attention to the challenges of incentivising efficiency without the existence of equity in Network Rail’s financial structure.
8 THE UK MODEL AND ITS INFLUENCE ON EU COUNTRIES

Pippo Ranci

Introduction

I shall try to develop the theme of my paper with reference to Europe, bearing in mind that the limits to my knowledge and experience prevent me from developing a satisfactory analysis covering the whole of the European Union. I shall make occasional references to some European cases and, more frequently, to issues related to the Italian liberalisation process.

In general, it is fair to say that the EU liberalisation and regulation of energy started from the UK. The UK experience was the starting point and model for many countries, indeed we could say for all European cases, with the possible exception of the Nordic market. Regulators have been set up in almost all European countries. I doubt that such a new type of institution would have been so widely adopted if parliaments and governments had not had the British precedent to consider. Application and development followed a variety of paths and solutions. My purpose is to illustrate some aspects of this variety and look for the reasons the different elements developed as they did.

The ‘national champion’ constraint

The basic decision in favour of a Europe-wide liberalised energy market has been taken and the process will not stop. Yet the obstacles are powerful: the UK model has been followed only partially, both in terms of choices regarding liberalisation and the
restructuring of the industry and choices relating to the setting up of regulatory bodies. The incomplete design of the liberalisation process and the weakness of regulators in many countries make the process of establishing a European market for energy a difficult task. The basic reason for such half-hearted choices lies, in my view, in the ‘national champion’ issue.

In a context of taking the European, and indeed global, view, governments are worried that national independent companies may be wiped out and national economies may be transformed into sets of sub-providers, assembly lines, and commercial agents working under foreign direction. Old energy monopolies were important national economic agents. In many countries, they are the most obvious candidates for the task of building at least some nationally-based companies, of a sufficient size to compete in the European market. When government is keen on such a scenario, liberalisation is doomed to be half-hearted at most.

The UK context was quite different. The world role of British industry and finance was clear and strong enough to enable any UK government to tackle the dismantling of Central Electricity Generating Board without any of the worries that continental governments would feel when considering the case for possibly dismantling EdF, or Enel, or RWE, or Endesa.

In fact, governments pursue the strengthening and growth of former monopolists so as to increase their competitive ability in Europe and their asset value, which, in the frequent cases of government ownership, is also in the direct interest of the Treasury. As an instrument of such a policy, Spain and Italy have developed compensation payments for the ‘stranded costs’ borne by former monopolists, borrowing from a practice that had been developed in the American case of local privately-owned monopolists which had tailored their generating plants to prospective demand from the local area and which found themselves suddenly exposed to competition from neighbouring generators.
In general, even a loss of national ownership presents less severe consequences in the UK than elsewhere. A foreign-owned UK company will be likely to maintain its British character and head-office location. The strength of the British environment for industry is based on first-class financial markets and services, a world language, and good research and education: ownership is not so important as it is in many other countries, where such unique environmental conditions do not exist.

A well developed stock market also makes a difference. The National Grid Company was privatised on condition that it would not be under the influence of any company with interests in the electricity business: this was not a difficult task, since the model of the public company was already there, alive and well and operating. When the Spanish government decided to privatise Red Elèctrica de España, they decided that allocating shares to all electricity operators so as to offset conflicting interests was more feasible than to try to keep them out. Italy stuck to the model of a government-owned system operator for electricity, while getting the privatisation of all other players under way; the privatisation of the national electricity grid and the company owning the national gas network is planned to take place in the near future, and Italian officials are worried that the floating of shares might end in a direct or indirect takeover by some mighty energy operator (the case of EdF’s near-takeover of Italy’s number two electricity and gas company, Edison, is still open).

The main consequence of such constraints is that the former monopolist is now the dominant company in each continental energy market; newcomers are few, and some have disappeared after a short blossoming.

Continental liberalisation implies a continuous ‘compare and contrast’ process with the national champion model. It is up to liberalisers to underline the advantages of liberalisation for the national economy, and the reasons why a policy of protection works towards the national interest only on a superficial and
short-term level. Regulators have a role in such a process, often having to defend it to their own governments.

**Geography**

Maintaining a large dominant company in a national market may not obstruct competition if the legal monopoly is eliminated and the national market is fully merged into a wider one where many companies, including all former monopolists, compete. This is the historic recipe for creating the European internal market in many sectors.

The large continental area encompassing France, Germany and Benelux could in theory implement the historic recipe, with a relatively easy extension to the east. If this has not yet happened, it is because of the resistance posed by legal and *de facto* restrictions to entry in several national or regional markets. This is where European directives and the work of the European Commission help.

In Italy and in the Iberian peninsula the geographical conditions are different, and echo the UK case: physical limitations to interconnections prevent the full merging of the national market with the European one, and present the uncomfortable alternative of having to choose between creating competition in the national market and trying to reconcile liberalisation with structural conditions of market power concentration, which should be considered as inconsistent with competition. Greece is also in a similar condition, due to constraints which are more political than strictly geographic.

The Iberian electricity market does not have one national champion, but a very small number of firms. On surface, the Spanish case is very similar to the UK one of fifteen years ago, but the government’s attitude is different. An effort has been made to create a single market covering Spain and Portugal, and to promote the expansion of the largest company abroad rather
than through domestic acquisitions. However, it is still hard to see how to make the move from a strict oligopoly to a more competitive framework.

In Italy, the laws introducing liberalisation included provisions forcing Enel to divest almost one third of its electricity generating capacity and Eni to gradually reduce its share of the gas market to 60%. This was enough to penalise the two Italian energy champions more than had been the case for any other European company, and yet far less than is needed to introduce real competition to the Italian market.

Greece is still a *de facto* monopoly. The strategy for establishing a degree of competition relies on new generating plants and new interconnections with neighbouring electricity systems (and in the future, gas systems).

**Conditions for a cheap energy supply**

Energy-intensive industries face worldwide competition. The competitiveness of firms depends on the price of energy (electricity or gas), which they are not able to buy in a worldwide market. So firms apply strong pressure on government and the regulator in their country in order to secure a cheap energy supply, regardless of whether the price applies to all buyers in the national system or to one sector only.

Where average national prices are low, as in the UK gas market or, so far, in the French electricity market, no problem arises.

In the presence of a high average national price of energy, the easiest way for energy-intensive industries to secure a cheap supply, once special tariffs have been ruled out by European regulation, is to obtain and protect opaque practices and agreements. This sets an obstacle to liberalisation, and to the efforts of regulators to establish a clear and non-discriminatory system of prices and commercial conditions.
THE INFLUENCE ON EU COUNTRIES

Legal framework

In countries following Roman law, rather than common law, rulemaking has to be more formal and rigid. If the rulemaking authority is different from, and consequently less threatening than, government, private parties find it relatively easy to appeal to the courts (administrative courts in countries such as France and Italy). In Italy decisions by the regulator are subject to a two-level judiciary procedure that may require more than a year.

For most industrial and commercial decisions this implies an intolerable element of uncertainty. Such ‘regulatory risk’ is an argument against the transparent, non-discriminatory setting within which liberalisation should unfold and competition flourish, and in favour of more opaque, but more effective, agreements by powerful incumbent firms – among themselves and possibly with government.

When it comes to judgements by the courts, we can see how difficult it may sometimes be for the upholders of justice to appreciate some features of liberalisation in an area where the notion of public service is usually understood as being inconsistent with the workings of a free market.

First example, economists have developed the concepts of efficiency-compatible tariffs, standard costs and the price-cap mechanism; yet it is difficult to convince judges that it is fair for a public service activity to be remunerated at a level which may be lower than actual costs.

Second example, it is a straightforward belief among economists that allocation issues raised by capacity bottlenecks in the networks should be addressed through such market mechanisms as capacity auctions. But let us consider the case of the interconnections between the Italian and neighbouring electricity systems, which are insufficient to prevent electricity prices from being substantially higher in Italy than on the other side of the Alps. Import prices were set, before liberalisation, by bilateral
trading among monopolists, and lie somewhere in the gap between domestic and external prices. Capacity auctions would inevitably push the price of imported electricity upwards, bringing it very close to the domestic price. No matter what socially beneficial use could be made of the proceeds from the auctions, large consumers of electricity (operating in energy-intensive industries) can show that, if allowed to use the interconnections, they could buy electricity abroad at a cost similar to that of their competitors and consequently manage European competition; under a capacity auction system, their energy costs would rise to the point of having to close down plants and lay off workers. So it may appear to be more ‘equitable’ to do away with auctions and allow large, energy-dependent consumers at least a limited access to interconnections, free of charge.

These two examples refer to judgements actually pronounced in Italian administrative courts, and I am sure they may also be of more general interest in stimulating some useful thoughts on the relationship between law and economics; or at least on the issue of ensuring that the implications of liberalisation are fully understood.

Characteristics of the gas market

The UK gas market is supplied by a sufficiently high number of independent companies to allow for competition. Suppliers have an interest in accessing the network under fair conditions. Only a small and dwindling share of the continental gas market is supplied by North Sea producers; the lion’s share of supply comes from two countries, Russia and Algeria, where one producer controls the entire supply and sells under take-or-pay contracts, with the further limitation of destination clauses. No continental operator would build a pipeline without the guarantee of long term contracts for its use: in fact gas pipelines are built around contracts, a condition which runs counter to the principle
of third party access (TPA), which is a cornerstone of European liberalisation.

The transition from the present state to a free market based on TPA requires directives, regulation, new entries and new initiatives by operators, and a profound change of mindset.

Security of supply

A market-based organisation of energy sectors may be too short-term in outlook to provide sufficient guarantees of adequate long-term supply, given the long timescale for planning, authorisation, and building that characterises energy investment. Governments are concerned with security of supply; they have long been used to relying on the special responsibility set on the monopolist, all the more so if the monopolist is a state-owned body.

The UK experience is comforting; years after liberalisation, the supply of electricity and gas is quite sufficient, perhaps excessive. On the other hand the experience of California, as it has come to be seen through incomplete and sometimes biased summaries, sheds a disquieting doubt on the ability of market arrangements to meet demand. The opponents of liberalisation often air this experience as indicating that liberalisation is in itself a threat to the security of supply.

It would be wise to analyse the characteristics of the UK experience with the question in mind of whether such conditions hold in the rest of Europe. I see marked differences. In the UK, gas supply has been at hand (although new investment will be necessary in the future); investment in electricity has been sustained by the attractiveness of a pioneering liberalisation, and by the dynamic mood of US companies gaining a foothold in a new and promising European market.
Present conditions in the continent are quite different. Gas has to be carried from very far off. US companies have disappeared from the market, and even European newcomers are much fewer in number and less ebullient than a few years ago. A wave of investment decisions is an unlikely outcome of the current slow-progressing and piecemeal liberalisation process. In addition, environmental opposition to almost any type of investment and the burden of long and slow administrative procedures for authorisations and licences contribute to rising costs and uncertainty: such difficulties are clear to see in Italy, and I believe are not wholly absent elsewhere.

If we cannot rely on a free market, under the present conditions, to deliver the expected results, a popular answer (among governments) may be to superimpose a degree of planning on the workings of the market. There is a probably a better alternative, which consists in improving the environmental conditions that allow markets to work properly, and possibly introducing special auxiliary markets such as one for tradable long-term capacity rights.

Conclusions

While the UK model was exerting its decisive influence on many European countries, the UK experiment went on. What is the UK model nowadays? If we look at market design in electricity, is it the Pool or the NETA?

There is no clearly defined country model, and there is much to be learned from a comparative analysis of country experiences. When we meet in the sessions of our Council of European Energy Regulators, we confront problems, results, and sometimes failures, so that we can better prepare ourselves for progress and offer valuable experience to the new regulators in the liberalising countries of Eastern Europe and in other continents.
THE INFLUENCE ON EU COUNTRIES

Enormous progress has been made during the last two decades, and work is under way on such aspects of liberalisation and regulation as the technicalities of tariff setting (length of period, transition clauses between periods such as the splitting of efficiency gains, treatment of depreciation and re-evaluation of assets, treatment of such external and non-controllable costs as fuel in thermal generation); quality regulation; and compensation for public service obligations such as special tariffs for low-income consumers. New issues have been raised by European integration, such as tariff harmonisation, the treatment of cross-border trade and transits: how interesting to compare European and US experience on such issues.

Much of such work started off with the UK’s pioneering liberalisation: this is now a common task, and it is useful to encourage frequent interaction in this area between regulators and other policy makers on the one side, and the world of research on the other.
Acknowledgement

Thanks are due to Jon Stern, Peter Vass, John Cubbin and the LBS Regulation Initiative/CRI/City University for inviting me to participate in the conference. The author is grateful to Peter Forsyth, David Gillen, Nienke Hendriks and David Starkie for extensive comments on earlier drafts of the paper. Heinz Decker, Michael Klenk, Rolf-Dieter Rolshausen have provided with useful information on German airports. The responsibility for any remaining shortcomings remains the author’s.

Hans-Martin Niemeier, University of Applied Sciences, Bremen

---

9 PRICE CAP REGULATION OF GERMAN AIRPORTS: SHOULD GERMAN AIRPORT POLICY FOLLOW THE LITTLECHILD APPROACH?

Hans-Martin Niemeier

Introduction

Ex-post rationalisation has always been a great danger in the re-interpretation of past events. Hamburg airport was partially privatised in October 2000 and the form of regulation had been changed from cost based to a price cap model earlier in May. It would tempting to claim that the decision makers had read Littlechild’s path breaking report, Regulation of British Telecommunications’ Profitability’, a work which we celebrate today.\(^1\) Ideas seldom spread so directly, but to our good fortune our academic consultants Hartmut Wolf and the late Martin Kunz must have read the report. At that time I was a civil servant

---

\(^1\) Littlechild S (1983), Regulation of British Telecommunications’ Profitability, London, Department of Industry.
working for the Ministry of Economic Affairs of the Free and Hanseatic City of Hamburg, and they provided a copy of a paper by Littlechild, not the famous report, but the much shorter paper The Regulation of Privatised Monopolies in the United Kingdom. How much I read it, how much I understood it, how much went into the proposals and how much remained of it at the end of the long bureaucratic and political decision processes I cannot recollect. Certainly, it is safe to claim that Littlechild indirectly influenced the price cap regulation of Hamburg Airport through its various interpretations and through the actual practice of airport price cap regulation in the UK and Australia.

In this paper I would like to deal with the question whether German airports in general, not only Hamburg airport, should be regulated by a price cap model. To begin, I will provide a brief overview of the main structural problems of the German airport industry. Next I will argue that the root of these problems lie in the way German airports have been regulated, with the exception of Hamburg. I will then outline the main points of the Hamburg model of price cap regulation and report how it has worked thus far. The change of regulation has lead to a reform of regulation at Frankfurt airport. The new charge framework will be evaluated in section four. I will argue that this framework is a further step towards incentive regulation, but that further reforms are necessary and that the adoption of an improved price cap model is superior to other currently debated options; namely, monitoring and treating airports as an ordinary industry. Finally, before summing up, I shall argue that price cap regulation as such is not sufficient to overcome all the inefficiencies but should be part of a larger reform of setting incentives for an efficient static and dynamic allocation of airport resources.

Let me suggest that from my reading of Littlechild’s paper this approach is pretty much in line with a carefully applied light handed approach of effective regulation of monopolistic

---

bottlenecks combined with an approach to increase the effectiveness of competition.

**Major structural problems of the German airport industry**

Germany has 18 international airports and over 20 regional airports with scheduled or charter traffic. German airports have experienced strong passenger and traffic growth particularly in the decade after the liberalisation of the European aviation market (see Figure 1).

**Figure 1: Passenger and freight movements at German airports**

*Source: Arbeitsgemeinschaft Deutscher Verkehrsflughäfen*
In 1990 the international airports served 80m passengers and in 2000 143m passengers (+79.7%). Freight volumes rose from 1.5m tonnes to 2.3m tonnes (+53.8%). Commercial movements increased by 54% from 1.2m to 1.85m in this period. However, in winter 2000 the world economy began to slide into recession which coincided with the events of 9/11 and with the more recent Iraqi war, the aviation industry has been severely affected and this has lead to much more than a temporary crisis. German airports also felt this crisis, but not to the same degree as Germany’s airlines. Passenger movements fell only by 1.9% in 2001 and 3.1% in 2002, while commercial movements were nearly stable in 2001 and decreased only by 1.8%. Freight fell sharply by 4.5% in 2001 but bounced back in 2002 with an increase of 3.7%.

The crises have slowed down the worldwide trend towards privatisation of airports. Privatisation of Sydney airport was delayed for a year because of September 11 terrorism and the collapse of Ansett. The parliament of the Netherlands voted against the privatisation of Schiphol airport last year. Germany has been reluctant to immediately follow the trend of privatisation but in the mid-nineties a plan was proposed to build a new fully privatised Berlin airport. The entire project has had a number of setbacks and has been delayed by many political scandals. Up to now no private investor has acquired a majority stake in a German airport (Table 1).

Only five out of 18 international airports are partially privatised, namely Düsseldorf, Frankfurt (Fraport), Hamburg, Hannover, and Saarbrücken. Furthermore, Fraport has, together with a local bank acquired a 30 percent share in Hannover airport and owns 51% of Saarbrücken airport. The private influence is in both cases rather indirect. No regional airport is privatised with two notable exceptions. Fraport owns 73% of Hahn airport and Düsseldorf airport owns 70% of Mönchengladbach airport. Both

---

are secondary airports in their respective regions and are served by low cost carriers.

Table 1: Private ownership of German airports

<table>
<thead>
<tr>
<th>Airport</th>
<th>State ownership</th>
<th>Private</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Federal</td>
<td>Länder</td>
</tr>
<tr>
<td>Düsseldorf</td>
<td></td>
<td>50.0%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fraport</td>
<td>18.4%</td>
<td>32.1%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hamburg</td>
<td></td>
<td>51.0%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hannover</td>
<td>35.0%</td>
<td>35.0%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Saarbrücken</td>
<td></td>
<td>49.0%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hahn</td>
<td>26.93%</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mönchengladbach</td>
<td></td>
<td>29.97%</td>
</tr>
</tbody>
</table>

Source: Arbeitsgemeinschaft Deutscher Verkehrsflughäfen

Once the current world-wide crises in aviation ends airports will again be a growth industry and the topic of privatisation will come to the top of the agenda. However, the German airport industry is not particularly well prepared for growth and for privatisation as long-term structural problems hinder the airport
industry from realising its potential. From my point of view there are the following problems:  

- **Lack of productive efficiency.** Doganis et al notes that for 1993, Frankfurt and Düsseldorf airport were producing above average European costs while Heathrow and Gatwick had lower cost than the average. Both London airports were more successful in developing the non-aviation business. Frankfurt and Düsseldorf airport relied on their traditional aviation business to generate the majority of airport revenue. Concession and rental income per passenger was only half as high as the income of Heathrow and Gatwick. Of course, such evidence is far from conclusive to prove the differences in commercialisation, but the study supports the casual observation that most German airports have not developed their non aviation business as rapidly as possible. Even Hamburg airport, which is rated highly by investment banks for its excellent management, made the mistake of building the shopping area on the arrival level of its new passenger terminal.

- **Lack of market orientated quality standards.** Given the tendency to gold plating German airports offer high quality standards, but in general they fail to provide a market-orientated level of quality with different standards. According

---

4 I would like to stress that my view reflects personal judgment resting on casual observations and some empirical analysis. A comprehensive study of the German airport industry is much needed.


7 The empirical evidence for productive inefficiencies of airports is less strong than in other industries because only a few studies have been conducted. Furthermore, there is an enormous variety of causes affecting the performance of airports making benchmarking a complex task. See, Gillen D and Lall A (1997), Airport Performance Measurement: Data Envelope Analysis and Frontier Production Functions, Transportation Research E, 33, 261-274.
to Doganis et al. (1995) both price and quality of ground handling at German airports were too high. The airlines demanded a lower, but for their business sufficient quality. Providing different quality standards will become increasingly important as low cost airlines gain market share and demand evolves for unbundled services from airports.

- **High level of charges.** The level of charges has risen in accordance with the inflation rate over the past decades. This has led to a high level of charges. Welfare gains of a decreasing cost industry have not been passed on to the consumer, but remained in the airport industry over a period of two or three decades.

- **Inefficient structure of charges at uncongested airports.** The majority of German airports have idle capacity and this will not change even in the case of strong traffic growth. Traditionally airport management has seen the structure of charges as having no effect on passenger or operations growth. The function of pricing has been seen solely as an instrument to finance airport operations. Changes to airport rate structures have been largely the result of external pressure and not an active management strategy.\(^8\) Weight based charges according to ICAO recommendations have been taken as granted. For an uncongested airport, there has been no effort from airports to develop a Ramsey pricing structure by charging a fixed fee per landing plus a charge per available

---

\(^8\) Two cases are very instructive. Differentiation of fixed charges have been finally given up in 1997 due to pressure from EU-Commission. Coordinated efforts of major German carriers lead to a lower differentiation between domestic and foreign countries of passenger charges in April 2001. In both cases airports did not even try to analyse if these changes increased or decreased traffic volumes.
seat mile as suggested by Morrison. Aircraft weight does not accurately reflect the cost of providing and maintaining runway capacity and provides no incentives for airlines to minimise the costs they impose on airport infrastructure as the costs are averaged among users.

- **Inefficient rationing of peak and excess demand.** In the next decade it is forecast that only one of the two German hubs and one of the secondary hubs will be congested, some secondary hubs will have peak problems while the majority of German airports have excess capacity. However, this forecast takes the current pricing regime of airport capacity as given. The scarcity of airport infrastructure is not currently correctly evaluated by a functioning price mechanism as airports do not charge efficiently and slot trading is prevented by law. Relative prices have lost the function to give guidance to the question at what time and to what extent which of the German

---

9 Weight based landing charges are sometimes interpreted as quasi Ramsey prices because heavier aircrafts are able to pay a higher charge than small aircrafts. See Productivity Commission (2002), Price Regulation of Airport Services; Report No 19, AusInfo, Canberra. This interpretation is correct, although the system has its shortcomings and can probably never be designed in a perfect way as the Australian Competition and Consumer Commission points out. See Australian Competition and Consumer Commission (2001), Price Regulation of Airport Services, Submission to the Productivity Commission’s draft report October 2001, www. pc.gov.au. The important thing is that, as Morrison shows, the approximation can be improved easily. See Morrison S A (1982), The Structure of Landing Fees at Uncongested Airports, Journal of Transport Economics and Policy, 16, 151-159.


airports should be extended. Runway and terminals capacity are usually constructed to serve peak demand and the costs are distributed by uniform charges. No effective peak pricing is practised at German airports so that peak users do not pay for the full costs of capacity extension, but are subsidised by off-peak traffic.\textsuperscript{13} When excess demand exists, it is not rationed away efficiently, but rather, expensive additional capacity is provided.\textsuperscript{14}

- \textit{Irrational investment decisions}. As charges do not reflect supply and demand conditions they have lost all their information about scarce capacity. In addition, they do not reflect environmental externalities. Under these circumstances the economic question of airport expansion becomes more and more a political question. In this political process the airports have developed a ‘predict and provide’ strategy based on a logic of ‘jobs versus the environment’ (Niemeier, 2003). Airports base their strategy on the hope that high growth promises based on optimistic traffic forecasts and employment effects generated by input output models will lead to an acceptance of the negative effects of growth, namely noise and pollution in the neighbourhood. However, the strategy is logically flawed especially because the expansion is a question of the social net return on investment, which cannot be answered by an input output analysis, but only by a cost-benefit analysis.\textsuperscript{15} Therefore the strategy of airports is very risky as not only the economics of airport expansion but also the politics of airport expansion become economically

\begin{table}[h]
\centering
\begin{tabular}{|c|c|}
\hline
\hline
\end{tabular}
\end{table}
irrational. It is doubtful whether a political consensus on airport expansion might be reached.

The shortcomings of cost based regulation

The economic regulation of German airports is a legacy from the times of a regulated aviation market. Unlike the UK, Germany did not change airport regulations with the liberalisation of the aviation market, and even with the beginning of the process of privatisation of airports the old system of cost related regulation of airport charges remained unchanged with the two exceptions of Hamburg and Frankfurt (discussed below). Legally, the old system is based on clause 43 Luftverkehrszulassungsordnung which states that the “airport operator must seek approval for the charges for starting, landing and parking of aircraft and for the use of passenger facilities from the regulatory authority” (translation by the author). Obviously, law does not define exactly how airport charges must be regulated, but there has been a common practice for the last two decades. In short it has the following main features:

- The Länder (federal states) actually regulate charges, but the Department of Transport (DoT) can intervene. Länder and DoT are both owners of airports as well as regulators. Officially, according to public law politicians and public servants, who are members of the board of an airport, are not allowed to participate or influence the decision on charges. As there is no institutional separation the law seems to provide no effective means to avoid clashes of interest.

- The authorities regulate the charges according to principles of cost relatedness, transport policy and reasonableness. The costs include the depreciation of capital and a normal rate of return on capital. In general the single till principle should be

---

16 Niemeier H-M (2002), Regulation of Airports: The Case of Hamburg Airport – a View from the Perspective of Regional Policy, Journal of Air Transport Management, 8, 37-48
applied, but in some cases a dual principle has been used. The regulation is not enforced and monitored very carefully. For example, in most cases no account is taken if previously approved airport charges have led to high profits because costs had increased less than forecast. Airports were in general allowed to charge up to the level of the inflation. The ‘criterion of transport policy’ was generally interpreted to enforce a uniform level of charges. Traffic distribution was not seen as a function of airport charges, because airport charges are only a small share of airline costs. Reasonableness was interpreted that charge increases should not be too rapid or abusively high for specific users. These charges were viewed as a means of financing airport investment and operations, only.

- The users of an airport are consulted. Initially the object of consultation was to inform the regulator of the effects of the new charges on the behaviour of airport users, but not to inform the airport users about the financial situation of the airport. In recent years airlines have been provided with aggregate information on costs due to the demands of the European Commission. However, consultation is not open to the general public as in the UK. The reasons for approval or disapproval of a decision are neither made public to the airlines nor to the general public.

As the regulatory framework sets the incentives and defines the rules of the game I would like to argue that the cost based type of regulation plays at least a major role. Of course, there might be

---

17 The single till together with the regulation of the rate of return tends to aggravate these distortions. Cost plus with single till acts as an obstacle to the development of non aviation business, because profits above normal must be used to lower charges. It is also an obstacle for innovation through privatisation. As airport profits are limited to a normal level private investors with innovative concepts for non aviation will invest in other industries, which reward their efforts to increase productivity yielding higher rates of return. See Starkie D and Yarrow G (2000), The Single Till Approach to the Price Regulation of Airports, London, www.caa.co.uk.
also be these other factors such as public ownership which contribute to the mis-allocation of resources, but the more airports tend to become commercial entities and seek profits the more important the incentive structure will become.\textsuperscript{18}

Regulatory economics expects from a system of low powered cost based regulation an inefficient allocation of resources and these phenomena are to be observed as I have argued above.

a) \textit{Inefficient choice of inputs}. If the allowed rate of return on capital is above the cost of capital the airport has an incentive to expand the capital base to increase profits (Averch Johnson effect). Furthermore, there are high incentives for cost-padding leading to productive inefficiency. In short, the German type of regulation sets incentives for costly airport infrastructure with excess capacity and gold plated terminals.\textsuperscript{19}

b) \textit{Inefficient price structure} (Sherman, 1989). Under cost based regulation the airport has no incentive to adopt peak pricing, but “\textit{rather lower the price of capital intensive peak demand in order to justify more capital assets, and charge a monopoly price at off-peak times to realise profit that greater capital will justify}” (Sherman, 1989, p241). From this perspective average pricing without time related price differentiation is the expected outcome at German airports.

c) \textit{Regulatory capture}. Ideally a regulator should maximise welfare, but already Stigler has questioned this assumption and argues that the regulated firm might be successfully influence regulatory decisions in its interest (Peltzman, \textsuperscript{18} Public ownership has obviously also a major impact on the performance as very often airports are seen as a tool of regional policy. Airports should increase local employment. Terminals are seen as highlighting the dynamism of a city. No doubt even for commercially run airports these factors are important as long as the owners remain the local government. \textsuperscript{19} Sherman R (1989), The Regulation of Monopoly, Cambridge UK, Cambridge UP.
While it might be very complicated to completely avoid the risk of capture, the German system in which the functions of ownership and regulation are not separated seems to be perfect for regulatory capture. It gives the management of the airport the rare opportunity to influence through the owner the regulator in various ways.

In sum, cost plus regulation in Germany is practised rather loosely. The authorities seem to be hardly aware of the low powered character of this system, which results in incentives to build and operate airport infrastructure inefficiently. No doubt the system can be improved without switching to a different regulatory system. Improving cost plus regulation however involves raising direct regulatory costs without overcoming the basic flaw of cost plus regulation, namely gold plating and inefficient price structures. Therefore the Ministry of Economic Affairs felt from the beginning of the process of privatisation that a radical shift to a new regulatory regime seemed to be necessary precondition to privatise Hamburg Airport.

**Price cap regulation of Hamburg Airport**

Such a radical shift was opposed by the Department of Transport, and therefore the legal structure price cap regulation has to be implemented by a legal contract between the airport and the Regulator. Both parties agreed to sign a contract for the first 5-year price cap period from January 1 2000 until the end of 2004. Thereafter the contract can end or be extended. The price cap regulation consists of the following key principles (Niemeier, 2002):

---


PRICE CAP REGULATION IN GERMANY

• **Scope of services to be regulated.** According to the essential facilities doctrine the scope of regulation should be limited to those segments of airport operation, which are necessary for airline operations and which cannot be duplicated. The line between regulated and unregulated charges was initially drawn in such a way that the price cap includes the fixed and variable landing charges, and the aircraft parking charges. Ground handling service and the non-aviation activities were left out as the airport was facing at least potential competition. Ground handling was seen as very competitive as the airport has to restructure these operations to meet the competition of companies specialising in it. In the non-aviation market the airport has in principle a strong market position, but mainly because of locational rents, which should be left unregulated. Charges for access to, and use of central infrastructure for ground handling should be regulated according to the essential facilities doctrine. However, as the regulatory contract is bound to the current legal structure the scope of price regulation had to be reduced to the scope of § 43 LuftVZO, leaving out this part of the monopoly.

• **No single till.** For Hamburg airport the single till principle seems to be inappropriate for a number of reasons. Firstly, the single-till principle extends regulation to markets which might work effectively. Monopolies should be disaggregated as had been done successfully by liberalising ground handling and *ex ante* regulation should be limited to activities with natural monopoly or other market failure character. Secondly, Hamburg airport is not an unconstrained airport, where the single till principle might lead to a first best solution, if non-aviation rents are sufficiently high. The potential welfare gains to reach by a first best solution compared to a second best solution are limited as average costs flatten out. Thirdly, locational rents are limited at Hamburg airport as the non-aviation business has been largely undeveloped. The single till acts as a tax on non-aviation thereby lowering incentives and

---

22 Locational rents should better be limited by a city planning policy given scope for competitors near the airport area (Niemeier, 2002).
innovation. Fourthly, as regulation sets the upper limit of the level of charges, the airport management is free to apply the single till and lower charges to increase traffic in order to increase non-aviation revenues. It was felt that such a decision should not be taken beforehand by the regulator, but left to the business management.

- **Rebalance of charges and revenue approach.** Price cap regulation does not regulate the structure of charges as the old cost plus system does. Incentives are set to reform charges and adopt an efficient structure. For the specification of the price cap the revenue yield and the tariff basket approach were evaluated. Both approaches set incentives to rebalance charges, but the price basket approach seems to be superior in terms of efficiency.\(^{23}\) However, because of the unsettled disputes about emission and central infrastructure charges, a decision on a defined price basket was difficult to reach. The revenue yield approach was finally chosen.

- **Proposal of \(X = 2\).** The value of \(X\) was determined in two steps. The number of workers for the regulated services was assumed to be constant as it was expected to handle the growing number of passenger with the same amount of employees. Passenger demand was predicted to rise yearly by 3.9 per cent for the regulation period according to the forecast of MKmetric for Hamburg Airport. In the second step productivity growth defined as passenger per worker was fairly divided between the airport and its users. \(X\) was suggested to have a value of 2.\(^{24}\)

- **Quality monitoring and consultation.** The airport is obliged to implement a quality monitoring system, which includes among other things, regular passenger surveys and service indicators. The monitoring is linked to a system of

---


\(^{24}\) On the shortcomings of this approach see below section 7.
consultation. Users of the airside meet twice a year to discuss problems of organisation and service, while users of the landsite, namely non-aviation business such as travel agencies and car rentals meet on a yearly basis. The monitoring and consultation system was very much influenced by the system in the UK and Australia.

The users of the airport reacted, in general, positively to the new regulation system, but sought two basic changes. Firstly, a price cap review board with user representatives was demanded for Hamburg airport. The airlines wanted to be better informed about the expected passenger growth, major investments and in particular about changes to the structure of charges. The regulator accepted the proposal of a review board, because such a review board makes the price cap system more transparent. Secondly, airlines argued that the (negative) value of $X$ was too low, because the airport would reap enormous profits, if passenger demand grew more than expected. They demanded a value of 4 for the $X$. Of course, the airport management defended the value of 2 in the consultation process, but airport management and regulator picked up a proposal made by the airlines to combine the price cap with a sliding scale. After intensive discussions an agreement between all parties was reached (see Figure 2). If passenger growth exceeds 4%, then the $X$ of 2 will be raised by half percent for each per cent of additional passenger growth. A value of $X$ less than 2 was not considered necessary because in the spring 2000 the growth expectations were very optimistic and the discussion centred on growth rates of 6 to 8% with a minimum of 4%. Even the airport management would not have accepted any compensation for a symmetrical sliding scale, based, for instance, on a higher $X$. 
The Hamburg price cap model is far from being a perfect model (see Niemeier, 2002a and below). This was clear from the outset as it was more important to establish an incentive based form of regulation for the first time in Germany than postpone the process through refining the technical details. However, some of the technical second or third best solutions like the asymmetrical sliding scale caused major problems while others like the exclusion of the central infrastructure fee for ground handling so far have not.

In May 2002 the sliding scale was abolished so that the airport is capped with an X of two. What at first sight looks like a regulatory failure is however quite the opposite. The airport argued that a temporary decrease of demand followed by higher growth would on average lead to a relative high X. The airlines acknowledged that the asymmetry was a mistake which would unfairly hurt the airport and which was not thought of in the initial contract. Both parties and the regulator agreed to suspend the sliding scale. From my point of view this shows that in a relatively short time price cap regulation has built up trust and a sense of fairness. Both tend to lower transaction costs.25

25 The use of discretion raises the concern that stakeholders might believe that the regulator will not stick to the price caps as announced. In this particular case I think that such a risk is rather low as both parties agreed for very good reasons to suspend the sliding scale.
The charges framework of Frankfurt airport

The adoption of a price cap regulation for Hamburg airport was followed by intensive discussions between airports and airlines and among the federal states and the federal Department of Transport. Politics reacted mainly negatively preferring to leave everything as it was. Only a few federal states were in favour of price cap regulation. The Department of Transport feared that a new regulatory agency would create a huge bureaucracy like the telecom regulatory authority and played a very passive role. While the airline organisations favoured price cap regulation the airports were against it.26

As the airlines could not achieve political reform at the federal level they developed a piecemeal strategy by demanding price cap regulation in the consultation process at each airport. In April 2002, after one and a half years of complicated discussions, Fraport Frankfurt Airport (Fraport) and the Board of Airline Representatives in Germany (BARIG), the German Air Carrier Association (ADL) and Lufthansa agreed on a memorandum of understanding (MoU) on the future development of airport charges for the term between the year 2002 and 2006.27 Thereafter a public contract between Fraport and the regulator, Ministry of Economic Affairs and Transport of Hessen, was signed.

The core of the contract is a revenue sharing agreement. The average charge per passenger will be determined by the future passenger growth rate. Both parties agreed that with a projected

---

growth rate of 4% average charges could be raised by 2%. Note that these are nominal prices as the agreement is not related to the price level.\textsuperscript{28} In the case of a higher growth rate airlines participate with a 33% share in additional revenues. With lower growth rates the airport cannot fully compensate revenue losses through higher charges. Only 33% of the loss can be compensated. The agreement results in a sliding scale of airport charges to passenger growth, illustrated below in Figure 3.

**Figure 3: Frankfurt-Model**

Frankfurt-Model relates charges development and passenger volume

\[\text{Price Development (CAGR 2001-2006):}\]
\[\text{Passenger Development (CAGR 2001-2006):}\]

Forecast 2003: 2% increase\textsuperscript{*}

* excluding noise protection and extension program; CPI Forecast 2003: XXX %

\[\text{Source: Klenk (2003)}\]

The contract contains a provision for a noise protection programme limiting funding to €76m, but did not cover the problems of quality monitoring and funding the extension of Frankfurt airport. The fee for central infrastructure for ground handling is also not included. Changes to the structure of airport charges should be discussed in the newly established review board. In case of disagreement the airport can submit their

\textsuperscript{28} The German inflation rate was 1.2% in March 2003 well below the 2% target of the European Central Bank.
proposal to the regulator for permission under the given law and practice of cost plus regulation.

The agreement has the important advantage that it breaks with the tradition of low powered cost plus regulation, and in this respect it is definitely a step in the right direction. Within the contract period, the airport may behave as though it is subject to a price cap, though not of the CPI-X form. Furthermore, the sliding scale is continuous and in this respect superior to asymmetric sliding scales of Hamburg and Vienna airport. However, the incentives for cost reduction and for traffic increase are rather mild as the level of charges is stabilised at a high level. The agreement seems to reflect more the limited bargaining power of airlines and the absence of an active regulator acting in the interest of the consumer and the public. Michael Klenk of Lufthansa points out that:

“the way to the charges agreement in Frankfurt was definitely not - unlike Hamburg - a well coordinated ‘top-down’ approach to establish a new mechanism of economic regulation. It was indeed a rather itinerant journey which showed that a commonly accepted culture of such solutions was not existing yet. Therefore discussion and promotion of models for independent regulation are still necessary and needed, given the fact that the Hamburg as well as the Frankfurt system are time limited” (2003, 12).

---

29 The agreement offers a lot of interesting questions for future research. For example, why did Fraport prefer the contract to the current cost plus regulation? One explanation could be that the rate of return on the aeronautical assets is higher than the normal rate of return accepted by the cost related regulation. But it could also be that the airport management was not acting as a profit maximiser and preferred a stable relation with their main customers.
The agreement involved high transaction costs as negotiations were interrupted several times and might have failed. This highlights the most serious potential problem with the contract. If the airport wins an approval to build a new runway and/or terminal, the parties will negotiate on the financing of the investment projects and the quality of services without an independent regulator. The existing legal framework offers the airport a fall-back position of low powered cost plus regulation. This might lead to substantial transaction costs, which, given other minor technical problems like price commitment in nominal terms, lack of quality agreement and exclusion of central infrastructure charges, might destabilise the regulatory contract. The reason is the airport and airlines have asymmetric bargaining positions because of the fallback position of cost plus regulation.

Regulatory options for Germany

Currently it is not clear whether or not the different approaches towards incentive regulation will be successful at all. While most airports did not favour price cap regulation they were more open to the similar approach of the Frankfurt agreement, but this might change for the reasons indicated above. In this respect it might be useful to look at other regulatory regimes.

I shall confine myself to three concepts currently debated by airport regulators and analyse whether these concepts are appropriate for the present situation of the German airport system with its specific institution. In other words, I do not intend to

---

30 Klenk (2003) notes in a footnote, “In fact the MoU was yet ready to be signed at the end of April 2001 when Fraport Executive Board decided not to sign the fully negotiated text of the agreement and suspended talks. As a result relations between airlines and airport worsened substantially until talks were taken up again”.

argue in general that the two other options are inferior. Nor do I intend to argue in general that the two other options are inferior to the option I prefer. Even concepts I dismiss might be appropriate for other countries. The first option is to give up ex ante regulation and rely on general competition law. It is an option recommended by David Gillen for Canada and David Starkie for the UK. Monitoring, the second option, is the new regulatory system for Australian and New Zealand airports, which supersedes the former price cap regulation (Productivity Commission, 2002). Thirdly, I will discuss the merits of the price cap regulation, which I find appropriate for German airports.

Gillen and Starkie argue in short that the airport industry has lost the character of a natural monopoly. The abuse of monopoly power is limited by competition among airports or for not insignificant proportions of airport revenue and from other transport modes. Furthermore, Starkie places particular stress on the argument that complementarity of revenue from competitive non-aviation and monopolistic aviation business provides an incentive for airports not to charge monopoly prices. The profit-seeking motive will lead even the monopolist to differentiate prices introducing peak and congestion pricing. As all types of regulation are far from perfect and might result in distortions the balance shifts towards liberalisation and giving up ex ante regulation. In the event that airports abuse their monopoly power, the competition regulator can step in.

The question whether airport have a natural monopoly cannot so far be answered conclusively because only a few studies have been carried out. The results seem to indicate that average costs decline up to a level of 150,000 movements and 12.5m

---

34 Ex ante regulation is commonly justified by a combination of economies scale and scope and sunk costs relative to demand. There is an agreement about the sunk cost character of airports.
passengers stay constant and finally increase as hubs experience diseconomies of scale, due to congestion and environmental constraints.\textsuperscript{35} Taking this as a rule of thumb the main German hubs Frankfurt and Munich are definitely beyond that range, but secondary hubs like Hamburg, Stuttgart, Berlin and small airports like Bremen, Dresden, Hannover and Leipzig seem to have a natural monopoly in their relevant market. This strong market position is reinforced by legal barriers to entry transforming airports into legal locational monopolies whether or not they are natural monopolies. Especially for environmental reasons it seems unrealistic that in near future a new airport will be built in competition with the existent airports or hubs. It seems also highly unlikely that the ownership of terminals at existent hubs could be given to competing operators. Hubs face only some competition in the transfer market, but no strong competition in the origin-destination market. Therefore, in general the competitive pressures will be rather low even if the surface access is improved by a multi modal transport network.\textsuperscript{36}

Perhaps the Rhine area around Cologne and Düsseldorf might be an exception to this rule.

Given the mild pressures of competition it is doubtful if airports will be prevented from abusing their monopoly power in Germany. However, the complementarity of the different airport services might be an effective counter force. The complementary nature of non-aviation and aviation services is evident. The question is how strong this relation is and how much the airport is forced to lower prices to levels which can be reached by effective regulation or effective competition. An airport will maximise profits by lowering airport charges as long as the marginal gain from increased non-aeronautical revenues equals the marginal loss from lower aeronautical revenues. While the


\textsuperscript{36} This at least the case in the north German market, where Hamburg faces an inelastic demand and doubling the level of airport charges would decrease passenger demand by only 10%.
Productivity Commission finds “an incentive for airports to temper prices for aeronautical services” (2002, 188) the Network Economics Consulting Group (NECG) on behalf of the Australian Competition and Consumer Commission comes to a different conclusion (ACCC, 2001).

The price elasticity for aeronautical services seems to be rather low so that lower charges will not lead to significantly more passengers. However, this might be not the case in Germany and with low elasticities the welfare loss of an airport monopoly would be limited in any case. Furthermore, NECG argued that it is doubtful that the loss through lower charges will be offset by higher non-aeronautical gains as the airport has less market power in the non-aeronautical business than in the aeronautical. This might be more relevant for Germany as so far even privatised German airports have not reduced charges to increase traffic even in the case of low cost carriers and the location and monopoly rents seem to be difficult to create. For these reasons I doubt that full deregulation will change much. It may just stabilise a system with monopolistic slack and an inefficient price structure unsuited to deal efficiently with the capacity problems.

Price monitoring, the second option, was adopted on 13 May 2002 by the Australian transport minister. The main airports should be monitored for a period of five years with an independent review and the right to reverse powers of price control in case of abusive pricing. The decision is based on a study of the Productivity Commission, which analysed the two options of an improved price cap regulation and a monitoring system. The Commission recommended the latter one (Productivity Commission, 2002) and the minister agreed.

38 The German competition law, at least as practised by the courts, is quite ineffective in setting incentives for efficiency or even preventing the abuse of monopoly power as the court case between Düsseldorf Airport and the airline Hapag-Lloyd shows (Niemeier, 2003).
because monitoring should give “greater scope for airports to price, invest and operate efficiently”. Monitoring has itself pros and cons. It might be conducted in such a way that it encourages through greater flexibility an efficient price structure and lower costs if these are the criteria which will be monitored. In this respect the results might be similar to price cap regulation and monitoring might be superior as it has the flexibility to take account of unforeseen developments like crises in aviation. However, it seems unlikely that even in Australia with a well developed and experienced regulatory system monitoring might be successfully conducted according to Forsyth:

“the criteria for poor performance are vague, but there is a real chance that high profits, per se, will be taken as the criterion of poor performance. This would be consistent with the ACCC’s history as a price monitor, and its suggested guidelines for data collection. In short, there is a distinct risk that monitoring may become a form of light handed cost plus regulation (2003, p21)”.

A precondition of effective monitoring is that the institutions are independent and the threat to re-regulate is real otherwise the airports have no incentive to behave efficiently. Germany does not meet these criteria, as it has no independent regulator with enough expertise. Therefore monitoring might create a situation

similar to complete deregulation in a monopolistic environment. The situation might develop as in New Zealand, where agreements between the airport and its users have led to long lasting litigation, and in the case of Auckland Airport, prices have been judged to be excessive though not by a large margin.\textsuperscript{42} Interestingly the Commerce Commission of New Zealand recommended \textit{ex ante} regulation for Auckland Airport. Such litigation is a sign that the transaction costs due to opportunist behaviour are substantial and a severe problem of the relationship between airports and airlines. The court case between Düsseldorf airports and Hapag Lloyd over a 7.5\% increase of charges in summer 2001 might be just a beginning of long lasting court actions. \textit{Ex ante} regulation by price cap has the advantage of reducing transaction costs as it brings all parties involved together in an orderly described discourse.

Price cap regulation

German airports show all the signs of an inefficient choice of inputs with gold plating and cost padding combined with inefficient price structures. In short, the level of airport charges is too high and the charges are not differentiated effectively leading to an inefficient distribution of traffic, excessive investment in physical capacity, and to irrational planning processes of airport expansions. In addition, regulatory capture increases the potential for increasing transaction costs.

In the following I argue that price cap regulation following on from the Hamburg model is superior to full liberalisation or monitoring for other German airports, as it sets the right incentives. Such an approach is not without risks, but they seem to be manageable and the pros outweigh the cons (Table 2).

Table 2: Price cap - pros and cons

<table>
<thead>
<tr>
<th>Pros</th>
<th>Cons</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Incentives for productive efficiency &amp; efficient price structure</td>
<td>• Danger of turning into cost based regulation</td>
</tr>
<tr>
<td>• Accepted by airlines</td>
<td>• No effective incentives for investment</td>
</tr>
<tr>
<td>• Transparent &amp; open process</td>
<td></td>
</tr>
<tr>
<td>• Low transaction costs</td>
<td></td>
</tr>
</tbody>
</table>

Price cap defines a ceiling of the average price level so that the airport can increase profits by lowering costs and by increasing demand through differentiated charges. The airport has an incentive to increase traffic by lowering charges for price elastic traffic and by increasing charges for price inelastic traffic. Therefore price cap regulation might lead to an efficient price structure over a relatively short period of time as airport managers are undergoing a learning process from running an airport as a public utility to a profit seeking company. So far managers have not acquired the knowledge about demand elasticities for an explicit approach to Ramsey pricing, peak pricing and congestion pricing, but once the rules are set in a way that such price regimes do pay off the learning process will accelerate.

Such price differentiation increases uncertainty as there are always some airlines better off and some airlines are worse off. It was instructive that the airlines accepted a new system of noise charges at Hamburg airport effective from 2002. The new system has its winners and losers, but because average charges had to be decreased according to the price cap formulae, the group of airlines accepted it. Price cap regulation combines the effects of an efficient price structure which led to winners and losers with the promise to pass productivity gains to all airlines. Therefore, it decreases the transaction costs of a reallocation of resources.
Transparency and openness of consultation are self-evident principles of good regulation, but nevertheless the obvious is very often practised. This indeed is the case with the current German regulatory system. The airlines appreciated in the case of Hamburg that because of their demands, a price cap review board was established providing more information, and that the X was raised as proposed by the airlines. The fact that all parties agreed to the proposals shows that transparency and openness of consultation process are essential to the reduction of transaction costs. Such an agreement will not always be reached, but even in cases of disagreement trust in the impartial outcome of a consultation process is enhanced by price cap regulation. Such trust building reduces transaction costs.  

The cons of such a reform are mainly related to the question how well in practice price cap regulation works. Price cap regulation was intended by Littlechild as a pragmatic approach for a workable regulation of monopolistic bottleneck without the negative incentives of cost based regulation. In the following discussions price cap regulation lost some of its theoretical elegance and merits. In the static setting incentives for cost reduction are lessened if the regulator bases its decisions on X on the cost of the regulated firm or on its rate of return. In the dynamic setting strategic behaviour might induce the regulated firm to have relatively high costs at the end of the review period so that the potential of the increase of productivity is hidden from the regulator. These arguments are all very convincing, but should not be interpreted as an argument in principle against price cap regulation which some regulatory agencies have

done. Under price cap regulation the regulator tries to estimate future productivity gains and avoid gold plating. The approach is forward looking instead of the usual backward looking approach of cost related regulation. This intention is limited by the fact that the regulator does not want to set the X below the cost of the firm thereby risking bankruptcy and the limited knowledge of the regulator on the cost and demand function of the airport. However, the lag of price cap sets incentives to reveal not all, but at least some of the potential productivity gains. Furthermore, benchmarking although far from perfect might be useful to prevent the regulator from underestimating the cost potential to a large degree. How well or badly price cap regulation performs in the airport sector has so far not been studied, but the results from other industries at least indicate that incentive regulation reduces prices and costs and performs better than traditional cost based regulation.

The above argument focuses on the question how much of a possible productivity gain can be passed to the airlines and the final consumer by price cap regulation. Even if price cap regulation achieves less than expected, it has the positive incentive to establish an efficient price structure without high transaction costs in order to use the given capacity more effectively.

---

46 The Australian Productivity Commission has argued that price caps “converge towards cost-based regulation ...with associated high levels of regulatory involvement and risks of regulatory error...” (Productivity Commission, p308). This argument is not conclusive both on theoretical and practical grounds. In his theoretical analysis on different regulatory methods Bős concludes that price cap regulation “implies a satisfactory compromise between information requirements for the regulator and negative incentives for the public”, Bős D (2001), Regulation: Theory and Concepts, Bonn. In practice the regulator tries to estimate future productivity gains and not past costs as cost based regulation does. www.wiwi.uni-bonn.de/users/fiwi/www/papers/pps/ppslist.htm.
effectively and to have the right price signals for investment. In other words, price cap regulation might not create such good incentives for productive efficiency as some have hoped, but it creates good incentives for Ramsey prices and peak pricing (Brunekraft, 2000).  

A further criticism of price cap regulation is that it might lead to underinvestment. Investment in new terminals, or in a new runway, are long term projects with sunk costs while price caps have a shorter period usually of five years. In the first stage the regulator sets the price cap, then the airport makes its investment decision and in the final stage the regulator reviews the previous price cap. Obviously, the airport might be subject to opportunistic behaviour of the regulator which might reduce prices below long run average costs so that the return on investment becomes too low. Thus regulation might cause underinvestment and the investment decision depends on the credibility of regulation to allow for a fair return on investment.  

No doubt this would be a serious defect of price cap regulation as on a long term basis capacity expansion will be necessary. However, the empirical importance is far from clear. Helm and Thompson found in 1991 “some grounds for believing” (p238) in

---

underinvestment, but the empirical support for this hypothesis is still open, in particular, for the UK airports.\textsuperscript{51, 52}

The initial consultation paper of the CAA directly addresses the central problem of a credible commitment.\textsuperscript{53} Of course, the current regulator cannot bind the future regulator, but establishing a clear framework clearly signals to the airports that regulator will leave the airport a fair return for cost effective investments. Compared to German airport regulation, where the airlines miss even the basic rights of information on investment programs, the whole process is transparent to all parties and strikes a fair balance between various interest.\textsuperscript{54} Adopting a price cap regulation with an independent regulator would enhance the economic rationality of investment decisions. Therefore, I think it is worthwhile to risk price cap regulation in Germany.


\textsuperscript{52} Lieb-Doczy E and Shuttleworth G (2002), Grundprinzipien eines wirtschaftlich effizienten regulatorischen Prozesses, London, (www.nera.com), name three examples for a hold up problem between regulator and private firm, but Ai and Sappington (2001) found that aggregate investment of the US telecommunications does not vary systematically under incentive regulation relatively to rate-of return regulation.


\textsuperscript{54} These positive aspects do not imply that the UK regulation of airports cannot be improved. The act for regulating airports has the peculiarity that it establishes the Competition Commission as a second regulator in addition to the CAA. This is different from other regulated industries and has lead to clashing concepts on important details of airport regulation such as the single till principle. It has increased the direct regulation costs and also the transactions costs, but the incentives to invest are still strong although not as initially intended by the CAA. See Andrew D and Hendriks N (2002), Price cap regulation of airports in the UK in: Gillen D, Forsyth P, Knorr A, Mayer O G, Niemeier H-M and Starkie D. (editors), The Economic Regulation of Airports - Recent Developments in Australasia, North America and Europe, Aldershot, Ashgate forthcoming. A reformed system of regulation without competing regulators.
Price cap plus enhancing competition

The price cap regulation of Hamburg airport undoubtedly has its shortcomings, but it has the advantage that it has laid down the principles of effective regulation (see Table 3). While its technical aspects can easily be reformed it will be very difficult to establish an independent regulator for the industry on the federal level (Niemeier, 2002) even after the recent decision to create an regulator for the energy industry, which has so far been regulated by an agreement among the suppliers. Wolf proposes a regulatory system based on competing powers along the lines of public utility regulation in UK and Australia. Regulation should be light handed and there should be no incentives to over-regulate or create bureaucratic structures. While ex post regulation should be carried out as today by the German or European cartel-office, airports should be ex ante regulated by a small and independent unit at the German CAA. Such a group of four or six experts would be more effective and would even cut the current cost. The DoT should decide, which airport should be designated for regulation. An important part of the institutional reform is also that the need for ex ante regulation should be reviewed independently every five years as circumstances might change and in the long run the airport industry might become an ordinary industry as Gillen and Starkie claim.

An important technical improvement from my perspective to include the central infrastructure charge for ground handling, as this is part of the monopoly. This is in line with the basic philosophy of the Hamburg model to regulate only the bottleneck facilities. Furthermore, the price cap should be based on a dual till principle, leaving the non-aviation business unregulated (see also Brunekraft and Neuscheler, 2003). In this respect it is superior to UK regulation, which for legal reasons was forced to start on a single till basis and so far could not escape the

---

55 Wolf H (1997), Grundsatzfragen einer Flughafenprivatisierung in Deutschland, Kiel.
tradition. The simple calculation of the X can be improved.\textsuperscript{56} The X should be determined by the projected growth of productivity without rate of return considerations. Benchmarking should play a role, especially if better data can be obtained and its precision can be improved.\textsuperscript{57} Whether the X should be combined with a sliding scale is an open question, though if it is, the symmetry should be present. In a crisis a symmetric volume allows the airport to regain some of its revenue losses through higher charges. The airport business becomes less risky, but also the incentive to add traffic is reduced. A definite answer involves an assessment of the potential gains and risks to airports and airlines and ultimately this bears on the question of stability of regulation in deep crises (Forsyth, 2003).\textsuperscript{58} Service quality monitoring is working very well so that no stricter regulation seems to be necessary. Users should be informed through improved consultations along the lines of UK regulation.

\textsuperscript{56} The calculation of X by dividing the productivity gains between the airport and the airlines has an appeal of fairness, but it lacks economic rationality. In a competitive environment a company is forced to pass the average productivity gains of the industry to its customers. From 1992 until 1998 average productivity of West German airports measured in passenger per worker rose yearly by 4.5%. Assuming that this trend continues, the X level should be set at the level demanded by the airlines. Furthermore, the method does not take account of capital productivity.

\textsuperscript{57} NERA (2001), The Application of Benchmarking to Airports, Final report for the Civil Aviation Authority, London, www.caa.co.uk.

Table 3: Regulatory reform package

- Effective regulation
  - Independent regulator
  - No single till
  - Designation of airports with monopoly power
  - Setting the X-factor also by benchmarking
  - Monitoring of quality standards
  - Transparent consultation

- Enhancing competition
  - Slot trading
  - Open skies
  - Privatisation
  - Cross ownership restrictions

- Rational investment and environmental decisions
  - Cost-benefit analysis
  - Noise budget

Price cap regulation is only an imperfect substitute for workable competition. Therefore, it needs to be supplemented by a strategy to promote competition and to rationally decide public policy issues. Price cap regulation is an appropriate tool to set incentives for productive efficiency and for peak pricing. However, as the case of Heathrow clearly proves price cap regulation has its limits, if an airport is heavily congested and an expansion of capacity is blocked for political reasons. Limits on prices imposed by price caps make a full price rationing solution for excess demand not feasible. Regulated airport charges did not clear the market at Heathrow in the past decade; in fact, it has even led to a higher excess demand as it tends to lower the level of charges. A market-based solution could clear the market and
would make regulation less complicated.\textsuperscript{59} In Germany several options from secondary trading to auctions are currently being put forward by airports and by airlines to influence the reform of slot allocation rules by the EU.\textsuperscript{60} From my perspective it seems important that the slot mechanism should be combined with price capped charges as for only a minority of the total available slots at German airports demand exceeds permanent supply and the value of slots can be influenced by charges. Slot trading without effective regulation might set incentives for gold plating and other monopolistic strategies to increase charges so that productivity gains are not passed to the airlines and to the consumer.

Restrictive air service agreements (ASA) in general decrease welfare and divert traffic, but create rents for national carriers.\textsuperscript{61} The most extreme case in this respect is the ASA between the UK and US, which contributes heavily to the congestion at Heathrow and Gatwick.\textsuperscript{62} In Germany the situation is not as extreme as in the UK, but nevertheless liberalisation is necessary to increase welfare and competition. In particular restrictive ASAs also limit the competition among airports as airlines are restricted to certain airports and secondary airports cannot develop a niche market. In other words they enhance an inefficient allocation of existing airport capacity and contribute


\textsuperscript{61} Organisation for Economic Co-operation and Development (OECD) (1997), The Future of International Air Transport Policy, Paris: OECD

to excess demand at hubs. Open skies would lead to a change in market shares among German airports in the long haul market. In a study by Gillen, Hinsch, Mandel and Wolf, these effects were quantified in a scenario for Hamburg airport. Assuming that ten ASAs would be liberalised in the year 1997, traffic would increase and the traffic distribution would change significantly among the German airports. Frankfurt airport would lose, but the secondary airports of Berlin, Cologne, Hamburg and Stuttgart would gain passengers. The inefficient allocation is not limited to the German market, but extends clearly to the European market. Roughly half of the additional passengers have used competing airports in the neighbouring states. The changes in the catchment area of Hamburg airport show how many more passengers Hamburg airport would gain especially from Schiphol airport (see Figure 4). Some of the gains would be lost if the Netherlands also adopt open sky agreements, but this effect might be partially offset by stronger competition, lower fares and higher passenger demand. Certainly the airline strategy can affect the gains that might accrue from changes to airport regulations, regulatory structures as well as bilateral liberalisation.

While with the exception of the US a strong worldwide trend towards privatisation has been observable. In Germany the overwhelming majority of airports are owned and sometimes even directly managed by the state or by state agencies. Privatisation provides an opportunity to increase efficiency by changing the principal-agent structure and by an influx of know-how leading to a more market based pricing policy. An effective private government structure will make price cap

---

63 Gillen D, Hinsch H, Mandel B, and Wolf H, (2000a), The Impact of Liberalising International Aviation Bilaterals on the Northern German Region, Aldershot, Ashgate.
64 The losses for Frankfurt amount to 3, which reflects the monopolistic position of Frankfurt airport.
regulation work better in practice as the airport management will behave like regulatory model assumes, namely maximising profits by cost efficiency and efficient pricing.

Figure 4: Changes by open sky in the catchment area of Hamburg airport

Frankfurt airport had an objective to head a centralised German airport system. A privatised monopoly on such a scale would not have received permission from the cartel office. However there are other tendencies, which might be harmful to competition. So far Frankfurt airport partially or fully owns the airports of Hahn, Saarbrücken and Hannover. The ownership of Saarbrücken and Hannover does not negatively effect competition, as both airports are pure feeder airports and are not substitutes for Frankfurt. Hahn is different as both airports are substitutes for low cost carriers this will be especially so if Frankfurt obtains permission to increase capacity. Horizontal alliances or mergers between airports which are in competition have the potential to negatively affect airline competition. This will become more important if
some airports lose the position of a natural monopoly due to a strong rise in demand. As most airport services have an overwhelming local content, economies of scale and scope are limited and the welfare loss through strict cross ownership restrictions like in Australia might be worthwhile for Germany.67

Economic and environmental regulation are analytically two separate issues. Having said this, it is important to address both problems in developing pricing as even the best incentives to invest by good economic regulation cannot overcome blockades of investment projects due to environmental restrictions. The examples of Düsseldorf airport which cannot use its second runway completed a decade ago or the violent protest of a new runway for Frankfurt airport in the seventies are extreme cases. However, these two cases highlight how vital rational decisions on environmental aspects of airport operations and investments are.

However, bringing more rationality into the economics of airport management should have a positive effect on the environmental problem as well. Once the narrow economics of airport expansion are treated rationally by a more balanced traffic distribution and better use of existing capacity a more realistic amount of demand for new capacity with less negative environmental impact will emerge. Major projects of airport expansions can be assessed in a public planning process on the basis of cost-benefit analysis. The alternative should be chosen which maximises social welfare. Aviation policy in Hamburg preferred to set environmental standards like noise or pollution by politics, which must be met by the airport. The privatised airport bears the risk of investment. By setting a noise budget Hamburg airport was forced to a rational management of environmental issues. The results are very promising as a

political consensus among the political parties emerged that passenger demand can increase as long as the resulting noise is offset by less noisy aircrafts with higher load factors.\textsuperscript{68}

Summary

The examination of the German airport industry shows that the system of airports as well as individual airports lacks productive and allocative efficiency. These inefficiencies are rooted mainly in the incentive structure of the regulatory framework. Cost plus regulation sets incentives that result in an inefficient choice of inputs, which leads to costly airport infrastructure with excess capacity and gold plated terminals, and to an inefficient price structure. This results in average aeronautical charges with prices too low for peak demand in order to justify capacity expansion. Airport charges have lost their information about scarce capacity and in addition they do not reflect environmental externalities. Investment decisions are not taken on the basis of a cost-benefit analysis, but on the logic of input-output-analysis, namely how many jobs are created directly and indirectly by the investment. This has turned capacity expansion into a political question with a dubious logic and high risks.

There are currently three regulatory approaches which are alternatives to cost plus regulation, namely liberalisation without \textit{ex ante} regulation, monitoring and price cap regulation. These schemes are evaluated to determine whether they might be appropriate to improve the efficiency of the German airport system. Relying only on \textit{ex post} regulation will probably lead to a system with monopolistic slack and an inefficient price structure as German airports are mostly regional natural monopolies and/or sheltered from competition by law. Monitoring presupposes a creditable threat to regulate the

industry if monopoly abuse occurs. However, this condition is not fulfilled in Germany. Therefore monitoring might lead to a system with long lasting litigation and high transaction costs.

Price cap regulation has its shortcomings when it becomes too narrowly focused on costs and when it cannot give the airport a creditable commitment for investment. However these problems can be reduced to a satisfactory degree. On the other hand price cap regulation offers the opportunity to increase the efficiency of German airports with low transactions costs. As price cap regulation is practised at Hamburg airport it may be easily extended to other airports. A truly independent regulator should be implemented who will take care of technical shortcomings of the Hamburg model like the asymmetry of the sliding scale. Price cap regulation should be confined to the monopolistic bottleneck. The dual till will liberalise the non aviation business of German airports and will make it very attractive for airports. Price cap regulation sets incentives for productive and for allocative efficiency. The combination of an efficient price structure and a lower level of charges might even overcome the resistance of those airlines choosing to fly at peak times. Price cap regulation has the advantage of establishing an efficient price structure with low transaction costs. In the short run, price cap regulation could reduce excess demand and install a price system that signals where and when to expand capacity.

Price cap regulation should focus only on a few airports with strong market power regulating others indirectly by the threat to designate them for regulation in case of monopoly abuse. As price cap regulation is only an imperfect substitute for effective competition it should be combined with a variety of measures to promote competition. Slot trading, open skies, privatisation with cross ownership controls should be part of a comprehensive reform of the basic rules of the airport industry. Such a reform could lead to a rational management of airport infrastructure with less excess demand and a realistic demand for new capacity. The negative environmental impact would be less than currently forecast giving the airports an opportunity to engage in a rational
discourse on the social cost and benefits of airport extensions. Intensifying competition within the airport industry makes it also necessary to review the usefulness of *ex ante* regulation. While under the current industry structure *ex ante* regulation should be part of a reform package this might change in the long run. The reform package might have the long run effect of transforming the airport industry into an ordinary industry.

In a nutshell, the answer to the question whether German airport policy should follow Littlechild’s price cap approach can only be positive. The industry needs less, but effective regulation with incentives for more competition and for a rational discourse on environmental problems. The implementation of effective regulation and promotion of competition, what Beesley and Littlechild have called “*the twin tasks of regulatory effectiveness*” (1989, p468) should serve as an agenda for the German aviation policy.
10 PRICE CAPS, EFFICIENCY PAY-OFFS AND INFRASTRUCTURE CONTRACT RENEGOTIATION IN LATIN AMERICA

Antonio Estache, Jose-Luis Guasch and Lourdes Trujillo

Introduction

Until the 1990s, infrastructure services in most of Latin America were provided by state-owned enterprises with local, provincial or national service monopolies. Throughout the 1980s, fiscal constraints had increasingly been inhibiting the public sector’s ability to perform some of the basic operation and maintenance on infrastructure and to expand coverage of services to meet

Acknowledgement
The authors are grateful to I. Alexander, O. Chisari, C. Crampes, N. De Castro, E. Engel, A. Galetovic, J.A. Gomez-Ibanez, A. Gomez-Lobo, J.J. Laffont, S. C. Littlechild, M. Rodriguez-Pardina and R. Schlirf and J. Stern for many discussions at various stages of the research covered here. However, any mistake are our own and the views expressed do not necessarily reflect of the institutions we are affiliated with, in particular, those of the World Bank.

Antonio Estache, World Bank and ECARS, Universite Libre de Bruxelles, Jose-Luis Guasch, World Bank and University of California, Lourdes Trujillo, Universidad de las Palmas de Gran Canaria
demand.\(^1\) This slow down led to a growing dissatisfaction among users, generating the necessary political momentum for reforms. Those reforms combined stabilisation programs anchored on public sector expenditures with a new vision of the appropriate role of the state in the economy.

For most countries, the infrastructure reforms of the 1990s consisted essentially of a vertical and horizontal unbundling of the sectors into multiple business units - when allowed by country size - and ‘privatisation’ of as many as possible of these business units. Competition for the residual monopolies through auctions was the first step towards improvements in efficiency levels in the sector. The reward for the winner was a long term contract with the often exclusive right to deliver the service. The adoption of incentive-based regulatory regimes and the creation of regulatory agencies to enforce the regulation was the second step designed to ensure sustained efficiency gains in the sectors. UK-type price caps and the related revision processes were part of what increasingly looked like a ‘standard regulatory regime’ in the region. Price cap revision timings ‘à la UK’ had the advantage of allowing the governments to buy time to get the regulatory agencies in place and to get them going since in most cases the first scheduled tariff revisions were five years down the road. They also allowed governments the time to create the additional incentives for quick efficiency improvements.

At a very first glance, the story was a successful one. By the end of the 1990s, the reforms had generated total private infrastructure investments of US$360bn. Moreover, there is ample evidence suggesting that the reforms, including the widespread adoption of price caps, were generally associated

\(^1\) According to Calderon C, Easterly W and Serven L (2002), Infrastructure Compression and Public Sector and Public Sector Solvency in Latin America, mimeo, The World Bank, public infrastructure investment reductions were used to ensure over 50% of the primary budget deficit during the 1980s and 1990s.
with improvements in efficiency and reductions in the costs of producing many of the services.²

A closer look at the stylised facts provides a somewhat more complex story. First, as impressive as they were, the private sector investment flows represented only about one third of the investment needs of the regions.³ Contrary to the hopes of many reformers, the private sector did not become the major financier of the sector, although there was rarely a call for private sector participation in projects in Latin America that went unanswered.⁴

Second, there was a downward trend in public infrastructure investment in the region. Yet, according to Calderon and Easterly, private sector participation does not explain this downward trend in public infrastructure spending. In fact there is little correlation.⁵ The evidence suggests that there was a lot of cream-skimming and that governments were left with the responsibility to meet the high costs and high risks associated with service needs of the weak cash flow operations, without the benefits of the intra-sectoral cross-subsidies of the past. Most often, countries offered only the crown jewels of their infrastructure to the private sector, usually because they brought substantial resources to the treasury, they were clearly attractive

² More specific examples are provided below.
³ According to Fay M (2000), The Infrastructure Needs of Latin America, mimeo, The World Bank, the annual investments needed for 2000-2005 should amount to about US$ 57bn, equivalent to 2.6% of Latin America’s GDP.
⁴ Note that this is to be expected since the private sector is not supposed or expected to come in as an investor in projects not financially viable. In those cases, the investment needs or at least part of them will have to come from the public sector. The real failure is the fact that privatisation commissions seldom took into account the residual fiscal consequences in the design of the degree and form of restructuring. The residual fiscal burden could often have been reduced with better packages which combined cream and milk!
to the private sector, and the transaction and operation were financially viable.

Third, while there were widely noted improvements in efficiency, it is not clear that the cost reductions were sufficient to compensate for the decline in total investment levels. Fourth, while evidence on the efficiency gains is increasingly widespread, the evidence that not much of these gains were shared with the users is growing just as fast. Indeed, there has been at best a weak correlation between the size of efficiency gains and decrease in tariffs. Also if coverage improved, it did not improve as much as expected. Coverage quickly expanded on unfulfilled demand with high commercial pay-offs and then expansion trickled down very slowly along income levels, because prices did not fall as much as expected. Coverage went from a supply problem to a demand problem.

Fifth, the contracts proved not to be the predictable regulatory instruments they were made out to be by the advisors to the reformers. About 30% of total contracts were renegotiated, in two out of three cases at the request of the operators. The renegotiation incidence was, in fact, much higher in the transport and water sectors.  

---


These stylised facts may seem like a puzzle in which the pieces do not fit together. The main purpose of this paper is to show how the various pieces actually do fit together. In particular, we examine the extent to which the decision to adopt price caps in the highly uncertain environments with weak regulatory capacity that characterised Latin America, affected (down) the investment levels, the cream skimming strategies, the efficiency levels, the high renegotiation rates, and the overall sector performance. The paper draws on the collective field experience of its authors in Latin America, the slowly growing literature on infrastructure regulation in developing countries and on the preliminary results of a recent research project on contract renegotiations in the region.

The paper is organised as follows. We first review briefly the diversity of infrastructure reform experiences and the relative role of incentive based regulation in Latin America. We then draw on the main lessons from a recent empirical analysis of the impact of the adoption of price caps on the odds of contract renegotiations. In the next section we review the empirical evidence on the efficiency gains that were associated with the adoption of incentive based regulatory regimes in the region. The following section presents Argentina’s experience to discuss the allocation of the efficiency gains between the various actors involved in the regulatory game. We then discuss the impact of the adoption of price cap regimes on the cost of capital then how other factors contribute significantly to solve the puzzle. We conclude on what the review suggests in terms of the inheritance left by Professor Littlechild in Latin America’s infrastructure sector.

Latin America’s infrastructure privatisation and regulation mechanisms

While casual observers continue to associate infrastructure reforms with privatisation - divestiture of assets - Latin
America’s reality is more subtle. What casual observers usually refer to as privatisation often did not actually imply any change in property. Divestiture is, in fact, only one of the four main categories of contracts generally associated with privatisation. The others are management contracts, BOT/O (built operate and transfer/own) contracts and concessions. Table 1 shows that 2 out of 3 contracts during the 1990s were concession contracts and that almost all water and transport privatisations were concessions while in telecommunications, the norm was divestiture. The popularity of concessions is easily explained by the fact that they allowed a relatively easy handling of constitutional, legal or political constraints on privatisations. With concessions, governments could, for instance, argue that they were not selling the assets of the country and hence bypass legal or constitutional constraints and reduce the criticisms of reforms by anti-privatisation segments of civil society.

These concession contracts also became the main regulatory instrument, while the main mandate of the regulators established as part of the reform process was to monitor compliance with these contracts. The more specific the content of the contracts on all parties’ obligations, the clearer the mandate of the regulators. In most cases, these contracts cover a wide spectrum of regulatory issues such as regulatory regimes and tariff design.

---

8 Bolivia offered an additional interesting creative experience and combined traditional privatisation transactions with capitalisation a new mechanism to transfer of public enterprises. Under capitalisation, the state transferred shares equivalent to 50% of the firm to the operator who won the right to run the service in an auction. It also yields about 45% to private pension fund which uses the funds derived from this share to pay old-age benefits complementary to those stemming from individual retirement accounts. The remaining 5% accrues to the company’s employees. For more details, see for instance, Barja and Urquiola (2003), Capitalization and Privatization in Bolivia: An Approximation to an Evaluation, paper presented at the Center for Global Development Conference on Privatization and Income Distribution, February.

9 For a longer discussion, see Gomez-Ibanez, J A (2003), Regulation of Private Infrastructure: Monopoly, Contracts and Discretion, Harvard University Press.
It is thus in these contracts and the related legal instruments that the concern for efficiency stemming from the proposals made by Professor Littlechild for the UK had the most impact.

**Table 1: Relative importance of concessions contracts in infrastructure privatisation in Latin America 1990-2000**

<table>
<thead>
<tr>
<th>Sector</th>
<th>Concession as a % of PPI projects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water</td>
<td>89%</td>
</tr>
<tr>
<td>Transport</td>
<td>97.5%</td>
</tr>
<tr>
<td>Energy</td>
<td>54.4%</td>
</tr>
<tr>
<td>Telecom</td>
<td>0.5%</td>
</tr>
<tr>
<td>Total</td>
<td>65.5%</td>
</tr>
</tbody>
</table>

*Source: World Bank PPI Database*

The practical institutional solution adopted by most reforming governments to monitor these contracts was very similar to the British model. To control private operators, reformers created a regulatory agency, which was sector specific in most countries, but multi-sectoral in a few others, covering a group of sector industries. The formal role of this agency was to ensure compliance by all parties with the terms of the contract, and to balance the interests of users, operators and government, and to act and interpret on circumstances loosely described or not covered by the contract but under the general jurisdiction of the regulatory mandate.

While most of these agencies were supposed to be autonomous and accountable in principle, very few enjoyed these qualities. In most countries, the degree of political control over regulatory decisions continued to be a dominant source of conflict between operators and governments. There are many instances in which the operator considered its main counterpart to be the sector minister or secretary rather than the regulator. And in fact in many cases the formal appeal to regulatory decisions went to the line minister, wrestling autonomy and authority from the regulator. Moreover, while the regulatory agencies were
established statutorily, they were rarely given appropriate resources, training, and instruments to carry on their mandate effectively. Overall, the weakness of these institutions proved to be one of the main determinants of the social and efficiency outcomes of the reforms as discussed later.\textsuperscript{10}

What the incidence of renegotiations reveals

To identify the importance of the choice of the regulatory regime on the success of reform, we rely on a database of 954 concession contracts awarded between the mid 1980s and 2000, in the Latin America and Caribbean Region.\textsuperscript{11} The database contains detailed information about the characteristics of these concessions, including general details about the projects (sector, activity, year of award), the award criteria, size and duration of the concession, information with respect to the institutional context and degrees of freedom of the regulator, the type of regulatory framework put in place (price cap, rate of return, no regulation), and other details of the concession contract like arbitration clauses, nationality of operators, among others. In this database, 56\% of the contracts were regulated under a price cap regime, 20\% under rate of return regulation. For 24\% of the contracts, the regime was a hybrid one.


\textsuperscript{11} For a full description, see Guasch (2003), and Guasch, Laffont and Straub (2003).
Table 2 shows how the choice of the two polar regulatory regimes, price caps. vs. rate of return, influences the odds of renegotiation. As mentioned earlier, the majority of the contracts were subject to a price cap - and the hybrid ones were closer to a price cap than a rate of return since they only allowed cost pass-through for a few cost categories. Formally, the choice was consistent with the advice of the international consultants recruited to assist in the preparation of the reforms. The marketing for this choice was based on now common but then innovative theoretical arguments. The regime, it was argued, would provide high powered incentives for securing efficiency gains, at least between tariff reviews and the regime was low maintenance in the sense that it did not require, at least between tariff reviews, large amounts of information about firm operation levels.

Table 2: Incidence of renegotiated concession contracts according to sectors and characteristics

<table>
<thead>
<tr>
<th></th>
<th>All infrastructure sectors</th>
<th>Transport</th>
<th>Water</th>
</tr>
</thead>
<tbody>
<tr>
<td>% of contracts renegotiations within regulatory regimes</td>
<td>%</td>
<td>%</td>
<td>%</td>
</tr>
<tr>
<td>With price cap</td>
<td>38.1%</td>
<td>55.1%</td>
<td>88.0%</td>
</tr>
<tr>
<td>With rate of return cap</td>
<td>12.8%</td>
<td>38.1%</td>
<td>14.3%</td>
</tr>
<tr>
<td>With hybrid regime*</td>
<td>24.4%</td>
<td>46.2%</td>
<td>39.6%</td>
</tr>
</tbody>
</table>

* Hybrid regimes are defined when, under a regime of price caps, a large number of costs components are allowed automatic pass through into tariff adjustments.\(^{12}\)

*Source: Guasch (2003)*

The fact that it induced a higher cost of capital because they tended to pass on to the operators a larger share of the project risks was very seldom considered. Also the fact that the regime

\(^{12}\) The numbers for the hybrid regimes should be taken with some care, since there is some subjectivity in that classification and also incomplete information in determining the classification.
REGULATION IN LATIN AMERICA

was associated with a risk of under-investment (which has happened) was surprisingly seldom addressed in a region in which one of the main reasons to try to reform and privatise was to attract private investment to compensate for a reduction in public investment. At the time also, the fact that, in practice, both regimes tend to converge in terms of process with the level of convergence depending on the frequency of tariff reviews, was also largely ignored.\textsuperscript{13}

Table 2 shows that 1 in 3 contracts were renegotiated in Latin America and that the rate goes as high as 1 in 2 for transport and 3 in 4 for the water sector. These renegotiations took place on average 2.19 years after the award of the contract.\textsuperscript{14} This was for concessions granted for about 20 to 30 years and that had a five year period for a tariff review (for concessions granted under a price cap regime). Table 2 also shows that the choice of the regulatory regime matters. In particular, Table 2 shows that a price cap regime strongly increases the probability of renegotiation well ahead of the scheduled tariff revision - which usually was scheduled for the end of the fifth year after the award of the contract. Hybrid regimes did, as expected, better than pure price caps, but not as well, in terms of renegotiations, as rate of return regimes.\textsuperscript{15}

While Table 3 shows the important role operators have in initiating the renegotiations, it is also interesting to analyse the extent to which the regulatory regime is correlated with the originator of the request for renegotiation. Essentially, in 2 out of


\textsuperscript{14} It was 3.3 years, accounting for construction lag time, in the transport sector and 1.6 years in the water sector (Guasch, 2003).

\textsuperscript{15} It may be useful to point out that the adoption of a hybrid regime was generally the result of renegotiation of contracts initially subject to a price cap regime. Indeed, in general, the main change in the regime was an increase in the number of cost categories that enjoyed automatic pass-through. In sum, the initial price cap choice has tended to be short lived in Latin America, in particular in the transport and in the water and sanitation sector.
every 3 contracts, the change is requested by the operator. This is a significant proportion. Within the context of this paper, the obvious next question is the extent to which the request for renegotiation is driven by the choice of the regulatory regime. **Table 4** provides the answer.

**Table 3: Who initiated the renegotiation?**

<table>
<thead>
<tr>
<th></th>
<th>Both government and operator</th>
<th>Government</th>
<th>Operator</th>
</tr>
</thead>
<tbody>
<tr>
<td>All sectors</td>
<td>13%</td>
<td>36%</td>
<td>61%</td>
</tr>
<tr>
<td>Water and sanitation</td>
<td>10%</td>
<td>24%</td>
<td>66%</td>
</tr>
<tr>
<td>Transport</td>
<td>16%</td>
<td>27%</td>
<td>57%</td>
</tr>
</tbody>
</table>

*Source: Guasch (2003)*

When examining the data on the regulatory regime, **Table 4** shows that the initiator of renegotiations, was overwhelmingly (86%) the operator when under a price cap regime, corroborating our hypothesis. The percentage drops considerably (26%) when the operator was under a rate of return regime, as expected under our hypothesis. **Table 4** might imply that the efficiency gains achieved by the operators may not have been large enough to provide them with the rents they were expecting to get when they signed the contract, or that they saw a favourable environment to secure more favorable terms through renegotiation demands.

**Table 4: Who initiated the renegotiation conditioned on regulatory regime?**

<table>
<thead>
<tr>
<th></th>
<th>Both government and operator</th>
<th>Government</th>
<th>Operator</th>
</tr>
</thead>
<tbody>
<tr>
<td>All sectors</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Price caps</td>
<td>11%</td>
<td>6%</td>
<td>83%</td>
</tr>
<tr>
<td>Rate of return</td>
<td>39%</td>
<td>34%</td>
<td>26%</td>
</tr>
<tr>
<td>Hybrid regime</td>
<td>30%</td>
<td>26%</td>
<td>44%</td>
</tr>
</tbody>
</table>

*Source: Guasch (2003)*
REGULATION IN LATIN AMERICA

A review of the evidence on the efficiency gains achieved as a result of the restructuring is thus a necessary step to be able to assess the contribution of the adoption of price cap regimes to the degree of renegotiation in the region.\textsuperscript{16}

The efficiency pay-offs from the adoption of price caps and other reforms

A plethora of studies evaluating different aspects of the impact of the reform program in infrastructure in Latin America have been recently completed (eg, Birdsall and Nellis and Ugaz and Waddams (2003)). Practically all of them show significant performance gains, improved quality of service and increases in coverage (but not as large as expected). For example, in their study of the regulation of the electricity sector in Latin America and of the telecommunications sector, Fischer and Serra argue that the privatisation-cum-regulation of these Latin American sectors has been, in general terms, successful: privatised firms have sharply increased their efficiency and coverage.

Most of these studies, however, shy away from the economic efficiency concept associated with the adoption of a price cap regime. The evidence on this measure of efficiency is much more scarce and does not cover all sectors nor all countries equally well. We thus need to rely on highly diverse types of studies to document the efficiency gains. Among the studies on efficiency, the electricity sector is the only one to enjoy a representative coverage thanks to a series of papers by Rossi. Rossi works with data on 39 firms covering a dozen countries between 1994

---

and 2000. He finds an annual average rate of productivity change around 1% for that period, mainly from the technical change component. Moreover, his evidence also suggests that private firms are the firms that are pushing the South American production frontier in the right direction. He finds no evidence of technical progress in public firms, whereas technical change in private firms is around 2% per year. Since the renegotiation rates are fairly low in this sector, it seems to suggest that both the regulators and the operators were satisfied with these gains.

There is unfortunately no comparable cross-country coverage for the other sectors; most of their evidence is for specific experiences. Accounting for this limitation, the various studies provide reasonable anecdotal evidence suggesting that reforms have on average improved efficiency quite significantly throughout the region. For railways, Estache et al estimated total factor productivity (TFP) with Törnqvist indexes for Argentina’s passenger and freight railways companies and for Brazil’s freight railways companies which both work under price caps.\(^{20}\) In Argentina, they find an average annual efficiency gain of 5.3% for freight and 9.8% for passenger concessions. In Brazil, the average TFP growth has been 8.4% in the first two years after the private operation of the sector started. Before the annual efficiency gains achieved during a gradual restructuring process started in 1985, the average improvement in TFP was 5.5%.

An interesting difference between the two countries’ experience, is that all Argentinean freight contracts ended up being renegotiated while all the Brazilian freight contracts worked out well and are on track for a scheduled tariff revision. Additional differences between the two countries include the fact that demand was grossly overestimated in Argentina in comparison to Brazil and that the resources allocated to the monitoring of the contracts were much larger in Brazil than in Argentina.

For telecoms, Benitez et al relies on an engineering-economic model (also known as hybrid cost proxy models (HCPM)) to estimate that in one of Argentina’s provinces, the efficiency gains achieved between 1991 and 2000 were about 3.9% per year, including the benefits from the major technological changes the sector enjoyed.\(^{21}\) Some degree of renegotiation also took place in that sector to allow contract extensions. For Brazil, Resende and Facanha using a data envelope analysis (DEA) do not find any statistically significant impact during the first 18 months after the opening of the sector to private operators under a price cap regime.\(^{22}\)

For ports, Estache et al focus on the effects of the 1993 port reform Mexico over the 1996-99 period.\(^{23}\) They rely on a stochastic production frontier to show that Mexico’s ports achieved 2.8-3.3% average annual efficiency gains since reform under a price cap regime. In that experience, there was no renegotiation.

For water, Estache and Trujillo also rely on a Tornqvist index to assess the efficiency gains achieved with reform in Argentina and find average annual TFP gains between 3.7% and 6.1% depending on which provinces are included in the sample.\(^{24}\) In one of the provinces covered by the study, the regulator has been in permanent renegotiation which has resulted in a regulatory regime which is moving slowly but surely towards a cost-plus regime. In another one, the company was returned to the public

sector but continued to be in a price cap regime and has managed to continue improving efficiency under the renewed public management.

Overall, this overview of the studies on efficiency available for Latin America suggests that in the vast majority of cases, the reforms, including the introduction of price caps, generated improvements in efficiency. Why would then operators request so frequently renegotiations, in particular in water and sanitation and in transport? Three scenarios could explain the drive for renegotiations or unhappiness of the operators. Under the first scenario, they could not retain the efficiency gains, at least not long enough for the effort to be worth the cost. This implies that these gains might have been captured by another player in the regulatory game. Under a second scenario, the adoption of an incentive-based regulatory regime could have resulted in a cost of capital that was inconsistent with the rate of return generated by the business in spite of the efficiency gains achieved. The need to cut the cost of capital would be what leads them to review some cost categories as part of the renegotiation. Under the third scenario, a combination of the previous two scenarios, operators saw a favourable environment to secure additional benefits, using their effective leverage, through renegotiation of the terms of the contract. These possible explanations are explored next.
Where did all the efficiency gains go?  

An easy, although admittedly weak, test of how the regulators distributed the efficiency gains is the correlation between efficiency and average tariff changes. Two main outcomes can be expected from this analysis. First, either tariff and efficiency gains are highly negatively correlated, in which case, the adoption of the price cap achieved a fair outcome for users but this can explain the requests for renegotiation by the operator. Second, there is no correlation and this suggests that incentive based regulation did not achieve much for the users. The more interesting story is the reason for why there is no correlation. One explanation could simply be that the regulator was unable to deliver on its mandate and the operator appropriated the gains (Table 6 below provides some evidence on that). Another is that the government may have hijacked part of the gains for fiscal purposes through tax increases.

To illustrate the point, the Argentina case is analysed here as a representative of the 1990s in the region. Table 5 summarises the evidence for Argentina and shows that the increasing use of the privatised sector as a tax handle may provide a good explanation as to why operators were not happy with the price cap system.

---


26 A second test is to check on the changes in the tariff structure across user and consumption types and to see how each one compares to the evolution of efficiency. If each category gets a similar cut of the efficiency gains in terms of reductions in tariffs, the perception will be that the distribution was fair, even if differentiated distribution of gains may simply reflect improvements in allocative efficiency, in which there is a better match between cost and tariff per user and usage type.
REGULATION IN LATIN AMERICA

Table 5: Comparing annual real tariff levels to efficiency changes since privatisation

<table>
<thead>
<tr>
<th></th>
<th>Electricity distribution</th>
<th>Gas distribution</th>
<th>Water distribution</th>
<th>Telecoms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average tariffs and efficiency changes do not seem to go hand in hand</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Annual average tax inclusive tariff change</td>
<td>-0.75%</td>
<td>-0.8%</td>
<td>+1.75% (for Aguas Argentinas)</td>
<td>-0.6%</td>
</tr>
<tr>
<td>Possible approximation of annual efficiency gains to be used in tariff revision</td>
<td>1% (shift)</td>
<td>2.9% (shift + average catching up)</td>
<td>6.1% (shift + average catching up for 4 water companies)</td>
<td>3.9% (shift + catching up) [set at 2% between 91 and 96 as part of cap] (in Mendoza)</td>
</tr>
</tbody>
</table>

...but the government gets an increased share of rent generated

<table>
<thead>
<tr>
<th>Indirect tax</th>
<th>20-57%</th>
<th>20-30%</th>
<th>20-30%</th>
<th>40-50%</th>
</tr>
</thead>
</table>


The table suggests that the efficiency gains have indeed often been significant but were generally not quickly passed on to users, during the 1990s. More specifically, while technical/productive efficiency improved, which means costs dropped, average tariffs did not drop commensurately. It suggests that a rent may have been created through efficiency gain improvements. The bottom part of the table reveals the beneficiary of the rent: the government. It may have hijacked the efficiency gains through the tax system. While there are obvious advantages to this for any country in fiscal crisis, it significantly reduces the signaling effect of the price system.

It turns out that, in Argentina, as in most of the other countries of the region, all three levels of government have contributed to
minimise the redistribution of the efficiency gains to the users, through major increases in indirect taxes. For Argentina, the infrastructure sectors are such an effective tax handle that they generate over 1% of GDP in tax revenue across government levels. Total indirect taxes add up to 40-50% on telecoms services, 20-57% in energy and over 20% on water services. This is 4 to 5 times the revenue it used to generate when these services were public.

The upshot of this review of the distribution of the efficiency gains is a rational discontent by the users. Users grew unhappy as average tariffs slowly increased. In water, this was due to a major catching up of tariffs with costs in a sector in which average costs recovery rates have long been around 25%. As for passenger transport, the effective increase in tariff was infinite in many cases, since prior to the reforms, roads were free and the effective fares in buses and rails were quite low since many users evaded the payment obligation under public operation. Even for those users, including non residential users, who were used to pay for the services, over time, the improvements in service quality were insufficient to compensate the fact that tariff appeared to be creeping up - and no one seemed to really notice the role of taxes in this creeping up.

In sum, it seems that the successive public administrations have benefited from the efficiency gains. In addition to the lump-sum payments at the signature of the contract or the annual payments due by the operator, the governments are now able to cash in more from reforms through the tax system. The problem is that in water and transport, the reforms have often not been as financially successful as they were in energy and telecoms, which may explain why there are so many requests for renegotiation by the private operators in these sectors.

---

Did price caps push the cost of capital too much?

In addition to the unhappiness of the operators with the taxation of some of their potential rents, the second reason why some of the operators may have been eager to renegotiate was the impact of the adoption of price caps on the cost of capital relatively in the region. Table 6, focusing on the cost of equity, shows how this cost of capital has evolved in the region during the 1990s through the early 2000s. Of course, the data is very rough since the increase reflects many changes, most importantly, the effect of the Tequila and Asian crisis in the region, but it provides interesting basic insights. In particular, it shows that in transport and water, the cost of capital has been the highest throughout the period.

The two cost of equity columns show its average value at the time of the award (initial) and the value in 2001 (current). The obvious increase in this cost of capital across sectors corroborates the hypothesis made above.\(^{28}\) It is also in these two sectors, water and transport, that the investment needs were the highest but that at the same time cost recovery through tariffs was the most politically difficult for obvious social and political reasons. In these two sectors the expected fiscal contribution of the public sector in the form of subsidies for operational or capital expenditures was also expected to be the highest and seldom delivered on.

---

\(^{28}\) But it understates the actual total cost of capital since it does not recognise the significant increase in the costs of debt.
Table 6: The cost of equity in Latin America in the 1990s

<table>
<thead>
<tr>
<th>Sector</th>
<th>Initial cost of equity</th>
<th>Current cost of equity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Telecom</td>
<td>13%</td>
<td>17%</td>
</tr>
<tr>
<td>Energy</td>
<td>14%</td>
<td>18%</td>
</tr>
<tr>
<td>Water</td>
<td>16%</td>
<td>19%</td>
</tr>
<tr>
<td>Transport</td>
<td>18.5%</td>
<td>21%</td>
</tr>
</tbody>
</table>

Source: Foster, Guasch, Pinglo and Sirtaine (2003), preliminary results

As a risk mitigation strategy aiming at offsetting the increase in the cost of capital, the request, as part of the renegotiation, for automatic pass through rules for as many categories as possible was thus a rational strategy for the operators. It was, of course, not the only instrument and in many instances the renegotiations were aimed at increasing the rate of return to keep it consistent with the increasing cost of capital. This is why slowing down investment, reducing service obligations or increasing direct or indirect subsidies were all addressed as part of the renegotiations, in particular in the water and transport sectors. This is why a common outcome of most renegotiations was a decrease in the level and pace of investments.

In balance, it is difficult to use this data to isolate the effect of price caps on the cost of capital. Even from the rate of return

---

29 The cost of equity is a measure of the appropriate return that investors should expect on equity investments in a specified country and sector, given the level of risk of such investments.


perspective, assessing the extent to which the rate of return has simply been adjusting to an increasing risk premium associated with a price cap regime is not an easy task. Indeed, in most Latin American countries, the accounting systems are not very good and hence easy to manipulate. Depending on how costs are allocated and depending on whether management fees collected by operators are classified as a revenue or as a cost, the rate of return on capital can vary 9% to 33% in any given sector. Considering that the cost of capital varied between 15% and 25% in most of the sectors for most of the countries, it is clearly not very easy to assess how much the regulatory regime mattered.

In sum, the only evidence available on price caps as a source of concern for the operators comes from the preference for less risky regulatory regimes which is shown by the changes brought by renegotiation. As already mentioned, renegotiation tends to lead to a transformation of most price caps into hybrid regimes, and de-legitimises the price cap regime, both on grounds of the speed of change of the agreed terms and of the outcome. This, in turn, suggests that if costs plus regime had been adopted to begin with, renegotiation may have been avoided. However, the question then becomes: if rate of return regulation had been adopted from the start, would the efficiency gains observed have materialised? To be able to address this question it is necessary to account for many more factors than we have been focusing on up to now.

The relevance of institutions, process and contract design

While the main purpose of the paper was to study the interactions between regulatory regime and contract sustainability, the research conducted by Guasch (2003) suggest that it would be naïve to focus only on the choice of the regulatory regime to explain the outcome of reforms in Latin America. Table 7
summarises the main statistics on the occurrence of renegotiation according to the main characteristics of the reforms.\footnote{For a longer discussion, see Guasch and Spiller (1999)}

Table 7 shows that in addition to the choice between price caps and rate of return, the award criterion, existence of investment obligations, the form of the legal support to regulation and the timing of the establishment of the regulatory institutions also substantially affects the probability of renegotiation. The design of the auctions and contract is also significant because it opens opportunities for renegotiation and reducing lock-in effects on operators. The legal grounding of regulation in a highly reversible legal instrument, such as a decree, does not help much. All that made it easy for operators to expect and thus ask for better terms and compensation for changes requested in the contract and ended up increasing the percentage of the costs benefiting from a time of escalation and indexation clause, and reducing or delaying investment obligations or performance indicators.

Yet, having said that, the fact remains that risk factors and the allocation of risks do affect significantly the cost of capital and financial equation of projects. On that account, the choice of the regulatory regime and how one accounts for its implications remains a key factor on the outcome of reforms.
Table 7: What drove renegotiations?

<table>
<thead>
<tr>
<th>Renegotiated concessions as a % of the category</th>
<th>All sectors %</th>
<th>All sectors (excluding telecom) %</th>
<th>Transport %</th>
<th>Water %</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total</strong></td>
<td>29.0</td>
<td>42.5</td>
<td>54.9</td>
<td>75.0</td>
</tr>
<tr>
<td><strong>Award criterion</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lowest tariff</td>
<td>60.4</td>
<td>61.0</td>
<td>60.0</td>
<td>81.9</td>
</tr>
<tr>
<td>High price paid to government</td>
<td>11.0</td>
<td>26.2</td>
<td>32.5</td>
<td>66.6</td>
</tr>
<tr>
<td>Multiple criteria</td>
<td>34.3</td>
<td>34.3</td>
<td>38.1</td>
<td>0.00</td>
</tr>
<tr>
<td><strong>Regulatory framework</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>In law</td>
<td>17.2</td>
<td>25.7</td>
<td>53.4</td>
<td>55.6</td>
</tr>
<tr>
<td>In decree</td>
<td>27.8</td>
<td>28.0</td>
<td>58.6</td>
<td>83.5</td>
</tr>
<tr>
<td>In contract</td>
<td>39.7</td>
<td>40.6</td>
<td>50.8</td>
<td>70.7</td>
</tr>
<tr>
<td><strong>Institutions</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Regulators in place</td>
<td>17.1</td>
<td>25.2</td>
<td>50.2</td>
<td>40.9</td>
</tr>
<tr>
<td>Regulator not in place</td>
<td>60.9</td>
<td>73.5</td>
<td>62.5</td>
<td>87.5</td>
</tr>
<tr>
<td><strong>Type of tariff regulation</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Price cap</td>
<td>38.1</td>
<td>43.8</td>
<td>55.1</td>
<td>88.8</td>
</tr>
<tr>
<td>Rate of return</td>
<td>12.8</td>
<td>13.1</td>
<td>38.1</td>
<td>14.3</td>
</tr>
<tr>
<td><strong>Regulatory obligations</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Regulating by means (investment obligations)</td>
<td>51.0</td>
<td>70.0</td>
<td>76.0</td>
<td>85.0</td>
</tr>
<tr>
<td>Regulating by objectives (performance indicators)</td>
<td>24.0</td>
<td>18.0</td>
<td>19.0</td>
<td>25.0</td>
</tr>
</tbody>
</table>

**Concluding comments**

Latin American countries adopted the price caps regime with a vengeance. Unfortunately, they merely swallowed rather than digested the concept, not accounting for its full range of implications. The problems the region has experienced with the reform program in infrastructure and with the adoption of price
caps as shown here are the result of this eagerness to adopt a concept in theory rather than in practice.

The way the price caps, and more generally reforms, were handled in practice, as shown in this paper, raises some frustrating questions. Would a less incentive based regime have resulted in more and better investment? Had the region created earlier, stronger and better regulatory institutions, would the outcomes have been better? Was the problem the choice of the regulatory regime or are we trying to blame everything on one of many factors that contributed to the high renegotiation rates? Finally, could the high incidence of renegotiation have been avoided? And was renegotiation all that bad?

The answers to most of these questions boil down to an understanding of how price caps and cost of capital interact in high risk, weak governance environments. Weak regulatory capacity and weak effective government commitment to improve that capacity in Latin America led to the fact that price caps alone did not yield the expected benefits for the users. Price caps did provide incentives for operators quickly securing efficiency gains, but many of these gains were then captured by the governments or firms rather than shared with the users. Users were in fact penalised twice, since these efficiency gains came at the cost of a higher cost of capital and thus higher tariffs to cover that increase, relative to a rate of return regime. Compounding the pain inflicted on the users is the fact that renegotiations, generally associated with the adoption of price cap regime, tended to delay or bring down investment levels, as firms do not get immediate rewards, through tariff adjustments, on investments (either the existing tariffs already account for expected investments or tariffs will be adjusted but only at the next tariff review period, usually a few years down the road).

Ultimately, the easy and fast contract renegotiation, before the usual five year review, may eventually lead to the adoption of new regimes which will result in fairer tariffs, better access and stronger commitment to fair returns to investors. This seems to
be happening through the adoption of hybrid regimes which will retain some of the incentive effects of the price caps while introducing cost recovery guarantees that may ultimately reduce tariffs because they will reduce the uncertainty of doing business in the region, and hence the cost of capital. In sum, what the 1990s Latin American experience shows is that, just like privatisation alone (eg, without competition) is associated with few benefits for an economy, price caps alone will not do much for the users.
11 REGULATORY CHALLENGES: LESSONS FROM THE UK MODEL FOR TRANSITION COUNTRIES

Maria Vagliasindi

Introduction

As the UK experience demonstrated, in order to be effective, regulatory reforms should be complemented by privatisation and broader reforms stimulating competition. The establishment of regulatory authorities, together with the sale of state-owned infrastructure enterprises to private investors, during the past two decades represented a major political, social and economic phenomenon. It has been associated with major economic and political redistributions of wealth, power and influence. It also has had important social consequences, both through the reduction in (and often the complete ending of) the role of the privatised enterprises and through the large-scale redundancies often associated with the restructuring that preceded or followed privatisation. Indeed infrastructure privatisations were part of a broader reversal of public policy - a withdrawal by the government from direct economic engagement in many industries that had become to be regarded as ‘strategic’.

More recently, the adoption of a fully competitive regime for the utilities in the UK has reduced, but not completely removed the need for regulation, despite the early optimistic views underlying the 1983 Littlechild Report. In the absence of competition,

---

1 The view and opinions expressed in the paper are those of the author. They do not necessarily represent the views and opinions of the European Bank for Reconstruction and Development.

Maria Vagliasindi, Principal Economist, European Bank for Reconstruction and Development
regulation is needed to provide incentives for productive and allocative efficiency, passing benefits on to consumers. However, regulation simply cannot replicate all the pressures of the market and it is unrealistic to expect it to do so. Price control is no substitute for competitive pressure and is likely to distort the market either by deterring new entry or by over-rewarding it at the expense of customers. Competition has brought dramatic changes in that utilities discover and provide customers want. For instance in the electricity sector, industrial customers secured customised metering and billing arrangements, domestic customers can purchase green electricity if they want. All categories of customers have secured better terms.

The introduction of private sector involvement and competition in transition economies is more difficult for a number of reasons, including the lack of credibility associated with weak government. The lack of protection for agents who are no longer residual claimant for the result of their actions (and in particular of their efforts) results in underinvestment for fear that gains from investment will be expropriated. The lack of institutional resources in monitoring and enforcement makes competition a particularly valuable substitute instrument for rent extraction in transition countries, but it is more difficult to implement. That is why is so important to establish stronger independent regulatory agency to support the process of privatisation and liberalisation.

The structure of the paper is as follows. The first section reviews the challenges faced by transition economies and the lessons that can be drawn from the UK model. The next section considers the regulatory process in a broader policy framework, where the other network industries reforms - including privatisation and the introduction of competition - interact and affect the regulatory process itself. A final section concludes.
Regulatory and infrastructure challenges across transition economies

For network utilities, regulation is normally recommended as, at least, an intermediate step in the move from government control to the governance of markets, since the state was originally acting both as an owner and a regulator. Effective regulation should establish a situation in which the outcome that is socially optimal also generates the highest profit for the firm, so that the firm is provided with the right incentives to choose it voluntarily.

Transition economies are facing enormous challenges in terms of physical and institutional infrastructure, that remain still inadequate, with the exception of some of the EU accession countries. The low level and restricted access to utility services has determined very high transaction costs and weakens competition. As regards to institutional infrastructure, the presence of captured or otherwise dysfunctional institutions has restricted the scope of market interaction and undermined competition. In particular, there is still an insufficient public consultation process, so that industrial and end consumers have insufficient voice.

Let us now turn to quantitative measure of access and reliability of infrastructure services derived from an enterprise level survey that the EBRD and the World Bank implemented in the summer of 2002. To capture access to the service we use an indicator of waiting time; that is the average number of days needed to get connected to mainline telecom and electricity services in 2001 (see Figures 1-3). As an indicator of quality and reliability of infrastructure services we adopted an indicator of outages; that is, the average number of days in 2001 when the enterprise

---

2 The Business Environment and Enterprise Performance Survey (BEEPs) was implemented by the EBRD and the World Bank in the summer of 2002 to assess the business environment and enterprise performance across transition economies. It includes 6,000 enterprises across 26 countries of eastern Europe and former Soviet Union.
experienced outages (see Figures 4-6), in terms of power outages and unavailable mainline telecom services. There are substantial differences across regions, including countries belonging to central and eastern Europe (CEE), south and eastern Europe (SEE) and Commonwealth of Independent States (CIS).³

In the case of telecom, waiting times for CEE are quite low - averaging 1.3 days, whereas for SEE they are 10 times longer (averaging to 13.6 days) and they become even longer for CIS countries, where the average is equal to 25 days. Differences are also substantial in the case of electricity, where the CEE average is equal to 2.6 days, which compares very favourably to the average of 7.8 and 20 days respectively for SEE and CIS countries.

Within each region, country averages differ substantially, as shown by the following figures. It is also interesting to note how countries that are leading for one sector are not displaying the same success for the other one.

![Figure 1: Waiting times across CEE](image)

**Source:** Business Environment and Enterprise Performance Survey, 2002

³ The CEE region includes Croatia, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Slovak Republic and Slovenia. SEE includes Albania, Bosnia and Herzegovina, Bulgaria, FR Yugoslavia, FYR Macedonia and Romania. CIS includes Armenia, Azerbaijan, Belarus, Georgia, Kazakhstan, Kyrgyz Republic, Moldova, Russia, Tajikistan, Ukraine and Uzbekistan.
As we move to countries belonging to SEE and CIS we also note the presence of very clear outliers. In the case of SEE, as Figure 2 below shows, Serbia and Montenegro and Albania represent the two main outliers respectively for telecom and for electricity. In the case of Serbia and Montenegro this can be explained by the highly criticised privatisation of the main telecom operator (Telekom Serbia) under the Milosevic era. In the case of Albania, the electricity crisis that affected the country explained the poor quality of the service. Additional evidence from case studies carried out by personal interviews with enterprises in the SEE region indicated that even getting service hook-ups for electricity supplies took an enormous amount of time (roughly 3-6 months) and often required side payments to the utilities and the regulators. Some have resorted to stealing service from neighbouring firms or renting space within existing firms’ warehouses just to be able to get a utility service.

![Figure 2: Waiting times across SEE](image)

*Source: Business Environment and Enterprise Performance Survey, 2002*

Also in the case of countries belonging to the CIS region Tajikistan is an outlier for telecom, whereas Azerbaijan and Georgia are the main outliers respectively for electricity. Tajikistan is still at the very early stage of development in the telecom sector. Azerbaijan and Georgia were notably among the countries with the highest quasi fiscal deficit in the energy sector and lowest collection rate which, particularly in the case of Georgia, pose a severe threat to the sustainability of the sector.
As in the case of access to utilities services, also in terms of reliability of the services there are substantial differences across different regions. In the case of electricity, outages for CEE are relatively low - averaging 2 days, whereas they are twice as high for SEE (averaging 4.4 days) and almost three times higher for CIS countries, where the average is close to 6 days. Surprisingly, interruptions of mainline telecom services are much higher than electricity blackouts. Also differences are more significant for CEE, where the average is just above 4 days, versus 14 and just above 15 days respectively for SEE and CIS countries. CEE countries that display good performance indicators, with the exception of Poland and Slovenia for the telecom sector.
Unsurprisingly Albania has been mostly affected by power outages, as a result of the electricity crisis affecting Albania. Serbia and Montenegro again appears to be characterised by the least reliable fixed line network (together with the highest waiting list as we noted above), as a result of severe under-investment after the highly politicised and criticised privatisation of the dominant operator.

**Figure 5: Outages across SEE**

![Graph showing outages across SEE countries](image)

*Source: Business Environment and Enterprise Performance Survey, 2002*

Across CIS countries Belarus emerges as the only outlier for telecom, whereas there are not substantial variations for the electricity sector.

**Figure 6: Outages across CIS**

![Graph showing outages across CIS countries](image)

*Source: Business Environment and Enterprise Performance Survey, 2002*
LESSONS FOR TRANSITION COUNTRIES

Let us now discuss the progress across transition countries in terms of setting up new regulatory agencies. With the exception of countries belonging to CEE, few other countries have set up independent regulatory agencies and even when such agencies have been established there is a lack of awareness of their existence and their effectiveness. However, there is strong evidence that countries where an independent regulator has been established are characterised by better performance indicators in terms of access and reliability of the utility services, as Figures 7 and 8 show.

**Figure 7: Correlation between independent regulator and waiting time**

![Bar chart showing correlation between independent regulator and waiting time](chart)

Source: Business Environment and Enterprise Performance Survey, 2002

SEE countries where an independent regulator in the electricity sector has been established are characterised by waiting times of 7 days versus an almost four times longer waiting time for countries with no independent regulator (equal to 27 days). A similar pattern characterised the telecom sector where countries with an independent regulator have much lower waiting times (equal to 2 days) versus 7 days of the remaining countries. Across CIS countries the correlation between an independent regulator and access to services is less pronounced but is still remarkable, particularly in light of the relatively weaker institution (compared to the SEE ones).
Similar considerations hold for the other indicator that we use to capture reliability of the service. SEE countries where an independent regulator in the electricity sector has been established are again characterised by much shorter outages (3 days versus 7 days of the remaining countries). However, SEE telecom regulator appears less successful in reducing interruption of the service in the telecom sector. Across CIS countries the correlation between an independent regulator and electricity outages is less pronounced for electricity, but is surprisingly stronger in the telecom sector.

Regulation and broader policy challenges for network utilities

*Privatisation and regulatory reforms.*

The specific regulatory regime that is adopted for the privatised network utilities encompasses several forms of regulation. The establishment of an independent regulator is a key regulatory challenge vital for the settling of market disputes and policy and other regulatory issues. If the regulator is not independent, the
LESSONS FOR TRANSITION COUNTRIES

government is still able to interfere even if the network utility is privatised. Even with an independent regulator the difficult challenge facing the national government is to endow it with technically competent people and give them the authority and budget needed to implement its mandate effectively.

Network industries are typically capital intensive and the needed investment is sector specific, that is, it cannot easily re-allocated and can be viewed as ‘sunk’. As a consequence, a fair return on capital is guaranteed only if the private investment plan for the utility is successfully implemented over sufficiently long time horizons that permit the private owner to recoup the sunk investment. This requires as a precondition the existence of a stable regulatory framework. The investor makes its decisions based on the announced regulatory policy and its credibility. Insecurity, lack of transparency and predictability represent critical problems that could potentially deter investment. A regulatory risk premium is required in order to attract private finance into the sector. In transition economies the importance of the legal and institutional framework has often been underestimated. Even in the advanced transition countries (those anticipating early EU accession), the appropriate legislative and regulatory framework, as well as the institutions to implement it, are not always in place.

Some of the arguments for privatization – such as the need to access capital to meet growing demand and improve quality of service – are even stronger for transition economies. And the discipline provided by private ownership is even more needed. The scale of losses and non-collection in some of the utilities sectors (particularly the energy sector) is very high and is simply inconsistent with good management and protection of customers and would not be tolerated under private ownership. Even for so-called advanced market economies the process of privatisation in many cases took place only recently (and in a number of important cases still has not even begun). Everywhere it has been a challenging process closely linked with the establishment of regulatory agencies to implement the newly adopted legal and
regulatory reforms. Privatisation has proved to be even more difficult in transition economies, requiring the creation of newly legislation and regulatory framework, sometimes from scratch.

In many cases the privatisation of ‘strategic companies’, enjoying a monopolistic position or playing a key economic role, such as firms operating in telecommunications, media, postal services, public transport, airport administration and air traffic control, the energy sector, gas and oil industry (as well as financial institutions) has proven to be difficult. There are several reasons why such assets have been kept in public ownership, including political parties’ interests and management opposition. Finally, the opposition might come from the governmental bodies (at central, state and local levels) and other players involved in the privatisation process (and regulation of network industries) that might have different interests and views on the privatisation process or methods.

Moreover, transition economies present special challenges. State and public enterprise budgets can be manipulated, regulation can be distorted and perverted; corruption is widespread and product, labour, capital and financial markets often work very imperfectly with considerable risk of ‘tunnelling’. Moreover, there have been many different privatisation methods (including a variety of voucher schemes, various forms of insider privatisation, auctions and direct sale to a strategic outside investor) and there is ample evidence that the modalities of the initial privatisation can have a lasting influence on the performance of the privatised industry. The original privatisation methods interacts in a complex way with product market, factor market and financial market structures (including the markets for corporate control and for managerial skills) to produce economic success or failure.

4 Tunnelling is the transfer of the assets of profits out of firms for the benefit of their controlling shareholders.
5 For further details of the privatisation process across EU accession countries see Buiter W and Vagliasindi M (2003), The Case of Privatisation for Network Utilities, in Structural Challenges and the Search for an Adequate Policy Mix in EU Accession Countries, forthcoming, Edward Elgar.
LESSONS FOR TRANSITION COUNTRIES

To be successful in enhancing efficiency, privatisation requires a number of complementary institutional changes, including restructuring to create scope for competition and/or to enhance the commercial viability of the privatised utility. Network utilities privatisation has proven to be an effective means of attracting private investors and, importantly, a way of attracting foreign direct investment (FDI), particularly when privatisation has occurred through the selection of a strategic investor by open international auctions. In general, informed external investors with a strategic share have turned out to possess both stronger incentives and greater ability to identify and bring in appropriate agents with industry-specific knowledge and the necessary finance. Privatisation through sale to strategic outsiders has promoted higher corporate governance standards, with less incentive to loot the company, and a better financial structure and performance.

In the case of telecom a privatising government among advanced market economies has tended to divest all or part of its ownership stake of the dominant telecom operator through an initial public offering (IPO). This leaves the existing management team in place and relies primarily on domestic suppliers of capital and technology for all needed system upgrades and expansion. In contrast, across transition economies, telecom privatisation has typically involved selling controlling stakes to a western operating company, usually in exchange for a large up front payment plus obligations to update and expand the network and services. This allows national governments lacking the managerial and financial resources to ‘import’ the needed capital and expertise to implement the major technological and service upgrades. Subsequently, the government tends to sell some or all of its residual holdings through IPOs thereby helping to jumpstart development of the national stock market and to spread ownership of the firms’ equity as broadly as possible throughout the citizenry. The financial impact of telecom privatisation can be quite remarkable.
The electricity sector is capital intensive and is characterised by typical peak-load problems. There are also specific challenges facing transition economies, where installed generation capacities were designed to meet energy requirement prior to the transition. Central planning encouraged wasteful consumption of electricity by pricing power at a small fraction of its long-run incremental cost. In addition, the electric power systems are inefficient and suffer from severe underinvestment and lack of maintenance. Additional problems derive from the fact that non-cash payments account for a large proportion of billed electricity resulting in low cash collections. Privatisation can be designed so as to encourage payment discipline through appropriate sequencing. A private firm owned or managed by a foreign strategic investor will have a stronger incentive to enforce payments discipline. Experience to date suggests that in cases where the private sector has entered power distribution, there have been major improvements in payments discipline.

Improvements in efficiency resulting from private participation may in turn reduce the price increases necessary to ensure the viability of the power sector. The introduction of the private sector would also help to mobilise finance and increase the possibility of further investments in the sector. However, institutional reforms are needed that support private investment through a system of credible and effective regulation. The power sector is a market characterised by significant network externalities in transmission, and full competition can only emerge in a well-regulated system. Apart from improving payments discipline, there is only limited evidence from transition economies to suggest that private sector participation improves operational performance.

However, experience in infrastructure reform in the United Kingdom and the widespread private participation in infrastructure around the world suggests that the introduction of the private sector in a well-regulated and liberalised environment results in lower prices and better quality of the sector. Empirical studies have been undertaken both at the country and enterprise
levels. Cross-country evidence generally indicates that the combination of privatisation and broader regulatory reforms is associated with significant improvements in the performance of the utilities sector, on any of a range of indicators, whereas privatisation on its own has only limited impact.

A second major stream of privatisation research focuses on the performance of a single firm or a small number of firms. Galal et al document net welfare gains in 11 of the 12 cases considered in Britain, Chile, Malaysia and Mexico. Newbery and Pollitt conclude that restructuring and privatisation of the UK’s Central Electricity Generating Board (CEGB) was worth it but could have been implemented more efficiently and with greater concern for the public’s welfare. Bortolotti et al find that the financial and operating performance of telecommunication companies from developed and developing countries improves significantly after privatisation but that a sizeable fraction of the observed improvements results from regulatory changes – alone or in combination with ownership changes – rather than from privatisation alone. Since in almost all cases new regulatory regimes and market structures are introduced around the time of privatisation, we also need to disentangle the separate effects of competition, regulation and ownership structure.

---

**Regulation and competition**

In the absence of competition, regulation is needed to provide incentives for productive and allocative efficiency, passing benefits on to consumers. However, regulation simply cannot replicate all the pressures of the market and it is unrealistic to expect it to do so. Competition has brought dramatic changes in the case of UK: companies discover and provide what customers want. Industrial customers secured customised metering and billing arrangements, domestic customers can purchase green electricity if they want. All categories of customers have secured better terms. Price control is no substitute for competitive pressure and is likely to distort the market either by deterring new entry or by over-rewarding it at the expense of customers.

Two key decisions for the newly established agency are the establishment of pricing rules and the choice between rate of return regulation and price cap regulation. Fixed rate of return or cost plus contract offers no incentives to the firm to reduce costs, because any variation in cost is appropriated by the regulator (and via the regulator, the government) rather than by the firm. A fixed price contract induces the right amount of effort, because any reduction in cost is appropriated by the regulated firm. The enterprise is the residual claimant for cost savings. Most of the transition economies followed the UK model in choosing price caps.

However, in the UK price caps have been used only on a temporary basis for a number of reasons. First, price controls limited the scope for competitors to offer price cuts. Second, the prospect of repeated tightening the control in this way would severely reduce the incentive on customers to search the alternative offers from the market and switch to the best supplier. Finally, the approach would suggest or reinforce in the minds of customers that price regulation was an important and permanent element of a competitive market. Insofar as the approach induced more customers to stay with the incumbent it would build up a constituency dependent on it. Such consideration led the UK
regulators to gradually relax and remove retail price controls. In the case of electricity retail price controls in the UK have been revised and tightened and ultimately removed in 2002. In the telecom sector most retail price controls have also been removed in 2002.

However, in many cases regulation is needed to support competition. There are important regulation involves designing rules to ensure the emergence of effective competition, by providing third party access to the incumbent’s network. In the case of telecom, interconnection ensures any customer of one network can call any customer of another network. Call termination (i.e., to deliver a completed call over the interconnected fixed network) is the essential interconnection service - it cannot be feasibly replicated and there is no market in call termination (there is no make or buy decision as the local loop involves high fixed costs and is unlikely to be duplicated by alternative network). It is frequently described as an enduring bottleneck.\footnote{See Li W and Xu L, (2001), Liberalization and Performance in Telecommunications Sector Around the World, mimeo. World Bank; Petrazzini B (1996), Competition in Telecoms - Implications for Universal Service and Employment, Public Policy for the Private Sector, Washington DC and Wallstein S (2002), Does Sequencing Matter? Regulation and Privatization in Telecommunications Reforms, Mimeo, Stanford University.} Depending on market power this may lead to an abusive situation by operators withholding call termination or setting onerous terms.

Interconnection is critical in providing efficient investment and effective competition. If the regulator fails to understand interconnection it can distort market entry signals, invalidate investments and allow/encourage the abuse of dominant positions to the detriment of consumers. Hence, those operators with the ability to abuse their market power should be subject to special rules (\textit{ex ante} regulation) to ensure that they do not abuse their dominance. These include a requirement to meet all reasonable demands for interconnection services from other network operators, transparent and cost based interconnection,
unbundling of interconnection charges, non discrimination and publication of interconnection offers (terms and condition of contract and prices). From a public policy viewpoint the resulting price of call termination needs to be economically efficient, guarantee fair recovery of costs for all operators and provide the right entry signals.

Long run incremental cost methodologies meet these criteria. Its advantages include that it: (1) is open and transparent as it is based on business decision costs that are the same for any operator of a similar network; (2) is forward looking, avoiding inefficiencies and relating equipment costs to unique cost drivers; (3) incorporates a reasonable rate of return so ensures a fair reward. Note that (1) implies that it is verifiable and should ensure the most efficient outcome, including the correct make/buy decisions. The disadvantages are mainly related to the fact that it is not a simple rework of existing figures, but needs relevant up-front effort. This can lead to common or fixed cost being apportioned in an arbitrary way that does not guarantee that the network operator will implement the efficient investment programme.

In most cases, access liberalisation has taken the form of regulated third party access (TPA); that is, a legal obligation to provide network access under non-discriminatory conditions. Regulated TPA is necessary to allow entry of new generators into a competitive market, as well as to allow consumer choice of producer/supplier. Without regulated TPA, liberalisation of entry and termination of legal monopoly status is unlikely to lead to actual entry as potential entrants face hold-up costs. Hold-up costs may be discriminatory rates or contracting hurdles directed at entrants by incumbents. Similarly, without regulated TPA, legal provision for consumer choice of supplier will not result in actual consumer choice; the lack of entry by new generators means that consumer options are not expanded; even legally unconstrained consumers will continue to contract with incumbent suppliers. Additionally, the largest consumers who most often qualify to choose their supplier may wish to contract
directly with third party generators, by-passing distribution utilities, but without TPA, they will be unable to do so.

**Policy recommendations**

The ideal sequencing is to set in place the regulatory framework before privatising utilities, as well as using privatization to design the most appropriate market structure. With respect to the best order for these measures, it is crucial that a sound regulatory framework is in place prior to privatisation. Furthermore, when privatisation or private sector participation occurs, it should involve strategic investors in order to maximise privatisation revenues, to secure finance for necessary investments and to strengthen incentives for improved efficiency. In the case of the electricity sector, privatisation of distribution should occur not later than privatisation of generation when payments discipline is a problem. This is because privatisation of generation when there is low cash collection is likely to attract low sale revenue and may not support necessary investments. This could in turn lead to increasing political objections to such changes. Regarding liberalisation, this should be the last step, undertaken after industry restructuring, the setting up of a regulator, and the introduction of the private sector. The sequencing can be different in the case of telecom where competition at least for advanced services can (and should) be introduced as early as possible.

Transition economies face significant constraints to infrastructure regulatory reforms, coming from market size, lack of sector specific regulatory expertise and the credibility of national governments in establishing a regulatory environment. Hence, it is worth to consider alternative solutions, such as adopting a cross-sectoral versus a sectoral regulatory approach and in some cases a regional versus national approach to regulation. Concerning the question of whether to adopt sector specific regulatory offices versus a multi-sector one, Britain opted for the first option whereas the US adopted public utility commission, with each commission typically covers several industries, but
within a single state. UK regulators as individual office-holders have been more pro-active than a panel of commissioners would have been and can more easily be held accountable for their decisions. In transition countries a panel of commissioners might be less vulnerable to influences and weaken the link with particular governments or ministers. This might increase stability but reduce the effectiveness in taking action. In Britain it has been helpful for each regulator to focus on the most relevant issues within each industry and to learn from each other’s experience. Some argued that a single commission covering several industries can make the best use of scarce regulatory expertise. Also in the future, as utilities become more intertwined, there may be greater advantage in a single body regulating all of them. Regarding finance where there are severe government budget constraints and a greater fear of government influence compromising regulatory independence there may be merit in giving regulatory bodies a statutory ability to fund themselves from licence fees, without requiring them to obtain government permission or constrain themselves to low pay-scales.

As an example of a regional approach, we report here the benefits of establishing a regional trade market for energy. When resource endowments across countries in a region are heterogeneous, then there is the potential for substantial system cost reductions through trade. At the same time, without domestic tariff adjustments, the benefits from regional trade will remain unrealised because cash flows within the system are insufficient to cover import costs. The benefits from regional trade in energy are particularly large in regions where countries are in different time zones and thus have non co-incidental peak demand, in which case trade opportunities for a given installed capacity increase. In addition, costs associated with reserve capacity – to meet unexpected upswings in demand, or to compensate for units that are unexpectedly unable to supply – are lower in an integrated system. Moving to technical capacity for regional trading, investments would be required in the areas of transmission network and installation of metering and data
LESSONS FOR TRANSITION COUNTRIES

communication equipment. The costs associated with these investments are small relative to the associated benefits (in terms of cost reductions associated with trade). In addition, investments in institutional capacity would be required if a market is to work. A pre-requisite for any power market is a grid code, without which system integrity is jeopardised. In a regional market context, ideally there should be a regional grid code. As a minimum, national grid codes within a regional market should be mutually consistent. Co-ordination might be achieved here through a regional regulators’ association, possibly supported by international financial institutions (IFIs)/bilateral donors.

A second pre-requisite for any market is a cost reflective transmission tariff methodology. In a regional context, questions arise over how system operators in transit countries should be compensated for transmission costs occurring due to international trade. Charging mechanisms here should be cost based, that is, based on the underlying flows of electricity (as opposed, for example, to distance based, or based on the number of countries between trading parties). Mechanisms for co-ordinating investments in a regional context should be in place given that these may be both substitutes and complements (for example, a transmission investment strengthening links between countries might substitute a generation investment in an importing country, and might complement a generation investment in an exporting country). The mechanisms for these choices should be good information – a regional system study – and co-operation between governments. In the medium term, co-ordination can be achieved through harmonisation of regulatory rules by national regulators.

Conclusions

As the experience of the UK and to a lesser extent of transition countries demonstrates, to be effective network utilities privatisation should be complemented by measures stimulating competition and broader regulatory reforms. Otherwise, it risks
allowing the newly privatised monopoly to use its resources and political influence to stifle reforms especially those that threaten to introduce greater competition. We report some evidence of a significant impact of the creation of an appropriate legal regulatory framework. However, we also found regulatory challenges, mostly due to the fact that, in contrast to western Europe, regulatory agencies were not in place before privatisation. Having been created late in the game, the east European regulators have had their task complicated by the economic and political clout of the newly privatised utilities.

This is in line with recent findings in empirical literature. Wallstein (2002) found that establishing a regulatory authority before privatising the dominant telecom firm is correlated with the increase in sector performance. It is also consistent with the theoretical argument that it is important to build the institutional and regulatory framework first and then to privatise, as opposed to simply creating a private monopoly. The presence of a strong and independent regulator may also increase the value of the firm to investors, even though such a regulator may (or should) constrain the firm’s ability to extract monopoly rents. The reason is that an effective regulator will bring something akin to a floor as well as a ceiling for profits. Investors face less uncertainty and are willing to pay a premium for legal certainty and security. An effective legal and regulatory framework is essential to attract private investment and to ensure that the country as a whole benefits from an effective set of network utilities.
12 THE UK MODEL AND DEVELOPING AND TRANSITIONAL ECONOMIES: COMMON ISSUES AND MISCONCEPTIONS

Ian Alexander

Introduction

Privatisation, competition and regulation have become key themes for the infrastructure and utility policies of the multilateral and bilateral development agencies over the past 10 to 15 years – predicated on the successes of the UK and other pioneering reform countries like Argentina and Chile. Yet, reform is moving slowly and in many cases is following more ‘traditional’ US style regulation than the incentive and competition focused ‘UK model’. Why is this?

One of the many reasons is a set of common concerns that are raised in developing and transitional economies (DTEs) when the ‘UK model’ type regime is proposed for utility or infrastructure service providers. This paper considers some of these common concerns and considers the underlying issues as well as some practical examples of the implications of choosing to follow one approach rather than another.

Acknowledgement
This paper reflects the personal views of the author and should not be attributed to his employer. In addition to the discussion at the conference, comments were gratefully received from Antonio Estache, Clive Harris and Chris Shugart, of course, all remaining errors are the responsibility of the author.

Ian Alexander, Senior Economist, South East Asia Energy and Infrastructure Unit, The World Bank
This paper focuses primarily on the regulatory aspects of the ‘UK model’. Competition elements in developing and transitional economies are covered elsewhere. The paper is structured as follows. After addressing some of the broader contextual issues about reform, three specific issues are addressed:

- the need for information;
- the focus of regulation in developing and transition economies, investment or efficiency;
- the need for regulatory capacity.

Before addressing the concerns of DTEs one important point should be made. There is no single ‘UK model’ and it is misleading to state that a specific reform is the embodiment of the ‘UK model’. Rather, there is an approach incorporating privatisation, competition and incentive based regulation with the various elements used to varying degrees. Two examples illustrate the variety captured within the ‘UK model’.

First, electricity reform in the UK was very different depending on which country is considered, Scotland has a different model to England and the approach in Northern Ireland is different again. Helm (2003) provides an overview of the reforms in each of these countries.\(^1\) Secondly, water reform has taken a very different route in Scotland when compared to England and Wales. The latter involved wholesale privatisation while the former incorporates a much more incremental role for the private sector – see Sawkins and Dickie (2000) for a review of what is happening in Scotland.\(^2\)

Why stress this point? Many proponents of reform working in DTEs present a simple, stark picture of reform which may not be appropriate given the political and social circumstances faced in

that country or the state of the sector being reformed. It would be better if the underlying philosophy were to be presented and then tailored to fit those circumstances.

Getting the context right – cherry-picking reforms?

As mentioned earlier, the ‘UK model’ is a combination of reforms covering ownership of the assets, the introduction of competition and, where appropriate, an incentive based regulatory regime. This set of reforms needs to take place in the broader context of the institutional and political framework of the country – for example, the UK was able to establish regulatory agencies headed by individuals enjoying broad support from stakeholders while giving the Secretary of State great freedom over selection of the person to be regulator owing to the existing institutional framework. In DTEs where that same institutional framework does not exist many hours are spent agonising over the appropriate wording of clauses in their legislation to ensure that an appropriate regulator or commission member is chosen. These institutional, political and legal issues cover a very wide range of aspects of the framework within which business and politics take place within a country and without a full understanding of these conditions it is difficult to make any but superficial recommendations as to how reform should occur.

Many DTEs have attempted to undertake some of the reforms without buying into the whole package – possibly for valid reasons – but have then been surprised that the same type of

---

3 See Electricity Act (1989), Part 1 Section 1, Stationery Office for an example of the wording while a consideration of the situation in DTEs consider The Karnataka Electricity Reform Act, 1999, where Section 5 which runs to several pages covers the conditions for the appointment of a commissioner. Copies of the Karnataka Act are available from their website: www.kerc.org.

4 A full discussion of these framework issues is outside the scope of this paper. However, it is something that reformers ignore at their peril.
result has not been achieved. Take one example of this. There have been significant attempts to apply incentive regulation to state owned enterprises – either as part of a move towards private sector participation or as a stand-alone reform. Yet, without the right corporate and political governance environment for incentives to have an impact it is not surprising that most of these attempts at incentive regulation have not proven successful.\(^5\)\(^6\)

A few cases of successful incentivisation of state owned utility and infrastructure enterprises do exist – the Chilean water sector and Eskom, the vertically integrated electricity company in South Africa are both often quoted as examples.\(^7\) There are, however, many more failed cases – the water sector in Columbia being but one example.

One recent example nicely illustrates this link between ownership of the entity being regulated and the applicability of

\(^5\) Only recently have we seen a return to the pre-1980s policy of trying to establish incentives for state owned companies in the UK – the approach adopted from the late 1990s for regulating the water industry in Scotland is an example of this. For a review of what is happening in Scotland see Regulating Scottish Water [regulatory reform in the Scottish water industry: recent progress and future prospects] by Sawkins and Dickie, Utilities Policy 8 (1999) and Water Industry Commissioner for Scotland (2001), Strategic Review of Charges 2002 – 2006, Water Industry Commissioner for Scotland, available from the Commissioner’s website: www.watercommissioner.co.uk.

\(^6\) Improving the governance of state-owned power utilities: options and evidence by Irwin and Yamamoto (2003), Improving the Governance of State-Owned Power Utilities: Options and Evidence, mimeo, World Bank investigates what elements of the corporate and political governance are needed to create a situation where incentives may work with state owned enterprises.

\(^7\) Some recent evidence on the comparative performance of private and public water companies in Chile shows that while the state owned companies have been able to raise their performance in response to the incentives created by the regulator they have not done as well as the private companies. Bitran and Valenzuela (2003), Water Services in Chile - Comparing Private and Public Performance, Viewpoint, World Bank sets out this evidence.
incentive regulation. Over the last year or so work has been underway in Pakistan for the planned privatisation of the Karachi Electricity Supply Company (KESC), a vertically integrated electricity utility serving the city of Karachi. The regulatory agency, the National Electric Power Regulatory Authority (NEPRA) undertook a price review in the summer of 2002 as part of the pre-privatisation work. It awarded a price determination that contained the following provisions:

- if KESC is privatised then a seven year price-cap (with an asymmetric profit-sharing system) is applied;

- if KESC remains in state ownership then specific targets for losses etc are applied under a one year price control.

NEPRA clearly stated that the incentive regime only made sense if KESC had been privatised.

Information – when is enough, enough?

It is not uncommon to hear regulatory agencies profess a desire to utilise some form of incentive based system but then state that there is insufficient information available to implement such a system. Some of the evidence on these concerns in India is available from determinations made by various state regulatory bodies.

---

9 The determination and background information is available from the NEPRA website: www.nepra.org.pk. Alexander and Wright (2003), KESC multi-year tariff determination, 2003, mimeo, World Bank, summarises the salient points of the determination.
Is the lack of reliable information a binding constraint on the possibility of using incentive based systems? The answer to this would appear to be no. This is for several reasons.

First, a significant amount of the information that is needed for an incentive regime is also needed for a rate of return type regime, so the regulatory agency will not have a significantly easier job if applying a lower powered regime. Second, one of the best ways to improve the availability of information is to provide companies with incentives to demonstrate at what cost they can deliver services. A continuation of a ‘traditional’ approach may do nothing to improve the data available to the regulator and so lead to a need for more intrusive regulation to try and determine data values.

Third, where there are important cost elements that are hard to forecast and outside the control of the company it should be possible to design a regime that allows for those elements to be treated on a cost pass-through basis. Over time as the availability of data improves the amount that is treated as a cost pass-through can be lowered. A consideration of the application of this type of approach to India is provided in Alexander and Harris (2001). Fourthly, because, presumably, the concern about not having sufficient data is that the regulator will create a regime that either allows the company to earn abnormal profits or face a real risk of bankruptcy. If this is the case there are possible solutions including rebasing systems such as that proposed by Mayer (2001) for the water industry in England and Wales which retain incentives for individual companies to try to outperform their peers while controlling the sector’s level of returns.\(^\text{11}\)

\(^{11}\)Mayer C (2001), Water: The 1999 Price Review, in Regulating Utilities: New Issues, New Solutions, Edward Elgar. This type of approach can only correct for sector wide errors, not individual company ones. It also suffers from the fact that on average the sector is restricted to earning the allowed cost of capital while if all firms were able to outperform their efficiency targets you would see the average outcome being above the allowed cost of capital. As such, using this type of approach does create problems and may be better suited to a transitional period when concerns about making mistakes are likely to be greater.
This sort of reasoning is found within the KESC determination discussed earlier and is now forming the basis for several incentive based systems being developed in India – including Andhra Pradesh, Karnataka and Orissa. Also, the experience of states like Orissa show that having annual reviews have not actually lead to better information becoming available – this is discussed further under regulatory capacity later in this paper.

One problem that does need to be considered is how to handle cost elements that are within the control of the company but are initially hard to forecast. This does pose a potential problem for the design of an incentive based scheme. This issue would obviously need to be tackled on a case-by-case basis but probably some form of pragmatic response will be necessary. For example, accepting that these cost elements should be included in the incentive regime but allowing them as cost pass-through items for the first control period may be all that is achievable. Over time, either at the first or second price reviews after the initial control is put in place, they can be moved into the controllable pot of costs and incentivised.

This is clearly not perfect and may mean that incentives are only being created for a small number of cost items. However, provided the key items are captured this may not be too much of an issue. For example, in many countries commercial and technical losses are the dominant problem facing the electricity industry and so incentivising the reduction of these losses, as is the case with KESC, will yield far more significant results than trying to incentivise all the other ‘controllable’ operating cost elements. This also appears to have been part of the rationale for focusing on loss reduction in the privatisation of the electricity distribution system in Delhi.\(^{12}\)

Regulatory focus – investment or efficiency?

Incentive regimes are perceived to place a primary focus on an improved operation of existing assets (improving the efficiency of operations) rather than the extension of the network. Accordingly, several authors have argued that given the importance of network expansion in DTEs it is more appropriate to employ a rate of return type system.\(^\text{13}\)

Are incentive based systems too focused on efficiency and unable to support investment in the way that rate of return systems can? The answer to this question clearly lies in the detail of the regime that it is proposed. Incentive based systems can support investment. Consider the case of the water industry in England and Wales. From privatisation to 2004 around 50bn pounds of investment is expected to have been undertaken, this should be compared to the equity sale price of five billion pounds at privatisation. This significant investment programme has been supported under an incentive system.

\(^{13}\) This argument is presented in Chapter 9 of Guasch (2003), Granting and Renegotiating Infrastructure Concessions – Avoiding the Pitfalls, draft, February. A variant is presented in Newbery (1999), Privatization, Restructuring, and Regulation of Network Utilities, MIT where the focus is regulatory credibility. The interaction of investment and type of regime creates conditions under which it is difficult for the regime to be credible when incentive based systems are utilized. For example, a regulator could announce that an agreed investment plan will be allowed over a five year period and then once the operator has undertaken the investment then some, or all, the investment could be disallowed at a future price review – possibly in response to keep consumer prices low. Something like this may be happening in the electricity sector in Moldova at the moment. As such, unless a regulator can create a credible system in which that investment plan is protected from discretionary actions, companies will not invest and consequently a rate of return type system could yield more investment than an incentive based one. While this fear may exist there are actions that can be taken to create credibility and also for many distribution type businesses investment is not a one-off event and so the fact that this is a repeated-game will constrain the actions of the regulator.
An appropriately designed incentive regime should actually support investment. *Ex ante* estimates of the investment are incorporated at the price determination and then not until the next price review is there an attempt to reset the value based on what was actually invested. Of course, this approach does not protect against cost over-runs or the need to finance additional investment until the next price review, but systems can be designed to give appropriate protection here – again the England and water case provides a good example, the ship-wreck clauses and the logging-up system are both parts of a potential answer.

Further, it is possible to strengthen the incentives for planned investment. Discussions in several sectors in the UK have looked at ways of providing stronger investment incentives, these include:

- lengthening the period until the *ex post* figures are incorporated into the regulatory asset base from five to 10 years – this would ensure that investment undertaken in the last year of a control period would still have five years of incentive;

- making the incentive period a rolling system so that investment undertaken in any year of a price control would always face the same length of incentive – so it could be a five year rolling system.

Further, if the concern is about the inability to adequately forecast the needed investment at the time of privatisation or the price review, there are also solutions to this. Logging-up, used to some extent in the water industry in England and used for all investment in the water and electricity sectors in Abu Dhabi provide for capturing investments at the next price review. If there is a concern about financing investment during this time period (possibly arising because of regulatory credibility concerns) then a cost pass-through type approach could be adopted for this additional investment. This type of approach has
been discussed in the airport sector in Australia. So, it would seem possible to create a system that provides incentives for efficient delivery of planned investment without blocking unanticipated additional investment.

This is not to say that even with a well designed system problems could not occur. In the electricity sector in Moldova even though there appeared to be a well specified incentive system for the investment the regulator has proposed striking 30% of the investment from the asset base. Further, until good output measures of the impact of investment are established there will need to be an undue focus on inputs rather than outputs. This will limit the incentives for management to only undertake appropriate investment but will at least leave incentives to minimise the cost of those planned investments.

What would the alternative be? Under a rate of return system there does appear to be protection for the investor to earn a return on the amount of investment undertaken. However, two caveats should always be considered:

- many rate of return systems accept the risk of the Averch-Johnson problem and so utilise a ‘used and useful or prudence’ rule to place some control on the amount of investment;

- the above issue is exacerbated through the consideration of annual returns. Not necessary under traditional US rate of return regulation but often employed in the variant seen in DTEs, the need to file annual returns increases the risk of regulatory intervention and so uncertainty about whether the investment will be remunerated.

Overall, incentive based systems should be able to provide an environment within which planned investments can be

---

undertaken in an efficient way with certainty about how they will be treated (at least during the life of the price control) and unanticipated investments can be supported. At worst this should be no worse than the environment available under a rate of return type system and at best it should be more supportive of investment by private operators.

Regulatory capacity – too little of a good thing?

A final issue that is often raised with respect to implementing an incentive based regime is that the regulatory capacity required to determine the price control is not available.

Clearly it is true that regulatory capacity in DTEs is limited and that this is a general concern. However, the annualised form of rate of return regulation that is employed in many DTEs actually seems to place an even greater burden on regulators than an incentive based system. Although any individual rate of return review may take less time than an incentive regime review would, only one incentive review should be required each three to five years unlike the annual rate of return review. Further, it is likely that the quality of incentive based reviews will be greater than that of annual reviews owing to the time being available to consider important issues and to prepare analysis etc. Some support for this proposition can be drawn from recent work by Domah et al considering the staffing and costs of regulatory agencies in developed and developing countries where the models reported showed that performance based regimes tended to lead to fewer staff.\(^\text{15}\)

\[^{15}\text{Domah, Pollitt and Stern (2002), Modelling the Costs of Energy Regulation: Evidence of Human Resource Constraints in Developing Countries, DAE Working Paper WP0229, University of Cambridge. In only one of the two models reported was the impact of the type of regime significant at the 10\% level. However, a consistent direction of impact was found.}\]
This work can be supported by anecdotal evidence from India where the State Electricity Regulatory Commissions seem to spend an inordinate amount of time on their annual price reviews and, as such, have far less time than necessary to spend on other key reform issues such as market development, quality of service regulation etc. Also, as mentioned above, if the annual determinations by commissions such as that in Orissa are considered it is clear that little or no real gain has been made in the information available for making determinations. As such, the annual process has not helped solve the information problem and has, in all probability, hindered a real solution to the information problem from being found.

Summary

As was stressed in the introduction to this note, the ‘UK model’ incorporates a series of reforms that need to occur within the right legal, political and institutional framework for the full effect to be gained. One element that has attracted significant attention in DTEs is that of incentive based regulation.

It would appear to be a common misconception that incentive-based systems cannot be utilised in DTEs. In many cases the reasons put forward as to why incentive regulation cannot work are based on an expectation of a perfect system needing to be employed or a stylised view of how the alternative, rate of return regime, will be implemented. Simple solutions to some of the problems are available and are being successfully utilised in DTEs.

Obviously there are problems with establishing incentive-based regimes, but the benefits that are gained from creating an incentive based system are such that solutions to these problems should be sought. It is also important to ensure that at least the basic environment for incentives to be meaningful exists. Trying to apply an incentive scheme to a state owned enterprise is in
most cases probably doomed to failure and could quite possibly damage the credibility of the regulatory agency.
CRI ADVISORY COMMITTEE

Chairman: **Professor Ralph Turvey**

Members

**John Ashcroft**, Director, Regulation Value for Money, National Audit Office

**Frank Attwood**, Partner, RSM Robson Rhodes

**Professor Brian Bayliss**, Director, University of Bath School of Management

**Jim Boudier**, Finance and Regulation Director, Thames Water Utilities

**Rodney Brooke CBE**

**Stuart Condie**, Chief Economist, BAA plc

**Clive Elphick**, Group Strategic Planning Director, United Utilities plc

**Adrian Gault**, Director, Energy Economics, DTI

**Professor Stephen Glaister**, Dept of Civil Engineering, Imperial College London

**Professor Cosmo Graham**, Faculty of Law, University of Leicester

**Professor Leigh Hancher**, Allen & Overy, Amsterdam

**Julia Havard**, Head of External Relations, OFWAT

**Ian Jones**, Director, National Economic Research Associates

**Ronan Palmer**, Chief Economist, Environment Agency

**Professor David Parker**, Aston Business School, Aston University

**Paul Plummer**, Director of Corporate Planning & Regulatory Affairs, Network Rail

**Professor Judith Rees**, Pro-Director, London School of Economics

**Frank Rodriguez**, Head of Economics, Royal Mail Group plc

**Colin Skellett**, Chairman, Wessex Water

**Vernon Soare**, Director, Policy and Technical, CIPFA

**Roger Tabor**, Strategic Information Director, Royal Mail Group plc

**Tim Tutton**, Director of Regulation, National Grid Transco

**Peter Vass**, Director, CRI, University of Bath School of Management

**Professor Richard Whish**, King’s College London

**Professor Stephen Wilks**, Department of Politics, University of Exeter
The UK Model of Utility Regulation: A Retrospective of the 20 years since the Littlechild Report.

An LBS Regulation Initiative, Centre for Regulated Industries & City University Conference.

Wednesday, 9th April
Conference 9:30am - 5pm
Location: Cass Business School, City University

Morning Sessions: UK

Session 1 - Chair: John Cubbin, City University

9:30 John Cubbin, City University – Welcome
9:35 David Currie, Ofcom and Cass Business School - Keynote Address:
  • Ofcom: The Latest Developments in UK Regulation
10:10 Jon Stern, Regulation Initiative, LBS:
  • What the Littlechild Report Actually Said.
10:30 Stephen Littlechild
  Discussant comments
10:45 Coffee

Session 2 – Chair: Ralph Turvey, CRI & Regulation Initiative, LBS

11:00 Martin Cave, Centre for Management under Regulation, Warwick:
  • UK Telecommunications, Regulation & Competition Policy.
11:30 Chris Bolt:
  • The Future of RPI-X and Implications for the Volume & Quality of Investment in the UK
12:00 Panel Discussion:
  Including - John Smith, former Director of Regulation, Railtrack
  Stuart Goodwin, Economic Regulation Manager, Thames Water
  Stephen Littlechild
  • What we have learned in UK utility regulation over the last 20 years.
13:00 Lunch

Afternoon Sessions: US/OECD, Developing & Transitional Economies

Session 3 - US / OECD Economies

14:00 Lynne Kiesling, Northwestern University & Reason Foundation
  • The UK Model & its Influence on North America
14:30 Pippo Ranci, President of Autorità per l’energia elettrica e il gas:
  • The UK Model & its influence on EU Countries
15:00 Panel Discussion:
  Including: Hans-Martin Niemeier, University of Bremen
  Jan-Peter Heida, Dutch Energy Regulator
  • UK Model’s influence on EU & on other OECD countries
15:30 Coffee

Session 4 - Developing & Transition Economies

15:45 J. Luis Guasch, World Bank:
  • UK Model & infrastructure Concession Contracts in Developing Countries.
16:30 Panel Discussion:
  Including - Maria Vagliasindi, EBRD:
  Ian Alexander, World Bank
  • UK Model on Transition & Developing Countries.
17:00 Concluding Comments & Close