

Privatisation, Competition and Regulation

Centre for Co-operation with Non-Members

OECD

© OECD, 2000.

© Software: 1987-1996, Acrobat is a trademark of ADOBE.

All rights reserved. OECD grants you the right to use one copy of this Program for your personal use only. Unauthorised reproduction, lending, hiring, transmission or distribution of any data or software is prohibited. You must treat the Program and associated materials and any elements thereof like any other copyrighted material.

All requests should be made to:

Head of Publications Service,
OECD Publications Service,
2, rue André-Pascal, 75775 Paris
Cedex 16, France.

OECD PROCEEDINGS

PRIVATISATION, COMPETITION
AND REGULATION

ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT

ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT

Pursuant to Article 1 of the Convention signed in Paris on 14th December 1960, and which came into force on 30th September 1961, the Organisation for Economic Co-operation and Development (OECD) shall promote policies designed:

- to achieve the highest sustainable economic growth and employment and a rising standard of living in Member countries, while maintaining financial stability, and thus to contribute to the development of the world economy;
- to contribute to sound economic expansion in Member as well as non-member countries in the process of economic development; and
- to contribute to the expansion of world trade on a multilateral, non-discriminatory basis in accordance with international obligations.

The original Member countries of the OECD are Austria, Belgium, Canada, Denmark, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, Turkey, the United Kingdom and the United States. The following countries became Members subsequently through accession at the dates indicated hereafter: Japan (28th April 1964), Finland (28th January 1969), Australia (7th June 1971), New Zealand (29th May 1973), Mexico (18th May 1994), the Czech Republic (21st December 1995), Hungary (7th May 1996), Poland (22nd November 1996) and Korea (12th December 1996). The Commission of the European Communities takes part in the work of the OECD (Article 13 of the OECD Convention).

OECD CENTRE FOR CO-OPERATION WITH NON-MEMBERS

The OECD Centre for Co-operation with Non-Members (CCNM) was established in January 1998 when the OECD's Centre for Co-operation with the Economies in Transition (CCET) was merged with the Liaison and Co-ordination Unit (LCU). The CCNM, in combining the functions of these two entities, serves as the focal point for the development and pursuit of co-operation between the OECD and non-member economies.

The CCNM manages thematic and country programmes. The thematic programmes, which are multi-country in focus, are linked to the core generic work areas of the Organisation (such as trade and investment, taxation, labour market and social policies, environment). The Emerging Market Economy Forum (EMEF) and the Transition Economy Programme (TEP) provide the framework for activities under the thematic programmes. The EMEF is a flexible forum in which non-members are invited to participate depending on the theme under discussion. The TEP is focused exclusively on transition economies. Regional/Country programmes, providing more focused dialogue and assistance, are now in place for the Baltic countries, Brazil, Bulgaria, China, Romania, Russia, the Slovak Republic (a candidate for accession to the OECD), and Slovenia.

© OECD 2000

Permission to reproduce a portion of this work for non-commercial purposes or classroom use should be obtained through the Centre français d'exploitation du droit de copie (CFC), 20, rue des Grands-Augustins, 75006 Paris, France, Tel. (33-1) 44 07 47 70, Fax (33-1) 46 34 67 19, for every country except the United States. In the United States permission should be obtained through the Copyright Clearance Center, Customer Service, (508)750-8400, 222 Rosewood Drive, Danvers, MA 01923 USA, or CCC Online: <http://www.copyright.com/>. All other applications for permission to reproduce or translate all or part of this book should be made to OECD Publications, 2, rue André-Pascal, 75775 Paris Cedex 16, France.

FOREWORD

Under the auspices of the OECD's Centre for Co-operation with Non-Members, the Advisory Group on Privatisation (AGP) serves as a forum for discussion of important privatisation issues. Since its creation in 1992, it has established a permanent network of contacts for the exchange of information and experience among countries. Initially, only OECD Member countries and countries in transition from centrally planned to market economies participated in the AGP. However, since 1997, it has been open to all emerging market economies.

This publication contains papers presented at the AGP's twelfth meeting in Helsinki in September 1998, the theme of which was *Privatisation, Competition and Regulation*. Referring to the past experience of different countries, the papers allow policy makers to gain insight in the issues emerging in the context of privatisation in infrastructure.

The main findings of the papers, and conclusions from the meeting, are summarised in an introductory note. A central message is that privatisation needs to be pursued in tandem with competition-enhancing policy and the design of an adequate post-privatisation regulatory framework.

The opinions expressed in this publication are those of the individual authors and do not necessarily represent those of the OECD, or the governments of its Members or non-OECD Members. Stilpon Nestor, Head of the OECD's Privatisation and Enterprise Reform Unit, and Ladan Mahboobi, a Consultant in this Unit, have edited this volume. This book is published on the responsibility of the Secretary-General of the OECD.

Eric Burgeat

Director

Centre for Co-operation with Non-Members

TABLE OF CONTENTS

Introductory Note	7
Privatisation of Public Utilities: The OECD Experience	
<i>by</i> Stilpon Nestor and Ladan Mahboobi	13
Introduction and summary	13
Public ownership of utilities and the case for privatisation:	
What has changed	16
The great institutional re-alignment: Changing incentives	
and separating objectives	24
The objectives and results of privatisation.....	28
Introducing competition in the infrastructure sectors	35
Conclusions.....	40
Privatisation and Competition: The Evidence from Utility	
and Infrastructure Privatisation in the United Kingdom	
<i>by</i> Stuart Holder	51
Executive summary.....	51
Introduction.....	52
Overview of utility and infrastructure privatisation	
in the United Kingdom	53
The performance of the privatised industries.....	61
Conclusion	75
Evidence from Utility and Infrastructure Privatisation in Chile	
<i>by</i> Pablo Serra	83
Summary	83
Introduction.....	84
The electrical power industry.....	92
The telecommunications sector.....	107
The transport sector.....	122
Privatisation Methods and their Impact on Competition	
The Brazilian Experience	
<i>by</i> Stefan Bogdan Salej	137
Summary	137
Factors that contributed to the Brazilian privatisation process	138

Methods and aspects of privatisations.....	141
Effects of privatisations	143
Trade off: mechanisms for the defence of competition versus the needs of large scale operation.	145
Conclusions	148
Appendix I History of the Brazilian Denationalisation Programme	152
Appendix II Initial Legal Regulatory Framework in Brazil	156
 The Role of the Regulatory Environment in Fostering Innovation and Growth	
by Mark Dutz.....	161
Introduction	161
Regulatory reform, new goods and the promotion of entrepreneurship	162
The benefits of infrastructure reform	164
Reform options.....	167
Conclusions.....	169
 Competition and Regulation in Public Utilities	
by Alberto Heimler.....	175
Introduction	175
Legislative role of the European authorities in the liberalisation process...	177
A policy for efficiency and quality improvements in public utilities	183
Conclusions	189

Annex I

Regulation of Water Distribution in Argentina	
by Mariana Conte Grand	193
Summary	193
Introduction	194
Regulation, competition and privatisation in Argentina	195
Privatisation and Regulation of water distribution in Argentina.....	196
Regulation of water distribution in the Buenos Aires metropolitan area.....	198
Conclusions	203

Annex II

Policy Issues in Telecommunications Reform: The Netherlands	
by Robert C.G. Haffner	207
Regulatory framework	207
Performance	209
Policy issues.....	210

INTRODUCTORY NOTE

In the last fifteen years, privatisation of public utilities and infrastructure industries has become an increasingly important policy tool for economic reform in many countries around the world. There are a number of reasons for this change. Global political developments have caused a significant change in the attitudes towards the control and distributional functions of utilities. Poor performance of state-owned enterprises and changing views on the role of the state in the economy, along with the need for increased investment to meet growing demand for more and better quality infrastructure services, at a time when most governments are pre-occupied with budgetary constraints have led to the emergence of alternatives to public provision and financing of such services. Massive changes in the capital markets and the ensuing opportunities for cross border investment have made alternative approaches to publicly funded provision of such services both attractive and feasible. Finally, technological changes have shrunk the domain of activities that can be considered natural monopolies, and have provided further impetus for privatisation. However, privatisation is only one aspect of the significant changes that have been under way. Liberalisation of formerly closed and regulated markets is the other.

As the title of this volume suggests, privatisation of public utilities (and broader network infrastructure industries) raises important regulatory and competition issues. These issues derive from the nature of the products provided by these industries and the markets in which they operate. Public utility services often embody significant public policy considerations, and therefore, their provision is not a purely commercial activity. Furthermore, for the most part, these industries have operated as vertically integrated monopolies.

In an introductory paper to this volume, Stilpon Nestor and Ladan Mahboobi look at the OECD experience with privatisation of public utilities and provide an overview of the development of the public policy debate on the ownership and control of utilities, and the case for their privatisation. They also discuss the changes that have occurred in the institutional approach to utilities and infrastructure, and examine some of the key privatisation objectives, along with the impact of different privatisation methods on achieving them. The authors stress the importance of using privatisation as an opportunity to introduce

competition and focus on the issue of the sequencing of competition and privatisation and the experience to date. Their key policy recommendation is that privatisation and competition need to be pursued in tandem, and that the choice is really about sequencing rather than the exclusive use of one or the other tool.

Three of the papers in the present volume focus on individual countries. The papers on the United Kingdom and Chile provide insights into the outcomes of the two longest running public utility privatisation programmes and the issues of competition and regulation in their context. The paper on Brazil's privatisation programme looks at privatisation methods employed in that country and their impact on competition.

In his review of the available evidence on privatised utilities and infrastructure providers in the United Kingdom, Stuart Holder presents the view that it is difficult to isolate the privatisation "impact", as often privatisation has been accompanied by significant regulatory and competitive or structural changes. The difficulty of establishing a credible counterfactual, compounds the problem. He argues that, if privatisation is defined broadly, the evidence from a survey of studies of privatisation would suggest that in privatised utilities and infrastructure sectors:

1. labour factor productivity, and in some cases total factor productivity, grew faster than before;
2. real prices declined (except in the case of the water industry, where they increased as a result of the need for increased investment);
3. sustained service quality improvements were achieved (especially in the water and telecom industries); and
4. privatisation made a very significant contribution to the public sector finances.

Pablo Serra's paper provides evidence from Chile's utility privatisation programme. He reports that the privatised utilities have achieved substantial efficiency improvements, increased their investments and expanded their services. However, their efficiency improvements have translated into drastic price cuts only where competition has emerged. He finds that regulated privatised firms are reporting rates of return on equity that are much higher than those of unregulated segments in the same industry. Serra argues that problems inherent in regulation have prevented the efficiency gains from being fully passed on to consumers. He also looks at the experience to date with the 1992 franchise law that allows private sector financing and operation of highway and airport projects, and the issues that franchising can give rise to.

Stefan Bogdan Salej's paper provides an overview of the methods used in Brazil's privatisation programme, and their impact on the process as well as its outcomes. He discusses the renewed role of the Brazilian state in the economy, and the legal framework changes that were aimed at expanding the scope of the programme, and attracting foreign investment. Transparency has been a basic premise of the privatisation process and has sought to ensure credibility of the programme. He also discusses the specific use of golden shares and partial privatisation as a means of ensuring an orderly transition to competition, and privatisation of strategic sectors (where there are constitutional restrictions, for example, in oil and gas exploration) through new entry.

The paper by Mark Dutz focuses on the role of the regulatory environment in fostering innovation and growth. In his view liberalisation of infrastructure services leads to innovations by downstream users of services, new entry, and a new range of goods and services which will in turn yield substantial benefits throughout the economy. He emphasises the importance of removing access barriers to infrastructure, especially those essential business services that reduce economy-wide transaction costs and, therefore, can affect downstream firms. He advocates the need for more empirical analysis to quantify such benefits in order to help make an even more compelling case for competition and improved access.

In the recent years European Union (EU) authorities have played an active role in promoting competition and preventing the segmentation of national markets. Alberto Heimler provides an overview of the key EU rules and guidelines regarding the opening up of public utility services to competition and an analysis of the most important steps that have been taken to encourage competition in different public utility sectors (telecommunications, electricity, railways, airports and air transport). He discusses the complementarity between regulation and competition, and argues that the primary goal of privatisation is to increase the role of market forces, and not just sale of shares. He argues that to achieve these objectives, privatisation must be accompanied by full market liberalisation, restructuring of the candidates into competitive segments and clear separation of public policy from commercial objectives. He emphasises the need for competition and regulatory policy to be carried out in tandem, to ensure that former monopolists do not retain their dominant market position.

Where natural monopoly characteristics are present and introduction of competition is not possible, long-term concessions can be used in the context of which the assets remain under the ownership of the state. Competition for the rights to service provision at the lowest cost, rather than competition in service provision itself, is expected to eliminate monopoly rents. However, such practices can be vulnerable to considerable moral hazard and provide ample opportunity for strategic behaviour on behalf of the parties. In this respect, it is

important to agree *ex ante* on clear dispute resolution mechanisms and exit arrangements for the incumbent firm, in addition to core regulation of prices and services.

Annex I contains a specific example of issues associated with such concessions. Marianna Conte Grand's paper presents evidence from regulation of water distribution in Argentina, where a 30 year fixed-term concession for the provision of water and sewage for the Buenos Aires Metropolitan area was granted to a private sector company. This approach marked a departure from other water and sewage privatisations in Argentina, as it involved a long term concession as opposed to the transfer of assets to the private sector. While prices did drop initially, the concession terms were such that they did not promote productive efficiency. Uncertainties led to opportunistic behaviour by the franchisee. Conte Grand proposes a simpler rate system, the use of quality and coverage goals rather than investment level goals, and an automatic rate adjustment mechanism in order to achieve a more stable and predictable outcome.

The telecommunications industry has been one of the sectors where rapid technological change has brought about the biggest changes in the last few decades. New technologies coupled with deregulation have led to the emergence of an intensely competitive market, in areas such as international and mobile telephony. But even in areas previously thought of as natural monopolies, such as fixed-line services, competition is now becoming more vigorous, as technology drives down the size of scale economies needed for an efficient presence in the sector, and large potential competitors (such as cable TV operators) are *ante portas*.

Annex II contains a paper by Robert Haffner, where he provides insights into the significant reforms that have been carried out in the Netherlands' telecommunications sector since the end of 1980s. Haffner discusses some of the key policy issues facing policy makers in Netherlands, and notes their relevance for other sectors with (former) natural monopoly characteristics. The paper also discusses the relationship between sector-specific economic regulation and general competition policy, and the extent to which economic regulation should be used as a substitute for market forces.

General Conclusions

There is overwhelming evidence that privatisation has had positive effects on profitability and performance of privatised enterprises. When private incentives are allowed to work and corporate governance improves, productive efficiency at the firm level increases.

Evidence from countries that have implemented privatisation programmes in the 1980s (most notably, the United Kingdom and Chile) consistently shows that, where privatisation resulted in the direct introduction of competition, the benefits to the consumers and the economy as a whole were considerable. Prices fell, even in comparison to pre-privatisation prices which usually were artificially low. Services improved and in most cases exceeded the minimum quantity and quality standards set by the state at the time of privatisation. The range of products and services available to consumers (both industrial and retail) increased. The levels of post-privatisation investment seems to suggest that the whole economy is benefiting from a much better (and better maintained) infrastructure; and that this is a sustainable, long-term trend.

Where privatisation was not followed by the introduction of competition into the sector the evidence is less clear. The services offered have improved in the vast majority of cases, in terms of both quality and scope and investment has picked up. Prices, however, have shown much more resilience than their equivalents in the competitive segments of the industries concerned. Even where regulation was effectively and credibly introduced before privatisation, regulators often miscalculated the potential of the privatised firms for achieving big efficiency gains and limiting entry. Important information asymmetries contributed to these miscalculations. In short, private sector monopolists are much more efficient than their state-owned counterparts in reducing productive inefficiencies but they are also much better at extracting rents.

The first requirement for achieving a successful privatisation is to introduce a clear separation between regulatory and commercial functions. This implies, on one hand, the creation of an arm's length relationship between the state as regulator and the firm as producer of goods and services; and the creation of a clear differentiation between shareholder and regulatory functions within the state.

Putting a new regulatory framework in place before privatisation is one of the most important prerequisites for the successful privatisation of infrastructure industries. This is the case when natural monopolies are privatised, but also appears to be needed for industries that are potentially competitive. Thus, regulation is needed in lieu of competition (where competition is not possible) but also in order to introduce competition. These are two distinct goals and the distinction should be reflected in the regulatory tools and institutions.

Restructuring the sector (as opposed to the company) by breaking up vertically integrated monopolies has been employed by several countries (such as the United Kingdom, Argentina, and more recently Brazil since the late 1980s) in order to introduce and encourage competition in upstream or downstream markets. The results of some of the earlier experiments with radical pre-

privatisation sectoral restructuring, such as the United Kingdom electricity sector, are very encouraging. Competition seems to have developed and the impact on prices and services has been very positive. On the other hand, such a radical upsetting of the industrial landscape might also be much more controversial and less consensual from a political perspective as it is bound to challenge a lot of vested interests. Another important concern, of a more economic nature, is that such restructuring might destroy existing economies of scale. While this might be the case sometimes, it seems better to err on the side of more competition. As the United Kingdom electricity industry experience shows, the market is quick in restructuring and consolidating itself in ways that are probably more efficient than existing vertical integration within state owned enterprises (SOEs). The freeing of infrastructure assets resulting from sectoral restructuring is one of the driving forces behind the emerging global utility companies; they are presumably better at achieving higher productive efficiency, have lower cost of capital and utilise global resources better than protected national companies.

PRIVATISATION OF PUBLIC UTILITIES: THE OECD EXPERIENCE

by

Stilpon Nestor and Ladan Mahboobi *

I. Introduction and summary

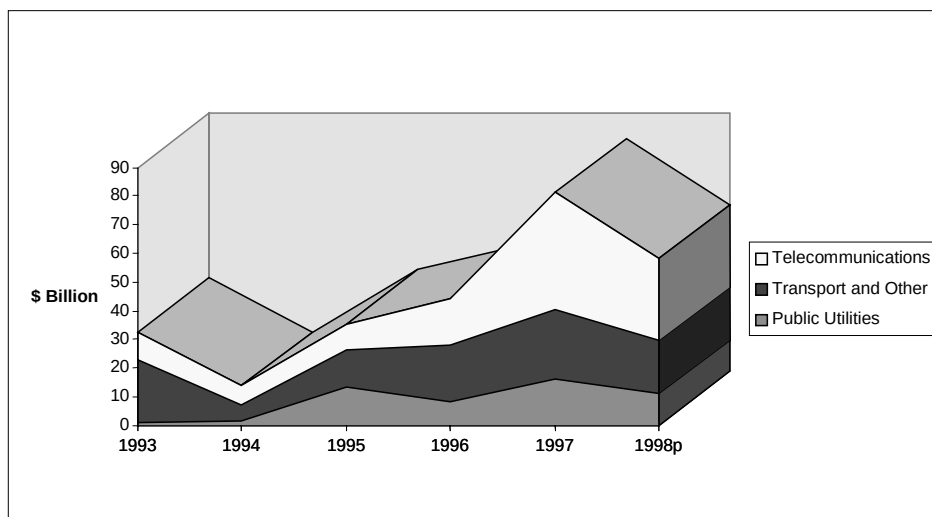
Only a decade ago, privatisation was a highly controversial policy. In the OECD as a whole it affected a relatively small amount of assets: no more than 20 billion in the then 24 member economies. By 1997, global privatisation proceeds increased dramatically to reach \$153.8 billion, which compared to the 1996 figure of \$97.2 billion, represents a 58 per cent increase¹. Preliminary data from 1998 indicate a drop from the 1997 record number: global privatisation proceeds reached \$114.5 billion, or 25% less than the year before. Nevertheless, within OECD the strong trend for further offerings seems to have largely survived the difficult market conditions of 1998, as privatisation proceeds only fell by about 10% .

In its early years, privatisation activity was largely confined to the tradables sector of the economy, but in the last 15 years sales of publicly-owned utilities have come to account for much of the privatisation activity around the world. In OECD area infrastructure sales have raised close to \$270 billion (see chart 1) in the period 1993-98. In 1998, they accounted for almost 70% of OECD receipts (see chart 2). Privatisation has resulted in one of the most swift and dramatic changes of context for utilities and infrastructure industries. Intense global competition between large multinational (both in terms of operations and ownership) companies with deep roots in the capital markets has replaced a landscape of national, over-regulated monopolies in fragmented markets, financed primarily through budgetary sources -- mostly, deficits.

* Stilpon Nestor is the Head of Privatisation and Enterprise Reform Unit, OECD, and Ladan Mahboobi is a Consultant at the unit. The opinions expressed in this paper are the authors' own and do not necessarily reflect the views of the OECD. This paper was presented at a Conference organised by the OECD Development Centre and BNDES in April 1999, in Rio de Janeiro.

There are a number of reasons for this change. To begin with, the global political developments have removed or radically altered some perceptions about the control and distributional function of utilities; some of the strategic underpinnings for maintaining a tight state control over them, especially in Europe, vanished with the collapse of the iron curtain. The generally poor performance of public utilities, and changing views on the role of the state in the economy, have meant that public provision of infrastructure fell from grace. Growing demand for more and better quality infrastructure services, has increased the need for infrastructure investments at a time when budgetary constraints have limited the scope for government funding; this has provided further impetus for the change in the governments' approach to such investments. In the capital markets, financial deregulation has introduced new suppliers of equity capital into cross border investment, making private provision of utility services possible; and the markets themselves were in need of quality stock to satisfy growing demand by pension funds and other financial intermediaries. Finally, technological developments in telecommunications and electricity generation industries have reduced capital intensity, and the lead times involved in the provision of services, and thus expanded the potential for competition in activities that were once dominated by monopolies.

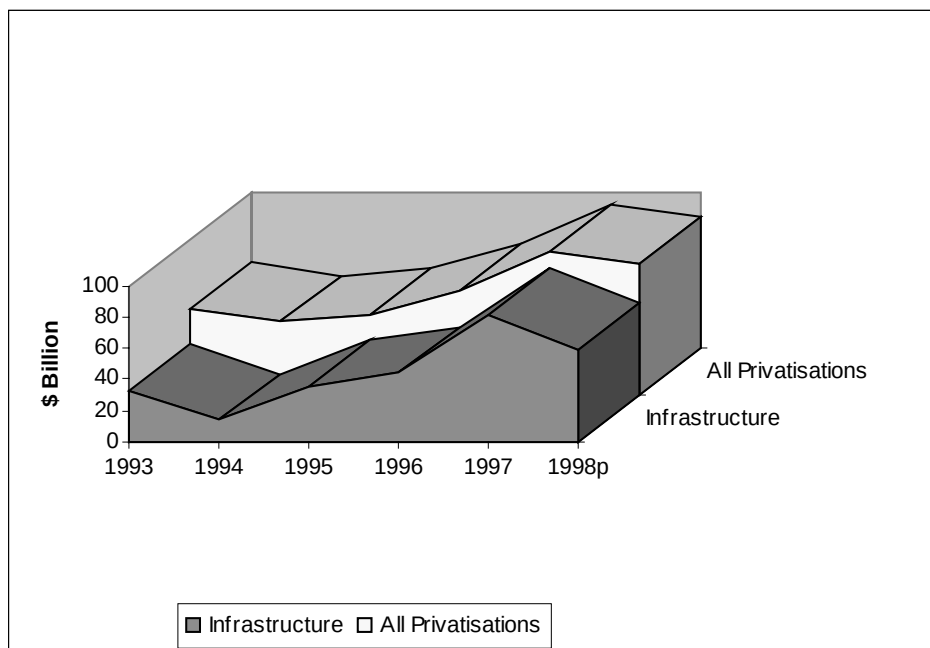
Chart 1. Infrastructure Privatisations in OECD, 1993 - 1998p



(*) Public utilities includes electricity, gas and water supply

Source: Estimated from data in OECD, Financial Market Trends

Chart 2. OECD Privatisation Activities, 1993-1998p



Source: Estimated from data in OECD, Financial Market Trends

In pursuing privatisation policies, governments have sought to achieve, economic, political and financial objectives. These objectives are often inter-related, and at times conflicting. The relative weight of different objectives varies among countries, and over time even within the same country.

Evidence on privatisation experience to date has consistently shown that a change in ownership has improved performance considerably at the firm level, both in terms of productive efficiency and profitability. In terms of financial objectives, such as fostering the development or further expansion of equity markets², privatisation has been a great success. In terms of economic objectives, privatisation has generally had a positive effect on consumer welfare as the separation of commercial from the non-commercial functions has allowed for a more transparent allocation of resources, thereby diminishing rents. The degree of success, however, has depended on the post-privatisation market structure, and the introduction of competition; or the existence of effective regulatory regimes, where introduction of competition was not possible and natural monopolies persisted.

In this paper, we will first discuss the development of the public policy debate on the ownership and control of utilities and the case for their privatisation from four different angles (II). We will subsequently turn to a discussion of the changes that occurred in the institutional approach to utilities and infrastructure (III). An analysis of key privatisation objectives will follow, which will also include discussion of the impact of different privatisation methods on achieving these objectives (IV). In part V, we will discuss the importance of competition as an objective and its relationship to infrastructure privatisation. Finally, we will offer some conclusions.

II. Public ownership of utilities and the case for privatisation: what has changed

By “public utilities”, we refer to network infrastructures that provide a range of essential goods and services to households and firms. They supply their product/service through a fixed network of pipes, wires or other facilities. In most cases, these monopolistic firms were vertically integrated: they provided for production (including in some cases the exclusive right to import), transmission and distribution to the final customers. Moreover, in the case of some industries such as electricity, the lines between different parts of the vertical stream were blurred. As a sector of the economy, utilities are quite significant. Often their value added accounts for a preponderant share of the GDP, and infrastructure investments, account for an even larger portion of total investment. Their importance is, however, mostly due to their pervasive role as an input to all other industries.

In a large number of OECD countries (with the notable exception of the US), these industries had been under state ownership and control for a good part of the 20th century. Viewed as natural monopolies, and regarded as strategic and sensitive from a national security perspective, they were afforded a statutory monopoly status, even in markets for goods and services that did not warrant such a status (*e.g.*, telephone equipment in the telecommunications sector). In most cases, the mandate of these enterprises included both commercial and regulatory functions. Only in the last 15 years has there been a reversal of this trend through an attempt to carefully separate public welfare/policy functions from commercial ones. One can view the reasons for this transformation through four different angles; (a) political /philosophical; (b)institutional and corporate governance structures; (c) economic and industrial organisation ; and (d) financial. All of them are important for understanding the fundamental change of landscape that is currently occurring on a global scale in the area of utilities.

a. Political and philosophical

Up until a decade ago, close control of infrastructures was dictated by reasons of national security, social peace and economic equality between citizens of most OECD countries. In the wake of the second world war and with the cold war in full swing, these considerations were of utmost importance. Making sure that utilities were run in a way that kept the enemies of the nation at bay and these vital industries under clear national control was essential, in view of the imminence of the communist threat. At the same time, the political threat that communism represented made the pursuit of egalitarian/redistributional objectives necessary in the provision of utilities

Some of these state objectives of control were pursued by statutorily limiting ownership by foreigners³. Some countries imposed strict limits to the control of utilities, for example by prohibiting individual investors from acquiring substantial blocks of shares in utilities. But in most countries, these objectives were served by making the provision of utilities a state function, often by constitutional means.

The end of the cold war was a powerful catalyst in rethinking (and narrowing) the boundaries of national security. Suspicion between neighbours was further attenuated through regional economic integration, as in the case of the EU and, more recently NAFTA. Direct ownership and control of “sensitive” firms has been increasingly viewed as a grossly disproportionate response to a rather narrow problem. As a result, regulation and “golden shares”, *i.e.* bylaw provisions that allow the state some veto power of corporate control moves that it deems harmful to the national interest, were seen as more appropriate tools. Countries started making use of international financial and know-how resources without many scruples. Many of the formerly state-owned utilities are now buying utilities in other countries⁴. From the United Kingdom to Hungary, industries such as telecommunications, water distribution and electricity, hitherto considered extremely sensitive, are today run by foreign firms (or owned by foreign institutional investors).

The OECD area has witnessed unprecedented prosperity during the post war period . This has meant that alleviating poverty through a redistribution of wealth has to a large degree been replaced as a priority goal with the need to advance consumer welfare, through lower prices, better quality and increased choice. While the provision of universal services remains in many OECD members a constitutionally protected right⁵, it is also an objective that has been largely attained and the recipients are now looking for better and cheaper provision of utility services.

Governments thus came to recognise politically what economists have long preached: consumer welfare through more, cheaper and better output depends on allocative efficiency with competing producers in factor and product markets and on higher productive efficiency in the use of inputs by individual firms through better incentives and finance mechanisms. Core economic objectives are once again taking centre stage in the provision of utilities.

Preserving employment in large SOEs has been the most politically sensitive and hence the most resilient non-commercial objective. Most privatisation officials will admit that more than 70% of their time is devoted not to designing privatisation policies and supervising transactions but in talking to the public sector trade unions. Contrary to popular belief, experience seems to show that while many of the privatised companies shed labour in the short term, this has not necessarily made labour worse-off as a group. Appreciation in the value of shares acquired in the privatised enterprises, generous severance packages, and more importantly improved economic conditions that permit absorption back into the job market have led to this result⁶. In the long run privatisation produces new employment opportunities due to the considerable output expansion that it usually generates. However, the experience of many “sunset” sectors (such as coal and steel, but not utilities) in some OECD countries has painted privatisation as a “job killer” in a seemingly indelible fashion⁷.

b. Institutional and corporate governance structures

The weight of non-economic objectives in the provision of utility services was directly reflected in their institutional profile. Utilities were considered either an integral part of the state (*i.e.* part of ministries) or were constituted as autonomous state entities, of a non-commercial nature (Guislain 1997). In most countries, the pursuit of non-commercial objectives was considered easier through state ownership than through arm’s length regulation, as information asymmetries between the state (the principal pursuer of these objectives) and the firm as well as transaction/administrative costs of control were thought to be lower under such arrangements.

By the mid-seventies, the state ownership and control arrangements for utilities had become obsolete and even pernicious to the objectives they were supposed to serve. Politicisation, of economic decision-making is synonymous with state-ownership (Boycko, Shleifer and Vishny 1996). Decisions on matters such as personnel, output, prices, quality, and location of production were made according to political considerations. As a result some of the most important firms in the economy no longer served economic objectives: they were rather viewed as a way to provide for employment, serve regional development objectives, or increase the prestige/status of the country and its government (in

the best of cases). Managers of state-run utilities were often, as a matter of course, political appointees and their employees were given a status equivalent to that of civil servants. As utilities occupy a neuralgic position in the economy, these patterns had an important impact on the rest of the economy and the overall allocation of resources. Evidence of the spillover was the creeping tendency to nationalise additional parts of industry and (especially) the financial sector.

The second result of politicisation was unexpected by the proponents of public provision of basic services; it undermined the very goal of a public spirited, non-commercial utility provision: accountability has proven to be extremely weak in the public sector. In other words, the principal-agent problem proved to be especially hard to address in the context of state ownership⁸. The absence of exit for the state as shareholder further compounds the agency problem and makes the valuation (and hence the policing of performance) of SOEs extremely difficult (Alchian and Demsetz 1972).

Conflicting, unclear and shifting political objectives and responsibilities are hard to pin down when the ultimate owner is the population at large via the Parliament, the government, individual Ministries and their bureaucrats. Thus, opportunistic behaviour became the norm as the cost of opposing powerful vested interests in some of the most important firms was prohibitive to bureaucrats and politicians. In the real world, the limits between negligent waste and conscious looting and corruption in the public sector became more and more blurred in many OECD countries -- not to mention the developing world.

Some have argued that weak monitoring and opportunism are an externality to the type of ownership: (Stiglitz 1993). After all, there are countries where such looting did not take place because of strong traditions of integrity and honesty in adequately remunerated public sectors. Even there, however, SOEs were not spared the hazards of principal-agent problems as efforts short of privatisation to separate economic/commercial from non-commercial objectives within the public sector (see below) met with only limited success. The absence of a direct profit incentive, always introduced an element of distortion in corporate strategies: insiders felt much freer to pursue expansion and grandiose projects without a proper cost-benefit analysis simply because the benefits were more visible than the costs in a politically- determined control environment.

Privatisation is, in this perspective, a response to the institutional failings of public ownership, to the state's weakness as a corporate governance principal. Any saving from internalising externalities through state ownership in the area of utilities, by aligning commercial and non-commercial objectives within the firms, were largely offset by this weakness, and the perverse incentives it

generates. In this respect, technological innovation also helped in tipping the scales in favour of privatisation. Transparency in arms-length relations has become much cheaper, due to progress in information technology. This implies that arm's length regulation is now less costly than outright ownership; and it suggests that the corporate governance of widely-held private companies is also becoming more effective: information asymmetries between shareholders and companies are becoming less pronounced, hence, corporate control can be more efficiently exercised through the markets.

c. Economic and industrial organisation aspects

Better corporate governance improves productive (or x-) efficiency in individual firms by allowing for a better utilisation of resources; and it has a positive impact on overall allocative efficiency in the economy by making the allocation of financial resources more transparent. But the biggest incentive for improving x-efficiency is competitive pressure. Most importantly, allocative efficiency in the economy as a whole will not get any better if there is no competition in the relevant product and factor markets.

In most cases, utilities have been natural monopolies in the past. Economies of scale have allowed for only one producer in these markets especially at the level of transmission and distribution. Contestability has, in theory, been always possible at some level or other; for example, electricity generation could always be a competitive business in theory. Most people assumed, however, that the presence of huge, lumpy, firm-specific investments, high capital intensity, and enormous up-front entry costs would deter most potential competitors from entry. As a result complete vertical integration prevailed in most utility sectors in OECD countries.

The implications for consumer welfare of monopolistic pricing and output decisions are judged to be pernicious by the great majority of OECD countries who dispose of competition legislation to address such situations in the private sector; hence, the need to closely regulate natural monopolies. In the US, arm's length regulation was deemed sufficient from the start. The government response to the natural monopoly features of the industry was to have them operate as a regulated privately-owned monopoly, with universal service obligations and cross-subsidies built into tariff structures. In most other OECD countries, state ownership was preferred mostly on the assumption of transaction cost efficiencies from internalising the regulatory externalities, political expedience (discussed above) and financing reasons (discussed below)⁹.

Technology has been a key factor in bringing about change. It has caused economies of scale requirements to shrink dramatically in many sectors. Developments in the telecommunications industry provide a prime example of a hitherto vertically integrated monopoly that is now an entirely competitive industry in many countries. The possibility to effectively and cheaply meter consumption and measure flows in electricity and gas networks has unveiled a hitherto unknown potential for third party entry. Upstream segments of infrastructure markets became truly contestable as deregulation allowed already established providers/producers from different geographical markets to directly compete. That has been the case with US deregulation of the electricity industry in the late 1970s and it is actually taking place in Europe through European Commission directives in the areas of electricity and telecommunication. More generally, the possibility for private agents to challenge existing monopolies was considerably enhanced by allowing foreign firms and investors to participate in their provision.

In most countries, contestability came to the fore with the arrival of big foreign players on the scene. Vertical disintegration started making more sense as the possibilities of vigorous competition emerged. Conversely, partly- and wholly-privatised companies, freed from stringent regulatory requirements that limited their geographical and product market scope, became important international competitors in their own right and thus maintained and intensified the privatisation momentum in countries other than their own. A series of acquisitions by US and French companies in several United Kingdom utility sectors and the on-going consolidation of the Nordic Telecoms industry testify to the powerful impact of globalisation.

Technological innovation, deregulation and openness to foreign investment have been driving forces in introducing competition in utilities. But certain areas still remain closed to competition due to natural monopoly characteristics. These are, however, quite narrow areas, mainly restricted to the fixed network and the large sunk investments that constitute it. Development of competition upstream has meant that privatisation could also be envisaged as a possibility for these monopolies. This is because the ending of cross-subsidisation (following vertical disintegration) makes their cost structures more transparent to regulators (Bitran and Serra, 1997).

d. Financial aspects

One of the main reasons for utilities and infrastructures to come under the government's purview in the 1950s and 1960s was the perceived lack of resources in the private sector to finance their rapid and wide expansion. Financial markets were fragmented into closed national areas with low liquidity

and insufficient savings. Equity markets were narrow and illiquid in the great majority of OECD countries. Corporate bond markets were a little more developed but puny in relation to sovereign debt issues. International capital flows were not only a small fragment of what they are today; they were also largely dominated by direct sovereign lending (or aid) and other debt flows explicitly or implicitly guaranteed by governments.

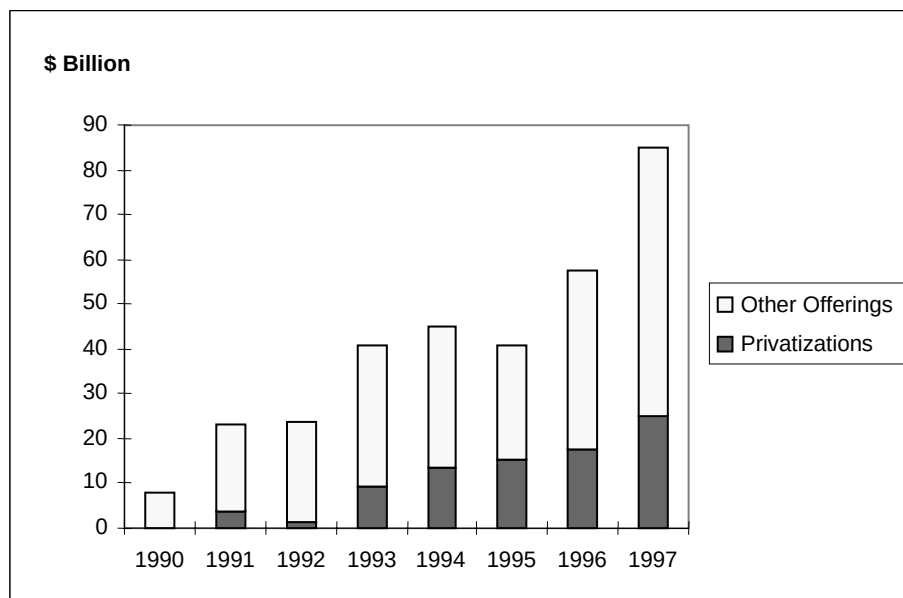
In this context, it seemed natural to choose government financing as an effective way of backing expansion in these resource-hungry, capital-intensive industries. Moreover, the risk premium that OECD sovereign borrowers commanded in international issues, combined with the fixed exchange rates of the Bretton Woods environment, allowed for significant deficit financing of these industries.

But financial markets have changed enormously during the last three decades. Floating exchange rates since the early 70s have rendered large budget deficits to finance public investment unsustainable as monetary policy could not anymore be exercised in a vacuum. Similarly, the alternative of printing money, proved to be catastrophic as the OECD area went through its worst inflation spell twenty years ago. Enterprises found themselves constrained, instead of cushioned by public ownership (Moore 1986). Many OECD countries were unable to provide for adequate levels of investment in infrastructure with the result being a continuing deterioration of networks and technological backwardness. Others (such as France) managed to maintain an adequate level of public financing for another decade or so by increasing the fiscal burden; but that too proved unsustainable. It is not by accident that the most intensive privatisation programmes of recent years has materialised among EU countries in the run-up to the EMU¹⁰.

The growing demand for new and better infrastructure services in a tight budgetary environment paved the way for greater private sector involvement in funding and providing such services, as a means of reducing governments' budgetary exposure.

Financial market liberalisation and globalisation trends intensified since the beginning of the 1980s. Bank disintermediation grew while the managers of an increasingly large pool of private savings have been chasing investment opportunities, bringing the cost of capital down for the companies in a position to tap into this pool. Privatisation became a prerequisite for large companies seeking to access this pool. More than 25% of international equity issues were privatisation transactions in 1997 (see chart 3)-- a steady growth from about a 5% average in the 1980s (OECD, FMT: No. 70 and 60).

Chart 3. **International Equities**



Source: OECD, Financial Market Trends

From a financial investor's perspective, privatisation is a part of current changes in European/Asian corporate control structures. Dominant shareholders are in the process of making their holdings transparent, structuring their relationship to the underlying companies on an arm's length basis and, most importantly, divesting all their non-core holdings. German banks have been distancing themselves from their equity holdings, French corporates are severing their cross-ownership links, the Japanese keiretsu are under threat as banks are cutting their links with industry in an attempt to restructure their loan portfolios and the Korean chaebol are forced to rationalise their operations and turn into real publicly-held companies in terms of their control (Nestor and Thompson 1999).

In the same vein, the state's control over large industrial companies is increasing the latter's cost of capital: as a result of the disintermediation trend noted above, debt financing (a classic form of financing SOE development) is becoming considerably more expensive than broadly based direct-equity finance. SOEs not only need to access the equity markets through privatisation; like private companies in the countries mentioned above they also need to meet the information and governance requirements that broad-based international private ownership implies.

III. The great institutional re-alignment: changing incentives and separating objectives

a. Separating commercial from the public policy objectives

The technological, political and economic changes as well as new financial market trends have made it extremely important for OECD governments to re-introduce commercial, market-oriented incentives in the provision of utilities. At the same time, the state retains a legitimate and very important role as the guarantor of an adequate provision of these fundamental services, that should be available to all at a reasonable cost. This continuing and important public interest consideration is what distinguishes utilities and infrastructure from other privatised or privatisable companies in industry or finance. The way to achieve these two different and often conflicting sets of objectives is to assign them to different institutions: the state and its regulatory institutions would take care of the public interest while the providers of utilities would be private, profit-oriented agents of the privatised enterprises functioning according to commercial criteria and assuming the commercial risks associated with the economic activity.

From a theoretical perspective, privatisation is in fact the obvious solution when the commercial/profit related objectives are predominant and can be separated from the public interest objectives in a meaningful way (Stiglitz 1993). When the commercial objectives are too narrow and limited as opposed to predominant public interest ones (especially in the provision of public goods, such as health care, education, public security), the case for privatisation is less clear cut. The benefits of separation should then be weighed against the cost of writing increasingly complicated regulatory/contractual arrangements *ex ante*¹¹. In such cases the possibility of efficiently separating the two functions should be closely examined on a case by case basis .

The separation of commercial from public interest functions has two implications: on one hand, it results in the creation of an arm's length relationship between the state as regulator and the commercial firm as producer of goods and services. On the other hand, it begs for a clear differentiation between shareholder and regulatory functions within the state. In most OECD countries line ministries gave way to treasuries in managing the shares of SOEs (whether the latter were partially privatised or not). This ensures a better separation between the commercial objectives (*i.e.* return on investment) that the state pursues as a corporate governance principal from the public interest objectives that it pursues as a regulator. It also addresses some concerns about capture of the "line" authorities by the enterprises and their insiders (Pebble 1996). The asset management function of the state has been continually extended to include a flexibility that was previously associated only with private

agents. In Sweden, a new asset management unit has been recently (early 1999) set up, with a mandate to commercially manage stakes in 59 major industrial companies (including telecoms and airlines); this mandate extends to the right to sell shares in these companies when it deems that exit is a sound investment solution.

The creation of an effective regulatory framework to address competition policy failings in the commercial utilities provision is the other component of the reforms. It is beyond the scope of this paper to discuss these issues in any detail. Suffice here to note that the need for industry- specific regulation, the content and institutional form of regulation depends on a number of factors: the level of actual or potential competition and the actual or latent market power of the incumbent; the particularity of market access in the sector (issues such as licensing, fair network access etc.); the need to minimise information asymmetries between the regulator and the firms; and the need to avoid capture of the regulator by the regulatee (Beesley 1994 and Bitran/Serra 1997).

b. Restructuring public enterprises without privatisation

The first step toward the separation of commercial from non-commercial objectives is the corporatisation of SOE, *i.e.*, their transformation into a full blown commercial company, subject to private law requirements and obligations and having the same legal governance structure as any other commercial entity. Corporatisation might be a long and complicated process, as, in many cases utilities were the successors of government departments. The intense due diligence exercise that is needed to identify assets relevant to a company, value them and legally assign them to the new company is trying, especially when it is met with hostility from the employees of both the enterprise and its ministry of tutelle. The corporatisation of British Telecom lasted almost two years, while that of France Telecom took more than one. In Netherlands, SOEs are usually given 5 years between corporatisation and privatisation, so that they can establish a credible track record.

One of the most important changes that corporatisation brings is transparency: by adhering to a corporate accounting standards applicable to the private sector, the previously unpenetrable picture of the enterprise's use of its assets become clearer. This gives to both the public and the government a better idea of the costs involved in particular strategies and decisions related to the development of utilities. It brings forth the problems related to the financial structure of companies and often obliges the state to assume directly certain liabilities, in order to improve this structure: the corporatisation of German Railroads (DB) in 1995 resulted in the state taking over some DM 70 billion of debts (Ludwig 1996); an equally impressive financial restructuring had to take place

in the commercialisation exercise for the French railroad company, the SNCF. Finally, hidden subsidies and cross-subsidies come to the fore; their need is reassessed and they are tackled in a more direct fashion. Corporatisation helps make the public interest aspects transparent and allows for better targeting of subsidies and adjustment policies.

Another benefit of corporatisation is the possibility to introduce new management and board of directors that will function and, most importantly, get paid according to private sector rules. In fact, a lot of the “privatisation” benefits started to be observed in companies even before they were taken to the market, simply because the new management that was put in place under corporatisation was able to function under business rules and not as a government unit. Both New Zealand and the United Kingdom made managerial restructuring and the introduction of board autonomy a central part of their commercialisation programme.

However, company law requirements are hardly sufficient to stop governments setting alternative objectives for corporatised SOEs. Moreover, the more complicated accountability line of company managers -- as opposed to bureaucrats directly responsible to a political master -- might actually encourage managerial opportunism. Even in the face of increased transparency, it is possible that a corporatised, 100% state-owned entity is subject to the worst of both worlds in terms of corporate governance: the profit incentive is lacking and the state/owner has less power to monitor and police managerial performance. In order to address this corporate governance problem, corporatised SOEs in the Netherlands are required to obtain direct permission for any important managerial decision from their shareholder, the Ministry of Finance. These requirements are automatically cancelled when a percentage of the shares are offered to private investors.

In order to address some of the incentive issues, governments came up with a set of alternative solutions to measure performance and improve governance in the public sector. The so-called framework contracts became the major tool for measuring and policing performance and corporate behaviour; they assume that the firms are sufficiently identifiable (*i.e.* usually commercial corporations) and can be treated as an arm’s length partner of the state. The framework contracts provide for the periodic setting of corporate goals between the state and the enterprise on the basis of a given stream of revenues and the provision of a level of investment financing¹².

From an incentives point of view, performance contracts have sometimes tended to increase information asymmetries between the state and its companies, as managers had additional reasons to demonstrate improved performance but were not constrained by share prices -- *i.e.* when faced with a

choice, they would pursue projects that generated more free cash flow, that they could then use for their own intra-company objectives; or they could opt for highly visible employment-intensive or “white elephant” type projects that would give them political points. In any event, performance contracts were rarely perceived as really binding on either of the two parties. Moreover, in the absence of tradable shares, valuation (and hence performance evaluation) became a negotiation process between managers and their bureaucratic supervisors. Empirical studies have shown that performance contracts have proved to be largely ineffective over time. (Shirley 97).

But the most important incentives for firm restructuring and increased profitability remained the threat of competition, on the one hand, and the ultimate objective of privatisation on the other. Most of the governance benefits associated with the adoption of a commercial framework for the activities of a firm remain pretty elusive if the transformation of an SOE into a 100% state-owned company is all that is in the cards. State run-airlines in France and Spain are cases in point: while being corporations for some time, the fact that their privatisation was not envisaged did not impact the level of politicisation which remained very high. Management contracts with professional managers did not seem to have any positive effect on the running of the companies. It was only with the announcement of ownership transfer that commercial incentives began to play a powerful role.

In order to address these issues while retaining some level of state control, governments have tried to partially privatise their companies. Partial privatisation results in a better valuation of the company; it increases the flexibility of its financial structure; it makes it possible to introduce real performance-related incentives in managerial remuneration through stock options; it focuses boards and management on producing shareholder value, as opposed to the pursuit of “political” objectives; it further increases transparency by imposing on the company disclosure requirements for public companies¹³. But it has its limitations too: in order for partial privatisation to work, the state must renounce political interference; most importantly, it has to convince the markets that it can be trusted to do so. Recent events in Greek Telecommunications OTE, where the minister simply sacked the CEO in spite of a 35% stake in the company floated, indicates that old habits are hard to break. On the other hand, the absence of a market for corporate control in the company’s shares might result in less capital market discipline. If the state desists from exercising its shareholder rights, this would leave ample scope for managerial discretion (Jasinski and Yarrow 1995). Similarly, if the state decides to float only a small fraction of the equity, the market might remain unconvinced about the government’s commitment to pursuit of commercial objectives. For example, in the case of floatation of 10% of Telecom Korea shares in 1993, the government had a hard time finding buyers for its shares.

IV. The objectives and results of privatisation

Privatisation is often part of a broader reform of the role of the state in the economy that usually includes regulatory reform and the introduction (or enhancement) of competition policy as a means to promote public welfare (Stiglitz 1993). Privatisation policies have multiple, and often inter-related and conflicting political, economic and financial objectives (Guislain 1997). These include:

Changing the corporate governance environment of SOEs and improving their productive efficiency and performance by introducing incentives based on private ownership rather than bureaucratic oversight.

Better corporate governance should be the primary concern of every privatisation policy. Schemes that aim to raise capital for the budget without change in governance incentives and structures in companies (for example through the retention of substantial majority rights or the creation of cross-shareholding and closed “stable cores”) do not bring most of the long term benefits of privatisation to the companies or the economy as a whole (Nestor 1998). Countries that have pursued these policies in the past such as France have gradually abandoned them, having realised their high opportunity costs for the firms involved (Morin 1998). The new generation of stable shareholder arrangements in privatisation are designed to address mostly issues of financial stability in countries with shallow, volatile stock markets with relatively low institutional involvement (Grilli 1997). Their main characteristic is that they expressly prohibit shareholder agreements and provide for relatively-market friendly arrangements for the stable shareholders (as opposed to the older French “noyaux durs” that mandated concerted action by shareholders and allowed no exit).

In terms of corporate governance results, Megginson *et al* (1994) have found that newly privatised firms show an unusually high turnover of board members: more than 50 per cent of directors of SOEs leave after privatisation. Moreover, they have found that newly privatised firms with high managerial/director turnover are among the highest post-privatisation performers in their sample¹⁴.

Another important aspect related to corporate governance has to do with the change in the capital structure of the firm after privatisation. As firms become much more equity oriented there is more pressure to produce shareholder value. This is reflected in the setting up of investor relations departments and the hiring of consultants to “sell” the firm in the market. In general, there is a change of attitude as regards risk and growth: privatised firms become much more willing to take investment risks as their debt/equity ratios improve.

A better incentives structure and corporate governance are important because they lead to better firm performance. Evidence in this respect is quite straightforward. In a survey of empirical studies of the performance of privatised firms in the United Kingdom, Holder (1998) has found that labour productivity considerably increased as a result of privatisation, and in some cases total factor productivity increased too. Newbery and Pollitt (1997), have calculated that return on assets in the privatised electricity generating companies increased by 40% (in the five years after privatisation). Megginson *et al* (1994) have found important increases in profitability (net income/sales) and efficiency (sales/employee) in their sample of 61 companies from 18 countries. In the same vein, La Porta and de Silanes (1997), have found that sales per employee roughly doubled after privatisation in 218 Mexican firms divested in the late 1980s-early 1990s.

Providing better access to finance for enterprises to generate higher levels of investment

With privatisation, enterprises are freed from public sector constraints on investment. They can tap the unlimited supply of the capital markets without any impact on the state budget. Even if competition can be introduced without privatisation, the competitiveness of enterprises cannot be ensured without proper access to finance. As noted above, competition without privatisation would actually harm SOEs, as they will not be on a level playing field with their competitors in terms of raising capital for their growth and expansion. In this respect Galal *et al* (1994), have found that “..relaxing an investment constraint had a significant positive impact...”. In the area of infrastructure, increasing investment is indeed one of the top priorities, and evidence from OECD (as well as non-OECD countries) suggest that privatisation has led to substantial increases in investment. In the United Kingdom, important net increases in firm investment were observed in all utility areas, irrespective of the post-privatisation market structure (Holder 1998).

Creating a windfall for the state budget, and improving certain macro economic indicators, notably public debt and the public sector borrowing requirement; improving medium term budgetary revenues.

These days, improving public finances is the most obvious privatisation objective. Despite the difficult market conditions of 1998, OECD countries raised some \$86 billion in privatisation proceeds. The importance of these revenues for the government budgets is telling, especially for the members of European Union which raised more than two thirds of this total, and have been engaged in meeting debt and deficit targets in the run up to the EMU.

One should note that the direct budgetary impact of privatisation proceeds is rather minor in most systems of public accounts as it replaces assets with cash -- an operation which in principle should add little to the asset side of the state budget. It might however have significant indirect effects on the budget, all of them welcome in a period of macroeconomic belt tightening. On one hand, it lowers the public sector borrowing requirement. In some countries (*e.g.* Italy) privatisation revenues have been explicitly earmarked as a means to reduce the public debt. On the other hand, privatisation can be reasonably expected to increase the state's tax revenues in the medium term: as some of the enterprises were previously exempt from tax or had a favourable tax regime. But even more important is the growth in tax revenue which results from the increased profitability of the privatised firms. A study by NERA (1996) has put the net inflows to the United Kingdom budget for the last ten years, *in addition to privatisation revenue*, at between £ 3.5 billion to 5.8 billion¹⁵, mostly due to higher tax receipts.

Deepening of the equity market, creation of a wide share owning class, and boosting the role of equity markets as a means of channelling savings in the economy.

In many countries this has been a key objective and has affected the choice of method of sale. In most European countries, broadening the equity market was an explicit objective; in the United Kingdom, it took an ideological importance during the Thatcher years. In any event, the long-term decline in United Kingdom population direct share ownership was reversed, with three times as many share owners in 1995 as there were 16 years before (United Kingdom Treasury 1996). The importance of privatisation for the development of European equity markets has been enormous. Roscini and Esteve (1998) point out the overwhelming influence of privatisation issues: They account for more than 55% of the number of issues in the 12 larger European economies ; in Italy and Spain they represent more than 70% of the total market capitalisation. In terms of size, all of the very large (over \$5 billion) and more than 70% of the large (over \$ 1 billion) European issues were privatisation transactions. As noted earlier, this has resulted in the tripling and quadrupling of market capitalisation in many European OECD member countries.

Introduce competition in hitherto closed markets, thus lowering prices and increasing the quality of infrastructure products and services

In the context of utilities, competition is often a primary objective. The reason is two-fold: (i) in contrast to other sectors, utility provision is often monopolistic (for a variety of reasons discussed above); and (ii) utilities provide services that

are important for the well being of the economy, and for consumer welfare, and thus a highly visible priority of any public policy. Privatisation offers an opportunity to break up monopolies, and to improve allocative efficiency and consumer welfare.

Privatisation of public utilities provides a good example of conflicting objectives, such as the desire to maximise proceeds by keeping the monopoly status of the large formerly state-owned incumbent intact, vis-à-vis the objective of creating a competitive market structure. Creating competitive markets often suggests a break up of huge monopolies and the establishment of a rigorous regulatory framework in natural monopoly sectors before privatisation. On the other hand selling public monopolies as such would certainly fetch a better price for the treasury and is thus tempting, especially in situations of budgetary contraction. Buyers are willing to pay a premium for future monopoly rents. Moreover, allowing incumbents to tap the vast resources of the global capital market and hence develop into global market players might in the eyes of many policy makers become an irresistible temptation, as opposed to the longer term goal of a more competitive market structure at home.

Overall, privatisation has led to lower prices and improved service quality. For example, in his review of the evidence Holder (1998) suggests that privatisation of utilities has been beneficial to consumers in the United Kingdom. Only in case of water and sewage companies, where privatised firms were required to make significant investments for the maintenance of the network (and to bring up the quality to standards required by EU), did prices significantly increase in the aftermath of privatisation. Galal *et al* (1994) analysis of the welfare consequences of privatisation have also found important welfare gains associated with privatisation, with consumer welfare being one of the most important factors in these gains, especially in the United Kingdom case¹⁶.

Some authors have suggested that one should be “agnostic” towards issues of ownership; introducing competition should be the only objective of public policy in the area of utilities (Vickers and Yarrow, 1988). This view seems to underestimate the practical difficulties of introducing competition and maintaining the momentum for improved efficiency without privatisation¹⁷.

It has also been argued that the overwhelmingly positive post- privatisation corporate performance cannot be attributed directly to privatisation, as competition and other structural changes which occurred at the same time, could have also been responsible for the improved performance (Newbery, 1997). However, this argument seems to be based on a contradictory reading of the facts. On one hand, it assumes that increased competition and not privatisation was mostly responsible for performance gains in privatised firms; on the other, its authors suggest that because of the lack of competition, consumers did not

adequately benefit from these windfall gains. In any event, it is also acknowledged that in the absence of privatisation, it is inconceivable that the changes would have taken place and the momentum sustained. In as far as the effect of market structure and firm performance is concerned, La Porta and de Silanes (1997) point out that the important performance gains they observed in their all-inclusive Mexican sample, were not linked to market power in any way; this suggests privatisation is the primary cause of these gains.

Having said this, most of the literature seems to point out that where improved competition was not a primary aim of utility privatisation, the impact on allocative efficiency (and hence consumer welfare) is less clear cut, even in the presence of clear performance gains at the firm level. The experience of two countries with long running utility privatisation programmes (United Kingdom and outside OECD, Chile)¹⁸ suggest that the difficulty of introducing competition post-privatisation (either through competitive restructuring or through regulation) was under-estimated and that it resulted in maintaining some price rigidities. The United Kingdom telecom and gas sectors are often cited as areas where the absence of a pro-active policy on the part of the state resulted in lower levels of consumer welfare through price reductions.

Matching privatisation methods and objectives

There are a number of privatisation methods:

- Initial public offerings (IPOs) in the capital markets
- Trade sales to strategic investors
- Management/Employee buy-outs
- Asset sales, often following the liquidation of the SOE

The choice of the method of privatisation depends on the country's characteristics in terms of capital market development and legal infrastructure, the size and nature of the enterprise in question, and the aims of privatisation. Methods of sale have significant implications in terms of the transparency of the process and its political credibility, corporate governance, financial market development, competition and political objectives.

In general, competitive privatisation processes breed better outcomes for the industries concerned. Countries that have chosen to limit competition in the corporate control market for privatised companies by directly or indirectly pre-selecting the new private owners have very often found themselves troubled by political controversy and charges of low transparency, favouritism and even

corruption. Moreover, even where the state can be trusted to effectuate such operations with integrity and good judgement, the resulting combinations might often reflect the state's industrial policies rather than the interplay of market forces in the sector. In the case of France, we have already noted the reversal in the mid-1990s of earlier policies to design the post-privatisation ownership structure through arbitrary (and certainly non-competitive) transfers to preferred agents (Morin 1998).

Initial public offerings (IPOs) are an open competitive procedure that allow for share pricing and company valuations by the market. Building competition in the offering process itself, for example by creating tension between institutional and retail tranches in book building procedures, is important. In general IPOs are more appropriate for utility privatisation for two reasons: firstly, the maintenance of firm independence through stock market floatation, at least for the initial post-privatisation period, ensures higher transparency of its cost structure and financial flows (Jenkinson 1998); this is important for lowering information asymmetries between the regulator and the firm in question. Secondly, IPOs allow the firms to tap vast financial resources at a low cost and this satisfies the hunger for investment in infrastructure, that seems to be more prevalent than in other sectors.

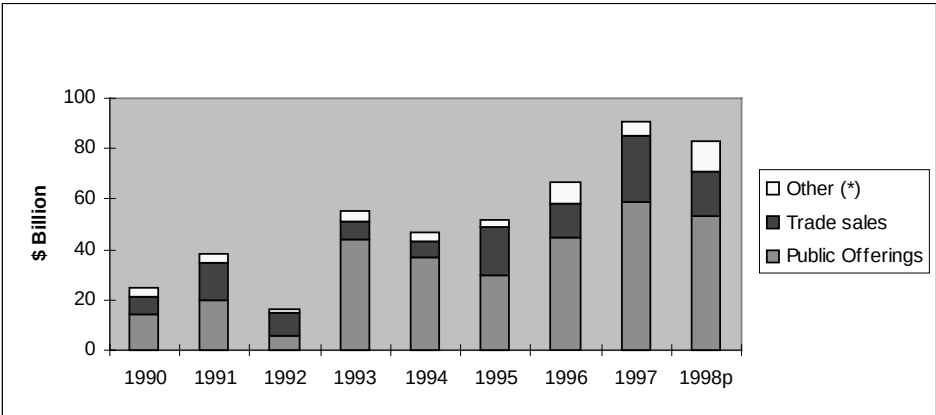
IPOs are highly transparent methods of sale, but to be effective, they require deep capital markets, a sophisticated financial and legal infrastructure, and a few, large privatisation candidates. Most OECD member countries meet these conditions, thus IPOs have been the dominant method of privatisation (see chart 4). IPOs also require significant preparations and restructuring of the firms prior to the sale (Guislain 1997). Because of this restructuring effort, most of the corporate governance gains that privatisation brings, are realised at the pre-privatisation stage¹⁹. It is, important that the government follows through with privatisation immediately after restructuring has produced results and the company has established a satisfactory track record. If not, the gains might prove to be temporary and the signals sent to other SOE managers would be conflicting and counter-productive.

Trade sales to strategic investors are especially vulnerable to competition failings. The state is often tempted (or captured into) selling its controlling stakes to local interests with negative results on the competitiveness of industry; this is especially the case when the companies are in sensitive sectors (*i.e.* utilities) and they are also not big enough for an international public floatation. That is why it might be advisable to require the involvement of competition authorities in the design of large trade sale transactions. Explicit or implicit limits on foreign participation in tenders is another common way of limiting bidder competition. While this is politically expedient, it does little to protect national interests since it prevents the emergence of efficient outcomes of

privatisation processes. Foreign ownership, even in so-called “sensitive” sectors might bring substantial benefits to the domestic economy.

The main benefits that trade sales bring are the introduction of considerable managerial and technical know how and a stable investment environment for an economically important firm/sector. The latter is especially important for countries where capital markets are shallow and undue exposure of utilities to the vagaries of today’s international capital movements might be deemed undesirable. Many smaller OECD countries have tried to combine the benefits of a trade sale with the capital market gains that a public floatation brings. The Czechs have sold 35% of their telecoms to a strategic buyer (with control rights) and have floated (or are planning to float) most of the rest in the stock market. A similar pattern was followed in the Belgian energy and telecom privatisation. The corporate governance implications of these arrangements are yet to be discerned. In any event, the above pros and cons of trade sales explain why IPOs are a preferred method of utility privatisation in OECD Member countries while trade sales are more predominant in the developing world (OECD, FMT No: 70 and 72).

Chart 4. Distribution Of OECD Privatisations By Method of Sale



Source: OECD, Financial Market Trends

There is often a discussion as to whether SOEs are appropriate buyers of privatised infrastructure assets in other countries. It might be argued that if their own objectives are still obscured by non-commercial considerations and their incentive structures are distorted, they will not be very efficient agents of change in privatised companies. Moreover, they might prove to be formidable lobbyists in their efforts to limit competition, as they are often backed directly by their government’s diplomatic and political weight²⁰. In practice, however,

these concerns might be overcome by the privatising government's resolve to resist capture. Therefore, the questions to be asked, in addition to the ones that are put to all bidders, is whether these SOEs operate under investment constraints or other severe corporate finance handicaps in their home markets, in which case they might be unable or unwilling to contribute to the long term development of the privatised firm; and whether they have an experience in operating in competitive product and services markets.

V. Introducing competition in the infrastructure sectors

a. Introducing competition before privatisation

We have already discussed a view in literature suggesting that privatisation is not important as the results of privatisation seem to derive mostly from the introduction of competition, and not the ownership change. In this context, it might be useful to discuss a few of the experiences in OECD countries with introducing competition before (or even, without) privatisation.

One attempt to create a "private" environment without actually privatising came from New Zealand. The electricity generation in that country was corporatised in the early 1990s. However, privatisation was politically difficult; hence, the government decided to simply create a second SOE and put these companies in competition with each other while at the same time allowing for some private entry into the sector. In 1998, the government further split the generation industry into 4 SOEs. In addition, the possibility for non-commercial interference in the corporate governance by the shareholding minister (the Treasurer) was strictly limited (Wilson 1997). The SOEs were "ring-fenced", *i.e.* they were prohibited from engaging in other non-core activities, or in any form of cross-subsidisation while their financial structure was heavy on private debt. Debt holders were expected to fulfil a corporate governance/monitoring role, in the absence of private equity that could freely enter and exit in response to the firms' commercial performance. Most importantly, an independent regulator was created to protect consumer welfare.

While it is too early to judge the success of the New Zealand approach, one could envisage two potential problems:

1. If private sector entry does occur, as has been the case in New Zealand in both generation and retail (transmission is still a monopoly), the SOEs are in a disadvantaged position. The financial structure of the SOEs is not flexible enough to allow expansion, in a world increasingly dominated by aggressive international companies. That is why the SOEs are now pushing

for their privatisation and the government has initiated “scoping” studies for their possible sale.

2. The SOE debt might be perceived as government debt and a moral hazard situation develops; this may be the case in some countries with a long history of SOE bailouts. If this happens, private competitors will not enter the market as they will be facing a much higher cost of capital (and de novo entry in an infrastructure industry is extremely capital-intensive).

Finland and, to a degree, Sweden adopted a similar sequencing pattern in their telecom reforms. They introduced genuine competition at all levels (including fixed-line telephony) early on; and the state showed the unusual virtue of consistently maintaining an arm’s length relationship with its company(ies), thereby nourishing a level playing field. In the case of Sonnera, the Finnish telecoms company, half of its revenue before privatisation was derived from mobile telephony, an intensely competitive sector while it faced competition in most local fixed line markets, long before it was privatised. This resulted in a very successful IPO in November 1998; the offering was heavily oversubscribed in spite of awkward conditions in international equity markets.

New Zealand, again, followed a similarly cautious path with telecom privatisation and the sequencing of the introduction of competition (Wilson 1997). The government allowed for entry in most segments of the market in the three year period that intervened between the 1987 corporatisation and the 1990 privatisation of the company. This has brought substantial benefits to consumers without the state having to transfer ownership. Privatisation was mainly company- driven (as was in the Finnish case) and was largely due to the need for a broader corporate finance base for firms, in the face of increasing global competition.

The above experiences lead to two conclusions: first, countries with the institutional capacity and political maturity to allow for real commercialisation of SOEs may reap the benefits of competition before privatisation, thus minimising the risk of regulatory capture and the raising of entry barriers by private monopolists after privatisation. Secondly, these countries might have to allow for important foreign competition to the national state-owned incumbent. Privatisation is important for the development of the firms in question. Ownership matters not so much for efficiency reasons, but rather to put these companies on a level playing field with their private sector competitors in terms of access to capital markets .

b. During privatisation

Privatisation offers a unique opportunity to restructure and introduce competition. In order to introduce competition, it is imperative that the natural monopoly and competitive segments of the relevant industry be effectively separated. Should the actual break up prove unfeasible, it is necessary to at least ensure that there is an accounting and organisational separation of these activities. An incumbent that is permitted to operate in both competitive and natural monopoly components of the industry, is likely to engage in anti-competitive behaviour such as restricting access to its network, and using its dominant position in the monopoly segment to support predatory behaviour in the competitive segments. In the United Kingdom rail and electricity privatisation as well as in the New Zealand electricity restructuring, the natural monopoly segments of the rail infrastructure and transmission grid were either kept under state ownership (in the case of New Zealand) or were separately floated (as in the case of United Kingdom) with the regulator being given the express mandate to prevent capture of the “grid” company by upstream or downstream commercial interests.

Restructuring the sector by breaking up vertically integrated monopolies has been employed by several countries starting in the late 1980s, in order to introduce and encourage competition in upstream or downstream markets. In most cases, competition seems to have developed and the impact on prices and services has been very positive. On the other hand, such a radical upsetting of the industrial landscape might be controversial and less consensual from a political perspective as it is bound to challenge a lot of vested interests.

The restructuring of the communications sector is a good example of the policy issues. In the past, many countries had their telecom organisations integrated with postal services as part of the government. In the run up to telecom privatisation, most countries separated the two services in the context of corporatisation of the telecom carrier. This seems to have been a correct solution: telecom privatisation is far more palatable politically than post privatisation, even though postal services are becoming a competitive industry. The United Kingdom case is telling: H.M. Post is the last firm of any commercial consequence to remain under state ownership. This is mainly due to the largely misplaced fears about the availability of universal postal services. On the other hand, where such separation did not occur prior to privatisation (as in the case of Netherlands which privatised the holding company for these two businesses), subsequent attempts to separate the two businesses have met with problems and friction between the company and the regulator.

Universal service concerns have often been cited as an obstacle to privatisation. However, there is little evidence to support such worries. In the vast majority of

cases, the availability of services has gotten much better with privatisation than it was under state ownership (Serra 1998, Holder 1998). Moreover, in many countries, with a strong universal or “public service” culture such as France and the Nordic countries, some basic public utilities have been for a long time provided by private agents (water and sewage in France and electricity in Finland and Norway). Yet, from a political perspective, there might be a need for explicit inclusion of relevant clauses in the mandate of the regulator and/or in the terms of license/franchise to industry participants.

There are some cases where the availability of services may be of real concern as it will depend on subsidies. In such cases using direct (reverse) bidding by potential entrants on the level of subsidies required would ensure that universal service concerns are met without major efficiency losses²¹. Nevertheless, practice indicates that rendering subsidies totally transparent may encounter serious political resistance as it impacts on the way power is exercised at a regional/local level. Incidentally, this is once more, an indication of how deeply privatisation can affect the role of the state and political customs.

To come back to the economic debate around competitive restructuring, an important concern is that the latter might destroy existing economies of scale. Where the markets are narrow and contestability is low, vertical unbundling might be more costly than living with an integrated firm with market power (Bacon 1994). While at times this might be the case, it seems better to err on the side of more competition. As the United Kingdom electricity industry experience shows, the market is quick in restructuring and consolidating itself in ways that are probably more efficient than existing vertical integration within SOEs (Jenkinson 1998). The freeing of infrastructure assets resulting from sectoral restructuring is one of the driving forces behind the emerging global utility companies; they are presumably better at achieving higher productive efficiency, have lower cost of capital and utilise global resources more often than protected national companies.

c. *After privatisation*

Competition and privatisation are sometimes uneasy policy bedfellows. Incumbent firms may argue successfully that the purpose of privatisation is to strengthen them, through a vastly increased possibility to tap international capital markets, so that they may become global players; that in view of intense global competition and or ongoing regional liberalisation they need to maintain their dominant position at home, by regulatory or other de facto obstacles; that maintaining the firm as such (*i.e.* avoiding any pre-privatisation restructuring of the hitherto monopoly) will create added gains for shareholders and thereby contribute to the development of the capital markets; and, most importantly, that

there are still vast parts of their activities where a monopoly is still the “natural” outcome of the market.

Policy makers have to weigh these “company” arguments against the longer term goal of enhancing competition and maximising consumer welfare. Evidence suggests that in the initial stages of privatisation, they were far too sympathetic towards companies, preserving competitors rather than competition. Early United Kingdom privatisation in the 1980s as well as an important part of continental European utility privatisation during the 1990s kept the incumbents intact and preferred to privatise them as such -- often in parallel with a slow process of introducing competition after privatisation. United Kingdom telecoms and gas are good cases in point. On the other hand, Italian²² and French Telecom privatisation might be forgiven for not addressing directly competition issues as concerns, as the recent EU directives²³ have pressed liberalisation issues on EU member governments.

Applying structural remedies to a whole sector under diverse (mainly private) ownership arrangements ex-post could be very difficult from a legal/constitutional point of view and might prove to be an extremely long process²⁴. In addition, private investors who bought into the government’s privatisation drive will feel cheated and their reaction will impact on the future of the privatisation programme, especially since these investors often include large parts of the population.

Delaying or rationing the introduction of competition after privatisation by tightly limiting entry does not seem to bear any positive results in the long run. Rationing of competition has resulted in an effective containment of the “junior” competitor in the market and the emergence of de facto oligopolistic co-ordination, as evidenced by the United Kingdom telecom experience. In the case of privatisation of British Telecom (BT) the government pursued a duopoly policy and placed restrictions on competition. This in effect maintained BT’s monopoly character. On the contrary, ten years later, a more open regulatory environment in the case of German telecom privatisation has introduced vigorous competition at every level and has lowered prices in every segment of the telecom market²⁵.

Following privatisation, the regulator should remain alert to the capacity of incumbents with market power to generate efficiencies. Newbery and Pollitt (1997) have found that clear improvements in performance by United Kingdom electricity firms following the restructuring of the industry were largely appropriated by shareholders and managers -- with consumers seeing only a fraction of these benefits trickling down. This suggests that regulators underestimated the new companies’ drive for cost cutting and the possibilities that they had to appropriate these gains, due to the slow pace of the

liberalisation of the electricity retail market and information asymmetries with the regulator.

Making licensing requirements more complicated and raising other administrative hurdles, in addition to the presence of a large incumbent, might deter entry altogether as in the case of Japanese telecoms. On the other hand, there is some wisdom in designing an orderly opening of markets to competition *ex ante* (i.e. before privatisation takes place), and providing for a short timetable for transition²⁶.

A general concern with privatising big monopolies as such is that these companies will be “too big/important to fail”. As a result of privatisation the state (and the tax payer) might become victims of a moral hazard situation. It might have to explicitly or implicitly guarantee the solvency of a private company, thus creating a lopsided playing field for investors and give the wrong incentives to company managers as regards to risk. The result is a continuing misallocation of financial and productive resources and a low level of financial discipline. In the presence of competition, these issues cease to be a problem (one firm’s failure is not deemed to seriously endanger adequate provision as others will take its place). Where, on the contrary, a private monopoly replaces the state-owned one, moral hazard might intensify, in the absence of a carefully designed exit mechanism.

VI. Conclusions

Until recently, public utilities were considered to be natural monopolies, usually under state ownership, with universal access obligations and cross-subsidies built into their tariffs. The need to increase investment and to access capital in order to meet a growing and changing demand, in an era where the governments are faced with severe fiscal constraints, led to a fundamental change of course. The changing terms of production and industrial organisation resulting from rapid technological development and, last but not least, the hitherto unsatisfactory performance of state-owned utilities were important factors behind changing attitudes. *In response to these concerns, many countries have been introducing competition and privatising their public utilities, in order to improve productive and allocative efficiency, to increase investment and benefits to consumers and the economy as a whole.*

Utilities and infrastructure are highly idiosyncratic and sensitive sectors of the economy. In contrast to the tradables sector, where a general regulatory legal framework for the protection of competition and consumers is sufficient, the provision of essential infrastructure services retains an important public interest component, both because it might remain monopolistic in certain respects and

because of its pervasive importance as an input in all other businesses and households. Liberalisation and reform in the OECD countries have revolved around one fundamental precept: *the separation of commercial from public interest objectives and their assignment to different institutions*. On the public interest side, a new breed of regulatory institutions have sprung up that are there to police the monopoly segments of the infrastructure markets and to promote the introduction of competition where that is possible.

In this respect, privatisation is an effective policy tool. It provides suppliers with profit oriented incentive structures and access to capital markets. It is the policy which addresses the *subjective side of market development*: you need private players to have markets. The introduction of competition is the other, equally important policy tool for commercialisation of infrastructure. It provides for the necessary rules of the game, the *objective for market development*. It helps ensure that efficiency improvements at the firm level are translated into lower prices for the consumers and a more efficient allocation of resources in the economy as a whole.

There have been arguments about whether a government can use one of these tools without the other. Privatising large monopolies, even with an adequate regulatory framework, might yield important efficiency gains at the firm level but from a public choice perspective it will tend to benefit certain groups (*i.e.* shareholders and management -- and possibly the state as a tax collector), at the expense of consumers and employees. On the other hand, competition without privatisation, might prove to be elusive in the long term. When private firms compete with SOEs, the latter are either favoured because they are state-owned (that would be the case in most institutional environments) or are in a disadvantaged position because of their limited access to capital. Competition between state-owned firms exclusively might be an extremely difficult game to introduce--almost a contradiction on itself; and it might prove to be very inefficient as its financing is exclusively debt-oriented. *It follows that privatisation and competition need to be pursued in tandem*. The choice is about sequencing rather than the exclusive use of one or the other tool.

Privatisation has had positive results in almost all of the OECD countries that have undertaken it. Empirical research seems to suggest that important efficiencies were generated by the change in incentives, financing and governance structures that privatisation generates. Moreover, privatisation creates important positive spillovers in the economy that are often ignored by empirical researchers. These include new performance benchmarks for remaining State-Owned Enterprises (SOEs). The “equilibrium of inefficiency”, faced by many countries in their public sectors, is upset and important incentives are created for better performance even before privatisation. Insider

expectations as to the future of the company (and of themselves) radically change and a competitive market for managers emerges, even within the public sector (Douglas 1996). A robust and credible privatisation programme thus delivers a lot of its benefits before the actual sale of a company. Even companies that are not programmed for sale are subject to increased corporate governance rigor as the state has fewer firms to police and its outlook on what commercial entities should be doing is changing.

Finally, privatisation has changed the enterprises involved with a speed and depth never observed before. Access to international capital markets has created several global, competitive companies out of hitherto inefficient state monopolies. This, in turn has increased the momentum for globalisation in infrastructure industries and has put further pressure on laggards to privatise and allow for competition.

SELECTED BIBLIOGRAPHY

- ALCHIAN, Armen and Harold Demsetz. (1972), "Production, Information Costs And Economic Organisation", *American Economic Review*, 62 , 777-795.
- BACON, R. (1994), "Lesson From The Electricity Sector Reform In England And Wales", *Public Policy For Private Sector*, The World Bank.
- BEESLEY, Michael and Stephen Littlechild. (1994), "Privatisation: Principles, Problems, And Priorities", in Bishop, Kay, and Mayer (eds.), *"Privatisation & Economic Performance"*, Oxford University Press.
- BITRAN, Eduardo and Pablo Serra. (1997), "Regulation Of Privatised Utilities: Lessons From The Chilean Experience", in OECD, *"Privatisation Of Utilities And Infrastructure"*.
- BOYCKO, Maxim, R.. Shleifer, and. R.. Vishny. (1996), "A Theory Of Privatisation", *The Economic Journal* 106, 309-319.
- BRUMBY, Jim and. S. Hyndman. (1998), "State-Owned Enterprise Governance: Focus On Economic Efficiency", in OECD, *"Corporate Governance, State-Owned Enterprises And Privatisation"*.
- CIUCCI, Pietro. (1998), "The Italian Privatisation Experience And The Role Of IRI", paper presented at the conference on Privatisation in Europe, Mimeo.
- DOUGLAS, Roger. (1996), "The Role Of Government In The Economy", in OECD *"Privatisation In Europe , Asia And Latin America"*.
- ESTRIN, Saul. (1998), "State Ownership, Corporate Governance And Privatisation", in OECD, *"Corporate Governance, State-owned Enterprises And Privatisation"*.

- GALAL *et al* (eds). (1994), *"The Welfare Consequences Of Selling Public Enterprises: An Empirical Analysis"*, New York, Oxford University Press.
- GRILLI, Vittorio. (1997), "Privatisation In Italy" presentation at the OECD Privatisation Network meeting (Mimeo).
- GUISLAIN, Pierre. (1997), *"The Privatisation Challenge"*, The World Bank.
- HELM Dieter, and Tim Jenkinson. (1997), "The Assessment: Introducing Competition Into Regulated Industries", *Oxford Review Of Economic Policy*, Vol. 13, No. 1.
- HOLDER, Stewart. (1998), "Privatisation and Competition: The Evidence From Utility And Infrastructure Privatisation In The United Kingdom", in OECD, *"Privatisation, Competition And Regulation"*, 1999-forthcoming.
- JASINSKI, Pyotr and. George Yarrow. (1995), "Privatisation: An Overview Of The Issues", *Studies in Regulation*, No 4 Regulatory Policy Institute, Oxford.
- JENKINSON, Tim. (1998), "Corporate Governance And Privatisation Via Initial Public Offering", in OECD *"Corporate Governance, State-Owned enterprises And Privatisation"*.
- JENSEN, Michael. (1986), "Agency Costs And Free Cash Flow", *American Economic Review* 76, 306-360
- La PORTA, Rafael and F. Lopez de-Silanes. (1997), "Benefits Of Privatisation - Evidence From Mexico", *"Public Policy For The Private Sector"*, Quarterly No. 10, June, World Bank.
- LUDWIG, F. M. (1996), "The Case Of The German Railroads" in World Bank *"Corporate Governance and Public Enterprises in Transition Economies"*, Technical Papers, Number 323.
- MEGGINSON, William and. R.C Nash, and M. and M. Van Randenborgh. (1994), "The Privatisation Dividend - A World-Wide Analysis Of The Financial On Operating Performance Of Newly Privatised Firms", *Journal of Finance* 49, 2.
- MOORE, Jim. (1986), "Why Privatise" in John Kay, Colin Mayer and David Thompson *"Privatisation and Regulation- the U.K. Experience"* Clarendon Press.

- MORIN, François. (1998), "The Privatisation Process And Corporate Governance: The French Case" in OECD "*Corporate Governance, State-owned Enterprises And Privatisation*".
- NEWBERY, David M. (1997), "Privatisation and liberalisation of Network Utilities", *European Economic Review*, 41, 357-383 .
- NEWBERY, David M. and M.G. Pollitt. (1997), "The Restructuring And Privatisation Of The CEBG- Was It Worth It?", *Journal of Industrial Economics*, XLV(3), 269-303
- National Economic Research Associates. (1996), "*Performance of Privatised Industries: A Report by NERA for The Centre for Policy Studies*", Volume 3: Efficiency.
- NELLIS, John. (1991), " Contract Plans: A Review Of International Experience", in Ravi Ramamurti and Raymond Vernon (eds) "*Privatisation And Control Of State-Owned Enterprises*", EDI Studies.
- NESTOR, Stilpon. (1998), "Privatisation in the OECD Area" in Petros Mavroidis and Cottier T. (eds) "*State Trading In The Twenty First Century*", Michigan University Press.
- NESTOR, Stilpon and M. Nigon. (1996), "Privatisation In Europe, Asia And Latin America: What Lessons Can Be Drawn?" in OECD "*Privatisation In Europe, Asia And Latin America*"
- NESTOR, Stilpon and John Thompson. (1999), "Corporate Governance Patterns In The OECD Area: Is Convergence Under Way?", paper presented at the OECD/KDI meeting on "Corporate Governance in Asia: A Comparative Perspective".
- PEBBLE, Richard William. (1996), "Corporatisation Of Public Enterprise In New Zealand" in World Bank "*Corporate Governance And Public Enterprises In Transition Economies*", technical papers number 323.
- Privatisation International* (1999), January, 4-6.
- OECD, (1998), "Recent Privatisation Trends" in OECD, *Financial Market Trends* , No. 70
- OECD, (1999), "Recent Privatisation Trends" in OECD, *Financial Market Trends* , No. 72

- ROSCINI, Dante and M. Esteve. (1998), "Evolution Of European Equity Market Issuance" in *Privatisation International* , December 1998.
- SERRA, Pablo. (1998), "Evidence From Utility And Infrastructure Privatisation In Chile" in OECD, "*Privatisation, Competition And Regulation*", 1999 - forthcoming.
- SCHMIDT Klaus. (1996), "The Costs And Benefits Of Privatisation: An Incomplete Contracts Approach" in *The Journal Of Law, Economics And Organisation* 12.
- SHIRLEY, Mary. (1997), "Information, Incentives And Commitment: An Empirical Analysis Of Contracts Between Governments And State-Owned Enterprises", World Bank Policy Research paper 1769.
- STIGLITZ, Joseph. (1993), "On The Economic Role Of The State" in J. Stiglitz *et al.* "*The Economic Role of the State*", B. Blackwell .
- U.K Treasury (1996), "Privatisation In The United Kingdom", in OECD, "*Privatisation In Europe, Asia And Latin America*".
- VALVERDE, Rafael. (1998), "The Portuguese Experience", paper presented at the conference on Privatisation in Portugal and Italy, Mimeo.
- VICKERS, John and George Yarrow. (1988), "*Privatisation: An Economic Analysis*", MIT Press
- WILSON, John. (1997), "Restructuring The New Zealand Electricity Industry", OECD, "*Privatisation Of Utilities And Infrastructure*".

NOTES

1. See Financial Market Trends (FMT), OECD, Number 72.
2. Privatisation has been the main cause of the quadrupling of the capitalization of some European exchanges (Milan, Lisbon) in recent years. See Ciucci (98) and Valverde (98).
3. These restrictions formed until recently a major part of individual country reservations under the OECD Codes of Capital Movements and invisible transactions, designed to eliminate discrimination and obstacles to capital flows between Member countries.
4. Economist, January 23, 1999, based on 1998 KPMG report on Mergers and Acquisitions.
5. In Germany, the Basic Law had to be amended in order to allow for the privatisation of telecommunications. Mexico had to go through several constitutional amendments in the 1980s to allow for the privatisation of certain “sensitive” sectors of the economy. More importantly, the Portuguese constitution had to be changed in 1989, to allow for the privatisation of more than 49% of all nationalized firms (Nestor and Nigon 1996).
6. See Galal *et al*
7. It has been pointed out that structural adjustment would have led to closures and unemployment in these sectors irrespective of the ownership regime; and that what is really needed is active labour market policies and an adequate social safety net for both public and private sector workers in these industries see (World Development Report 96).
8. For a revue of the considerable literature on the principal agent problem in the context of state ownership see Estrin (1998).
9. This is of course an over-simplification of the real reasons for nationalizing network industries. In many cases, this was an ideological decision that did not even claim an economic rationale.

10. Italy and Spain consistently topped the OECD privatisation league during the last few years; other EMU countries are also showing impressive performances (OECD, FMT No: 67, 70 and 72).
11. See Schmidt 1996, who alludes to these issues, without directly addressing them.
12. While framework contracts were pioneered and perfected mainly in French SOEs, other countries used similar devices such as the shareholder statement of expectations in New Zealand (see Nellis 1991 and Brumby/Hyndman 1998)
13. In many OECD member countries, partial privatisation has been undertaken as a strategy of gradual introduction of a company in the stock market, for reasons related to the perceived absorption capacity of the latter. That has been the case in many British companies (BT, Britgaz), Spanish (Telefonica, Argentaria) and Italian (ENI, Telecom Italia). In other cases, however, partial privatisation has been the final objective: Deutsche Telekom, France Telecom and Royal KPN of the Netherlands have been only partially floated with the state intending to remain a controlling shareholder; some of the smaller OECD economies have kept large stakes of their utilities (telecoms in Czech Republic and electricity in Belgium), after having sold important minority stakes to strategic foreign investors.
14. It should be noted that their sample includes firms from developing countries as well as OECD ones.
15. Includes all privatised companies to that date, and not just public utilities. However, the latter account for the bulk of these financial inflows.
16. In part IV of this paper, we review some of the main issues for the introduction of competition.
17. See also the discussion on introducing competition below.
18. United Kingdom: (Holder, 1998), and for Chile: (Serra, 1998).
19. This is evident in the case of United Kingdom privatisation. See U.K. Treasury 1996.
20. In the case of the purchase of the Czech airline CSA by Air France in the early 1990s, the sale had to be reversed due to the inability of the buyer to proceed with the needed reforms and capital infusions; the same was true with the acquisition of part of the Hungarian airline by Alitalia. In the case of the Spanish Telefonica acquiring a dominant position in the Chilean telecoms market, Serra(1998) notes that Telefonica was quite successful in resisting

regulatory pressure for more competition, a fact that might be related to its state owned status, until recently.

21. In this case there is competition in acquiring the rights to provide the service, rather than competition in the provision of service. This approach has been used in Chile for increasing access to telephone service in remote and poor rural areas.
22. However, in case of ENEL, the Italian state-owned electricity company the Prime Minister, has been quoted as saying that privatisation would only be considered after liberalization and creation of real competition.
23. For example, European Union, DG XVII , IEM directive 96/92 deals with electricity, and requires member states to open up at least 26.48% of their natural markets to free competition, as of Feb 1999. For Telecom See ONP Framework Directive, section III.A.6 where member states are required to liberalise public voice telephony by January 1998, while maintaining universal service.
24. See the experience with the implementation of structural remedies in the US, in an antitrust context: the break up of “Ma Bell” took more than ten years, while other antitrust suits that focused on structural remedies have often failed after protracted legal battle (for example the IBM case of in the 70s).
25. See the Economist 12/12/98 .
26. For example, outside OECD, Brazil seems to have adopted this approach.

PRIVATISATION AND COMPETITION: THE EVIDENCE FROM UTILITY AND INFRASTRUCTURE PRIVATISATION IN THE UNITED KINGDOM

by
Stuart Holder*

I. Executive summary

This paper reviews the currently available evidence on the experience of the privatised utilities and infrastructure providers in the United Kingdom. It covers the telecommunications, gas, electricity and water industries, and also the provision of port and airport infrastructure.

It is difficult to identify a separate impact of privatisation, which was often accompanied by significant regulatory, competitive and structural changes. We do not know, moreover, how these industries would have performed had they remained in the public sector. Nevertheless, the evidence shows that the privatised utilities and infrastructure providers:

- increased labour productivity, and sometimes total factor productivity, at rates faster than those generally achieved before privatisation;
- offered real price reductions (except in the water industry, where higher charges were needed to fund significant quality improvements). In the telecommunications and gas industries in

* Stuart Holder, is Senior Consultant, at the National Economic Research Associates, United Kingdom. Laura Altinger has provided valuable research assistance for preparation of this paper. The opinions expressed are those of the author and do not reflect the views of the National Economic Research Associates.

particular, prices have fallen at a faster rate than they did before privatisation;

- achieved sustained improvements in levels of service quality, especially in the telecommunications and water industries; and
- provided very substantial contributions to public sector finances.

A combination of privatisation, industry restructuring, regulation and liberalisation has allowed the companies to build upon the improvements achieved by better management of the nationalised industries in the early 1980s. It is hard to believe that these companies would have achieved these significant further improvements had they remained in the public sector.

Competition has been introduced in the telecommunications, gas and electricity industries. To date, this process has generally been managed by the regulators, and has required some privatised firms to reorganise (either an accounting separation or the creation of separate subsidiaries) to ensure that competitors have non-discriminatory access to their networks. Longer-term issues still need to be addressed, particularly concerning the sustainability of universal service obligations in a competitive environment.

II. Introduction

The United Kingdom privatisation programme commenced in 1979, at a time when nationalised industries accounted for about a tenth of the country's Gross Domestic Product and employed about 1.5 million people. Some of these industries were (or were thought to be) natural monopolies, often providing vital services such as water, electricity and gas to domestic and industrial customers. Others, including coal and steel producers, car manufacturers and ship builders, occupied what was sometimes characterised as "a position of strategic importance" to the United Kingdom economy.

Since then, more than 50 major companies (and dozens of smaller ones) have been transferred to the private sector, raising more than £60 billion for the United Kingdom government in the process. Many privatised firms face strong competition in an increasingly open world market. Others, notably the traditional utilities, became private sector monopolists, though most of these are now facing competition in some or all of their markets. Although some of its language may be different, the current Labour government is continuing to privatise (or, in some cases, establish "public private partnerships"), organisations such as London Underground and the national air traffic control service.

This paper reviews the currently available evidence on the experience of privatised utilities and infrastructure providers in the United Kingdom, including the telecommunications, gas, electricity and water industries, and also the provision of port and airport infrastructure.¹ Academic research has focussed mainly on the impact of privatisation (and other changes) on firms' efficiency, as measured by labour productivity and total factor productivity. This research is summarised below, along with the findings from surveys carried out by NERA into the prices, service quality and financing of privatised industries in the United Kingdom.

It is difficult to reach conclusions from this evidence about the impact of privatisation. One reason for this is that privatisation has often coincided with other significant changes, for example to the regulatory structure, the nature of competition or even the basic structure of the relevant industry.

An equally difficult problem is that of establishing the correct counterfactual: what would have happened if these firms had remained in the public sector? As noted in Section IV, there is convincing evidence that the nationalised industries performed better in the 1980s than they did in the 1970s, including some industries for which privatisation was not on the political agenda during this time. If this improved performance would have been maintained (or bettered) in the absence of privatisation, then some of the apparent benefits from privatisation may be illusory.

The rest of this paper is structured as follows. Section III describes the way in which each industry was privatised, including the market structure and regulatory framework adopted on privatisation, and also identifies significant developments since privatisation. Section IV then considers the various ways privatisation might affect an industry's performance and reviews the available evidence on the performance of United Kingdom utilities and infrastructure providers before and after privatisation. Section V draws some conclusions.

III. Overview of utility and infrastructure privatisation in the United Kingdom

This section describes the process of industry restructuring, privatisation and regulation in United Kingdom utility and infrastructure industries, including both the privatisation process and any significant regulatory or competitive changes, which have occurred since privatisation. Sections III.1 to III.6 cover the individual industries in the order they were privatised, then Section III.7 draws together some common themes.

III.1. Ports

The first major utility or infrastructure privatisation was that of Associated British Ports (ABP), formerly the British Transport Docks Board, which was privatised in February 1983. ABP owns 22 large and small ports, accounting for about a quarter of total United Kingdom port capacity (by value of trade). There is strong competition between United Kingdom ports, and the industry has a historic tendency to provide excess capacity. United Kingdom ports also face competition from ports in Belgium, Holland, France and Germany. In view of this competition, ABP is largely unregulated, though it is subject to general competition law and there are also backstop procedures for appeals to the Secretary of State for Transport over the level of charges.

The main change to the industry since privatisation was the abolition of the Dock Labour Scheme in 1989, which removed a number of historical restrictions on port owners. This allowed ABP and other port owners to manage their workforces far more efficiently, and also to contract out some operational activities, such as cargo handling. This is one reason for ABP's apparent strong performance during the "recession period" shown in Table 1.

III.2. Telecommunications

Before 1981, all telecommunications services in the United Kingdom were provided by the Post Office.² In 1981 a separate public corporation, British Telecom (BT), was created to carry out the Post Office's telecommunications functions, and BT was privatised in November 1984. A new regulatory body, the Office of Telecommunications (OFTEL),³ was created both to regulate BT's prices and service quality and, more importantly, to oversee the interconnection arrangements between competing operators.

Some of BT's prices are subject to a price cap formula determined by OFTEL. At first, this covered only exchange line rentals and local and national direct dialled calls, accounting for about 50% of BT group turnover. Subsequently, the scope of the price control was extended to include operator assisted calls, directory enquiries, some private circuits, international calls and connection charges, accounting for about 65% of BT group turnover.⁴ Last year, in view of the increasing extent of competition (see below), the price cap was amended so as to apply only to the lowest spending 80% of residential customers and a package to protect small businesses, and to exclude directory enquiries services.

At the time of privatisation, BT was a *de facto* monopoly supplier of basic telephone services. Even though a national competitor, Mercury Communications, had been licensed in 1982, it was unable to supply basic

telephony until it had an interconnection agreement with BT, which was eventually determined by OFTEL in October 1985.⁵ At the time of privatisation, moreover, the government announced its intention not to license any further fixed-link competitors until 1990 at the earliest. Between 1985 and 1991, BT and Mercury enjoyed a duopoly in the market for fixed-link telephone services.⁶

Following its review of the duopoly in 1990-1, the government decided to allow further (and, in theory, unrestricted) entry by suppliers of domestic fixed-link telephone services. Importantly, cable television operators were to be allowed to compete in their own right (rather than just providing infrastructure for BT or Mercury, as was previously the case). BT's market share has now dropped below 75% of call revenues (ranging from 52% for international calls to 85% for local calls), and 90% of exchange line rental revenues.⁷

The framework for interconnection between operators has had a major impact on the nature of competition, particularly between BT and other operators. OFTEL's initial determination in 1985 was favourable to Mercury, since it ignored the impact of BT's "access deficit" (which meant that BT was forced to keep call charges high in order to compensate for low line rental charges). This arrangement was formalised in 1993, when access deficit charges were introduced for other operators, but a waiver was granted so that operators only paid access deficit charges when they had achieved a 10% share of international or inland calls.

The structural problems associated with introducing competition in the presence of a vertically integrated, dominant incumbent were addressed more directly by OFTEL's requirement that, from 1995, there should be an accounting separation between BT's retail business (*i.e.* supply of calls), network business and access (*i.e.* supply of lines) business. Under this new arrangement, BT's network division charges all operators (including both BT's retail division and its competitors) for the use of its network according to a common set of charges.

III.3. Gas

British Gas (BG) was privatised in December 1986 as a vertically integrated producer, transporter and supplier of natural gas. Although other suppliers had been able, in theory, to purchase and transmit gas for sale to final users through BG's pipelines since 1982, BG was still a monopoly supplier at the time of privatisation.

A new regulatory body, the Office of Gas Supply (OFGAS), was created to protect the interests of customers, but its powers were restricted to the "tariff"

market for customers with an annual demand of 25 000 therms or less. BG's monopoly over the "contract" market (for customers using more than 25 000 therms a year) was abolished, and regulations to allow common carriage through BG's pipelines were strengthened. Notwithstanding the absence of actual competitors, this market was thought to be sufficiently competitive that it should be subject only to general competition law (rather than industry-specific economic regulation).

Within a year of privatisation, BG was referred to the Monopolies and Mergers Commission (MMC), following complaints of discriminatory behaviour in the contract market. The MMC found that BG was practising extensive discrimination, and that this was acting against the public interest by imposing high prices, deterring entry, increasing the risks faced by customers and imposing additional costs on those users whom BG refused to supply with interruptible gas. BG was required to produce price schedules for all supplies to large customers, to publish details of the terms and conditions of common carriage, and also to contract for no more than 90% of the gas from any new field.

The Office of Fair Trading (OFT) reviewed the impact of these remedies in 1991, and found that they had been ineffective in terms of encouraging competition to BG. The OFT recommended that BG should release some of its contracted gas, that the upper threshold (25 000 therms a year) on the tariff market should be reduced, and that BG should divest (or at least create an arm's length subsidiary for) its gas transportation and storage business.

BG agreed a set of undertakings based on these proposals in 1992, which also provided for the regulation (by OFGAS) of its transportation and storage charges. The threshold on BG's monopoly tariff market was reduced from 25 000 therms to 2 500 therms a year in August 1992. But BG was unable to reach agreement with OFGAS, particularly about the rate of return to be included in its transportation and storage charges, and so there was a further MMC investigation which reported in 1993.

The MMC recommended that BG's trading business should be divested, and that the threshold on BG's monopoly should be reduced further (to 1 500 therms per year) and perhaps then abolished.⁸ The Secretary of State for Trade and Industry decided not to accept the MMC's recommendation for full separation, but instead allowed both trading and transportation/storage businesses to remain as separate subsidiaries of BG. He also established an accelerated timetable for the removal of BG's monopoly, starting with the introduction of competition in the South West of England in 1996, spreading to the South East of England in 1997, and covering the whole of Great Britain in 1998.

BG now faces significant competition in all supply markets. About 25% of domestic customers in the relevant parts of South West and South East England had switched to alternative gas suppliers by 1997, and its share of the industrial and commercial sector has now fallen below 30%.

III.4. Airports

British Airports Authority (BAA) owns and operates seven United Kingdom airports (Heathrow, Gatwick, Stansted, Southampton, Edinburgh, Glasgow and Aberdeen) which together account for roughly three-quarters of United Kingdom air transport movements and passengers. BAA was privatised in July 1987, and the main regulatory issues arising since privatisation have concerned the details of five-yearly price reviews (see below), rather than any structural or competitive changes.

All of BAA's airports are subject to economic regulation by the Civil Aviation Authority (CAA). For the smaller airports, this simply takes the form of provisions designed to protect airlines and other airport users from anti-competitive practices. But BAA's three largest airports (Heathrow, Gatwick and Stansted), plus the publicly owned Manchester airport, are also subject to price cap regulation, which automatically involves the Monopolies and Mergers Commission (MMC).⁹

Although only some airport charges (including take-off and landing fees, parking fees and per-passenger charges) are regulated, the price cap is reviewed on the basis of the overall financial performance of each airport.¹⁰ For BAA, the price cap applies to the three airports taken together, and also separately for Heathrow and Gatwick.

III.5. Electricity

Unlike previous utility privatisations, electricity privatisation in Great Britain was preceded by significant industry restructuring. Until 1990, the electricity industry in England and Wales had consisted of a vertically integrated generation and bulk transmission business, the Central Electricity Generating Board (CEGB), plus 12 area boards responsible for the local distribution and supply of electricity. The industry was restructured in 1990, as follows:

- the area boards were renamed Regional Electricity Companies (RECs) and were privatised in December 1990;

- the CEEB's non-nuclear generation capacity was split between two firms, National Power and Powergen, which were privatised in March 1991;
- the CEEB's transmission activities were transferred to the National Grid Company (NGC), which was set up as a jointly-owned subsidiary of the RECs, and which was sold (by public offer) in November 1995;
- the CEEB's nuclear generation capacity initially remained in the public sector (as Nuclear Electric). This was merged with nuclear generation in Scotland to form British Energy, which was privatised in July 1996¹¹.

Generators and suppliers buy and sell electricity either under contract or through a spot market operated by the Electricity Pool of England and Wales ("the Pool"), which is a collective organisation of electricity generators and suppliers. NGC operates the settlement system and funds administration on behalf of the Pool.

In contrast, the only major restructuring before electricity privatisation in Scotland was to separate nuclear generation (initially as Scottish Nuclear) from other activities. Otherwise, the two vertically integrated suppliers were renamed Scottish Power and Scottish HydroElectric and privatised in June 1991.

This was followed by the restructuring and privatisation of the electricity industry in Northern Ireland. Four power stations were sold (as trade sales or management buy-outs) between April and June 1992, and the new transmission and distribution company, Northern Ireland Electricity, was privatised in June 1993.

A new regulatory body, the Office of Electricity Regulation (OFFER), is responsible for the economic regulation of the industry. Price cap regulation is applied separately to supply prices (except to larger customers who may use alternative suppliers - see below), the RECs' distribution charges, and NGC's transmission charges. Generation prices are not regulated, though following concerns about National Power and Powergen's market power, these companies agreed to voluntary limits on the prices at which they bid into the Pool.

The period since privatisation has already seen a number of significant changes to the industry. Initially, competition in the supply of electricity was restricted to customers, mainly large industrial or commercial users, consuming more than

1MW per year. In 1994, competition was allowed for customers using more than 100KW per year, and is due to be extended to all customers later this year.

In addition, the distinction between generators and suppliers has blurred, as some of the RECs have acquired significant generation capacity.¹² Initially, the RECs were not permitted to own generating capacity in excess of 15% of their requirements, but these limits were subsequently relaxed, which allowed Eastern Electricity to purchase divested capacity from National Power and Powergen and thus become the fourth largest generator, with a market share of almost 10%.

More fundamental changes could have occurred in 1995/6, when National Power and Powergen each bid to take-over a REC (respectively Southern Electricity and Midlands Electricity). Although the Monopolies and Mergers Commission concluded that, subject to undertakings being provided, the mergers should be allowed to go ahead,¹³ they were blocked by the Secretary of State for Trade and Industry. Some further vertical integration was allowed, however, through Scottish Power's take-over of a REC (Manweb) in 1995.¹⁴ The question of vertical integration is now being revisited, following a bid in July 1998 by Powergen for another REC (East Midland Electricity).

Most of the other RECs have changed hands, with buyers including US electricity companies and United Kingdom conglomerates. Two RECs (Norweb and SWALEC) were acquired by privatised water and sewerage companies (North West Water and Welsh Water).

III.6. Water

From 1974 to 1989, the water industry in England and Wales consisted of 10 state owned regional Water Authorities, which supply approximately three-quarters of the population of England and Wales, and 29 privately owned Statutory Water Companies.¹⁵ The Water Authorities were responsible for water supply and sewerage services, plus a number of functions associated with water resource management,¹⁶ whereas the Statutory Water Companies were responsible only for water supply.

A new regulatory and legislative framework was introduced in 1989. The Water Authorities became Water and Sewerage Companies (WaSCs), while the Statutory Water Companies became Water Supply Companies (WSCs). The WaSCs were privatised in December 1989.

Both the WaSCs and the WSCs are regulated by the Office of Water Services (OFWAT). This is mainly carried out through price caps placed on each

company, and also a set of minimum service standards. The companies must also comply with quality standards established by the Environmental Agency (which is responsible for pollution control, water resource management and related functions) and the Drinking Water Inspectorate.

The scope for competition in the water industry is clearly limited. Nevertheless, the current framework allows for "inset competition" whereby a new supplier is licensed to supply water and/or sewerage services within an area already served by another supplier for either greenfield sites (which are not served by an existing supplier) or large customers using at least 250 megalitres a year. To date, most cases of inset competition have involved third party brokerage arrangements rather than new entry.

There has been some limited merger activity in the water industry, mainly involving the WSCs. Even when companies with no other involvement in the water industry have bid to take-over WaSCs, OFWAT has argued that such take-overs will lead to a loss of comparative financial information, and has often sought compensating price reductions for consumers. There has been only one case involving a proposed merger between WaSCs, when both Severn Trent Water and Wessex Water bid for South West Water. The Monopolies and Mergers Commission recommended that both bids be blocked, mainly on the grounds of the reduced ability to make comparisons between WaSCs, and this recommendation was accepted by the Secretary of State for Trade and Industry.

III.7. Summary

The privatisation and subsequent regulation of port and airport infrastructure suppliers has been relatively straightforward. By and large, these companies have continued to carry out their business in the way envisaged at privatisation.

In contrast, the privatised utilities have been subject to significant internal and external pressures for change. In the telecommunications and gas industries, these reflect the significant difficulties associated with introducing competition in industries still served by large vertically integrated incumbents. The industry structure adopted for privatisation in these industries is not necessarily (indeed, almost certainly not) that which would be chosen today. Conversely, private operators in the electricity industry have been trying to reverse the vertical separation created at the time of privatisation, and sales and purchases of generating capacity have blurred the distinction between generators and suppliers.

An important feature of competition in the telecommunications, gas and electricity industries is that it has been carefully managed by the industry

regulator. Administrative decisions have been taken about when and how to introduce competition, and the “rules of engagement” have been established by the regulators, sometimes placing constraints or disadvantages on the incumbent supplier in order to facilitate entry.

In the longer term, important questions remain to be addressed about the nature of competition in the regulated utilities. Incumbents may enjoy advantages from economies of scale and an established market position. But they may be disadvantaged because of universal service obligations and also by the impact of investment decisions taken while the firm was in the public sector. Regulators also face conflicting pressures, as a tough approach to price and service quality regulation of dominant incumbents, while delivering benefits to consumers in the short run, may make it more difficult for competitors to enter (and remain in) the market in competition with an efficient incumbent. Such problems can be overcome while competition and entry is managed by the regulator, but in the long term the impact is unclear.

IV. The performance of the privatised industries

Privatisation is merely a change in the ownership of a firm. If both public sector and private sector owners had direct control over managers' behaviour, then there might be no reason to suppose that a publicly-owned firm would be more or less efficient than a privately-owned firm. The two firms may have different underlying objectives, in particular the privately-owned firm will be profit-seeking rather than welfare-maximising, but most of these differences can be addressed through an appropriate framework of regulation.

In practice, of course, owners cannot directly control those who manage their firms. Instead, they must provide their managers with appropriate incentives and put in place arrangements for the monitoring and control of managerial behaviour. The differing incentives and controls placed on managers in the public and private sectors could mean that ownership *does* matter as:

- shareholders are interested primarily in financial returns, and managers' remuneration can be linked directly to the profitability (and share price) of the firm. In contrast, public sector firms may pursue a variety of objectives and managers' priorities may include, for example, keeping in favour with the relevant Minister rather than necessarily improving the financial performance of the firm;
- it may be easier for shareholders to monitor the performance of private sector managers than for Ministers or civil servants to monitor public sector managers;

- the threat of take-over may act as a discipline on the behaviour of private sector managers;¹⁷
- managers in the public sector may be subject to additional constraints which are not placed on private sector managers. In the United Kingdom, for example:
 - the government seeks to restrain public sector pay, both to control public expenditure and also to set a low benchmark for private sector pay negotiations. Public sector managers may find themselves locked into pay disputes which would have been settled in the private sector, or unable to pay sufficiently high wages to attract the staff they would like to employ;
 - most public sector enterprises are not allowed to borrow money from private capital markets. Instead, they must use public funds, and negotiate with government as part of its general determination of public spending plans. Investment projects might come under pressure as they are judged not merely on their own merits but in comparison with other items of public expenditure which could be financed instead.

In addition to the change in ownership, other changes occurring at the same time as privatisation might have a significant impact on managerial behaviour. The privatised utilities are now subject to economic regulation, and price limits may be based on a more rigorous assessment of potential efficiency gains than was usually carried out when they were in the public sector. Increasingly, they are also facing competition in some or all of their markets, leading to further significant pressure for firms to achieve efficiency gains.

The fact that privatisation was often accompanied by a new regulatory framework, and sometimes by industry restructuring or liberalisation, means that researchers have not generally attempted to identify the impact of privatisation alone. Haskel and Szymanski (1993) have attempted to do this (see Section IV.1), but most others have simply recorded the change in overall industry performance which occurred around the time of privatisation.

The rest of this Section summarises the main evidence available on the performance of privatised utilities and infrastructure providers in the United Kingdom. Sections IV.1 to IV.4 deal with costs and efficiency, prices, service quality and financing. Section IV.5 contains a brief summary of the main findings.

IV.1. Costs and efficiency

The efficiency of public or private sector companies is usually measured by either labour productivity or total factor productivity. In theory, total factor productivity is preferable, as it measures the efficiency with which all inputs are used. In contrast, an increase in labour productivity might reflect a substitution of capital for labour inputs rather than any change in the firm's underlying productivity. But total factor productivity is more difficult to measure, particularly as it requires an estimate of the change in capital inputs, and both measures are used in practice.

IV.1.1. Cross-sector studies

As noted above, Haskel and Szymanski (1993) derived separate estimates for the impact of privatisation, as opposed to management restructuring, increased competition or regulatory change, on labour productivity for a sample of 12 United Kingdom firms or industries which were publicly owned in 1972.¹⁸ Unfortunately, only four firms in the sample were privatised during the study period (1972/3 to 1988/9), and Haskel and Szymanski found that privatisation had a significant positive impact on labour productivity growth for only two of these firms (British Airports Authority and British Airways). The impact was insignificant in the other two cases (British Gas and British Telecom). Their conclusions on the impact of privatisation were only tentative, however, because of the relatively short period of post-privatisation experience during the sample period.

Parker and Martin (1997) analysed labour and total factor productivity data to assess the impact of privatisation and associated changes on 11 United Kingdom firms, including four utilities or infrastructure suppliers (Associated British Ports, British Airports Authority, British Gas and British Telecom).¹⁹ They measured trends in labour and total factor productivity relative to the economy as a whole, both in the eight years before privatisation (divided into two four year periods, labelled as the "nationalisation" and "pre-privatisation" periods) and in several periods after privatisation (the "post privatisation" period covers the first four years after privatisation, which in some cases overlaps with the "recession" period (1988-92). These are followed by the "latest" period (generally 1992-5, but 1993-4 for Associated British Ports).

Their results, which are summarised in Table 1 below, show clear evidence of improved labour productivity growth both before and after privatisation, but the findings in terms of total factor productivity are less clear cut. Similar results were obtained for the other firms in the sample, and Parker and Martin observe that their stronger findings in respect of labour productivity are consistent with

the view that state ownership is primarily associated with over-manning, which may reflect either managerial slack or the impact of political intervention.²⁰ They conclude that:

"The empirical work presented confirms that there is no automatic relationship between privatisation and performance improvement. Privatisation has been associated with improvements in performance in a number of cases but not all. Also, improvements in performance often pre-dated actual privatisation, leaving open the question of whether ownership matters."

Even this conclusion may be overstating the case. The general improvement in the performance of the nationalised industries during the 1980s is well documented (see, for example, Bishop and Thompson, 1992). Substantial increases in labour productivity and, to a lesser extent, total factor productivity growth were achieved not only by the privatised utilities, but also by a number of firms (including British Coal, British Rail and the Post Office) for which privatisation was not yet on the political agenda. Indeed, Bishop and Green (1995) draw attention to the strong productivity growth of the (still publicly owned) Post Office during the early 1990s, compared with less impressive performances by several privatised utilities.

Table 1. Productivity Trends Before and After Privatisation

Annual % change relative to the economy as a whole	Nationalisation period	Pre-privatisation period	Post privatisation period	Recession period	Latest period
<u>Labour Productivity</u>					
Associated British Ports	- 3.1	0.4	12.7	23.2	7.4
British Airports Authority	- 0.1	2.4	- 0.7	- 1.5	11.7
British Gas	- 0.2	5.5	2.0	1.8	2.8
British Telecom	1.3	3.8	2.3	5.6	12.2
<u>Total Factor Productivity</u>					
Associated British Ports	- 1.2	5.7	9.2	2.6	6.7
British Airports Authority ^a	0.4	0.1	- 5.2	- 4.0	4.2
British Gas	- 0.3	2.1	- 0.1	- 0.3	- 3.2
British Telecom	6.7	2.8	1.0	3.1	3.1

Source: Parker and Martin (1997), Tables 3 and 4

^a The data shown are based on an estimate of all BAA outputs. Parker and Martin also report estimates of productivity growth with output measured by the number of air traffic movements

Put simply, therefore, the United Kingdom government got better at managing public sector enterprises, and economists have not yet been able to find conclusive evidence of additional improvements which are attributable to privatisation alone.

IV.1.2. Single sector studies

The evidence from studies of individual industries or firms is also mixed. Waddams Price and Weyman-Jones (1996) constructed Malmquist indices of productivity growth to assess British Gas' performance over a sample of 12 production and distribution regions. They found that privatisation was associated with a doubling of British Gas' rate of productivity growth (to 5-6% per year), and that this was due to a shift in the production frontier rather than any catching up between regions.²¹ They argue that this is because privatisation and regulatory reform placed improved incentives on the entire industry, rather than any pressure on individual regions to improve their relative performance.

Burns and Weyman-Jones (1994) carried out a similar analysis for the electricity distribution industry in England and Wales. They found a wider diversity of performance among the 12 companies after privatisation (compared with the period before privatisation), but were unable to identify a statistically significant impact of privatisation on productivity growth. Two possible reasons for this outcome are the fact that the companies were privatised during an economic recession, and also Burns and Weyman-Jones argue that the initial price cap placed on the companies was extremely lenient (in part to allow for improvements in service quality).

In the case of telecommunications, Parker (1994) reports a substantial increase in BT's labour productivity growth, from an average of 3.8% per year in the five years before privatisation to an average of 6.9% per year in the ten years since privatisation. But he also found that average total factor productivity growth fell after privatisation, though this is consistent with the fact that most of the efficiency gains realised by BT have resulted from labour shedding.²²

IV.1.3. Labour costs

Anecdotal evidence exists of low wages paid by privatised firms, though these often involve services (such as refuse collection, cleaning and London bus routes) which are contracted out under a system of competitive tendering. The limited evidence about the privatised utilities is more mixed.

Haskel and Szymanski (1992) examined the impact of either privatisation or changed objectives on employment and wages in 14 firms or industries which were publicly owned in 1980.²³ They found that privatisation or changed objectives led to large-scale labour shedding as companies became more profit oriented. Those workers remaining with the firms have generally maintained their wages relative to comparable groups, but relative wages have fallen in cases where liberalisation has reduced the firm's market power.

Parker (1994) found that performance related pay had been introduced and union power had diminished since BT privatisation. Average wages increased at similar rates to those in the rest of the economy and in manufacturing, until 1992/3 when a shake-out of labour led to an increase in average wages.

IV.2. Prices

The prices charged by most of the privatised utilities and infrastructure providers are controlled by industry regulators, usually through a price cap formula ("RPI-X" or similar) which sets the maximum level of prices the firm is allowed to charge in each year. But some prices are excluded from price cap regulation (including energy prices for large customers, mobile phone and payphone charges, and BAA airport charges outside of South East England), mainly because these activities are subject to a greater degree of competition. Neither do price caps apply to firms competing with the privatised utilities, though clearly the regulated tariffs set a benchmark for the prices which competitors can charge.

Trends in prices (and service quality) for five privatised industries are recorded in NERA (1997). These are summarised in Figures 1 to 5 below, which show real price indices set equal to 100 in the year of privatisation. Points to note about these charts are that:²⁴

- the data shown in Figures 1, 2, 4 and 5 are industry averages, which therefore include the prices charged by both the privatised utilities and their competitors;²⁵
- each data series is a separate index, so the relative positions of the lines for domestic and industrial users in Figures 2, 4 and 5 do not indicate anything about the relative levels of charges for these customers;
- there is no series for telecommunications charges for business users. The impact of re-balancing of BT tariffs (see below) is likely to have resulted in larger real price reductions for business users than

for domestic users, therefore Figure 1 understates the overall fall in real telecommunications prices since privatisation;

- the data series for domestic energy users in Figures 2 and 5 exclude the impact of VAT on household fuel, which was introduced in 1994.

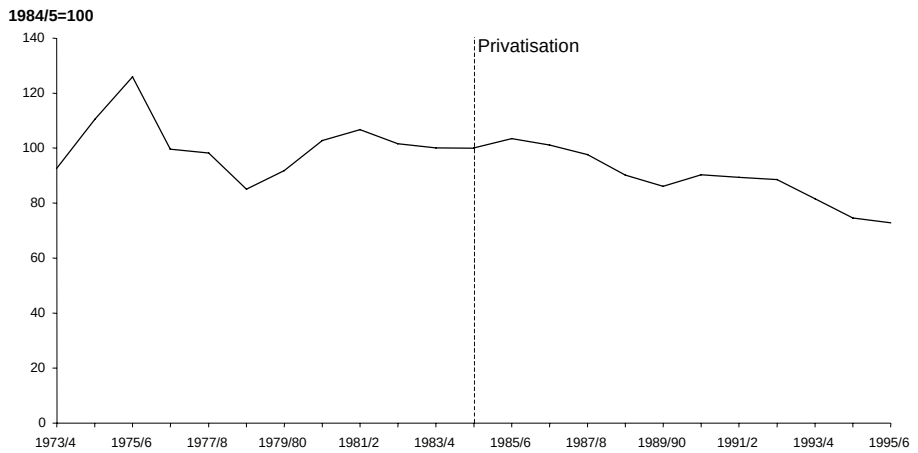
Figures 1 to 5 show that both domestic and industrial customers have generally benefited from real price reductions since privatisation. The only exception to this is the water industry, where prices rose by 37% in real terms between 1990 and 1994 in order to fund a major increase in investment. This investment was required partly to ensure future compliance with EU legislation on water quality, and also to address a shortfall in investment from the 1970s and 1980s which had left much of the industry's infrastructure in a poor condition.²⁶

Elsewhere, both telecommunications and gas users have benefited from real price reductions in most years since privatisation, whereas reductions in airport and electricity charges have been concentrated in the last two or three years of the period. Comparison with pre-privatisation price trends is difficult, mainly because of the volatility of the prices charged by nationalised industries, which is particularly marked in Figures 1 to 3. Nevertheless, the long term trends in telecommunications and gas prices are clearly more favourable after privatisation than before privatisation, while the reverse applies to water prices.

It is clear from Figures 1 to 5 that there has been a significant rebalancing between domestic and industrial tariffs over the last 15-20 years. In the period before privatisation, gas, electricity and water charges to domestic users rose faster (or fell more slowly) than those to industrial users. This trend has continued since privatisation in the gas industry, and initially in the electricity industry (though this appears to have been mostly corrected).²⁷ Though not shown on Figures 2 and 5, domestic consumers have also had to pay VAT on household fuel since 1994.

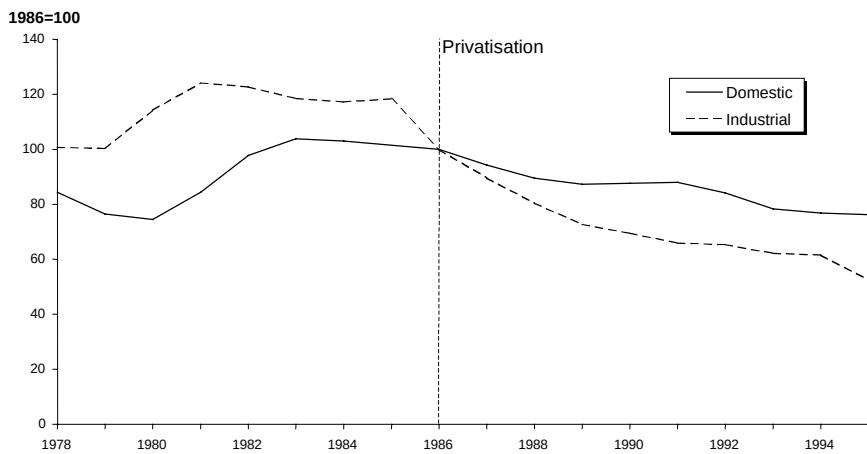
There has also been a significant re-balancing of telecommunications prices, reflecting both the impact of competition and the need to correct a large imbalance between exchange line costs and revenues (known as the "access deficit"). The real reduction shown in Figure 1 is the result of a much larger reduction in call charges, especially for long distance and international calls, combined with a real *increase* in BT's line rental charges. These trends are likely to have benefited business users, who often make more intensive use of exchange lines and tend to make more long distance calls than domestic users.

Figure 1: Real Domestic Telecommunications



Source: Office for National Statistics

Figure 2: Real Gas



Source: Department of Trade and Industry Energy Statistics

Figure 3: Real BAA Airport

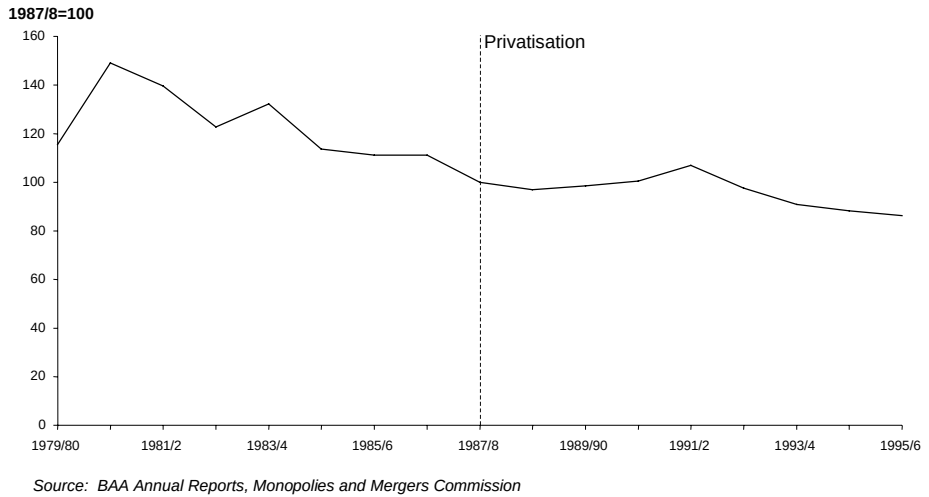
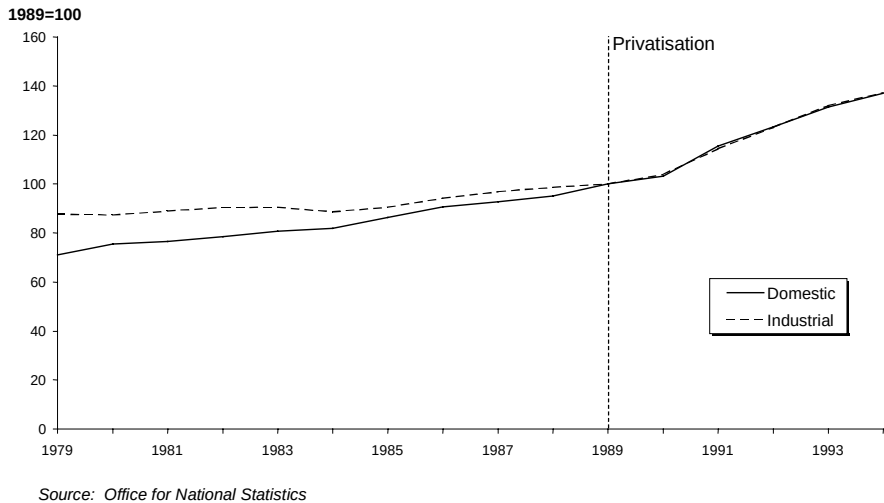
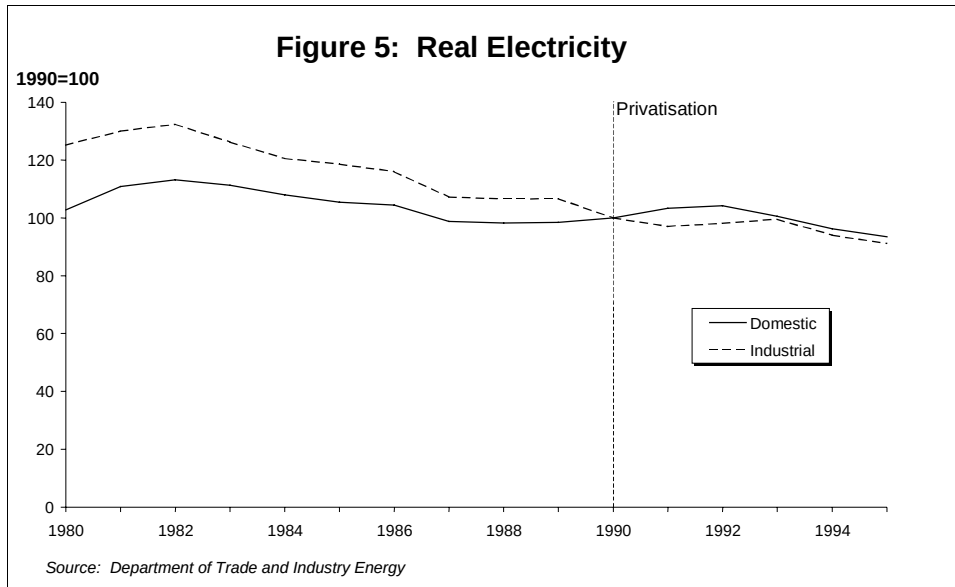


Figure 4: Real Water Prices





IV.3. Service quality

The regulatory frameworks established in the early privatisations (including those of British Telecom, British Gas and British Airports Authority) contained no explicit provision for regulating service quality, though it was recognised that price cap regulation created strong incentives for firms to achieve cost reductions, and that these might be achieved at the expense of poorer service quality (rather than through improved efficiency). Following criticisms of BT's quality of service by the National Consumers' Council in 1987, OFTEL has become increasingly involved (and remains so) in monitoring the performance of both BT and its competitors.

The regulatory frameworks established for later privatisations included provisions which allowed the regulators to collect and publish service quality data, to set minimum performance standards and to require companies to establish customer compensation schemes for cases where they fail to meet these standards. The telecommunications and gas regulators were given similar powers by the Competition and Service (Utilities) Act 1992.

Any attempt to assess the impact of privatisation on service quality is hampered by the relative paucity of data for the pre-privatisation period. The nationalised industries were essentially self regulating with respect to service quality, and there is very little systematic data available to compare with the post

privatisation period. Since privatisation, however, most of the utility regulators have collected a substantial amount of service quality data, and this is summarised in NERA (1997).

In general, these data indicate a sustained improvement in levels of service, especially in the telecommunications and water industries. The improvements achieved since privatisation by British Telecom include:

- a reduction in the percentage of call failures from 4.4% for national calls and 2% for local calls in 1984/5 to an average of 0.5% for all domestic calls in 1995/6;
- a significant improvement in the reliability of payphones. OFTEL intervened after finding that nearly a quarter of payphones were out of order in 1987. It now collects data on payphone serviceability, which showed that an average 96% of payphones were in working order during 1995/6;
- an increase in the proportion of residential orders completed in eight working days, from 59% in 1985/6 to 97% in 1995/6, and a significant increase in the proportion of faults cleared within two working days.

While BT's service quality improvements were accompanied by a significant real reduction in average telecommunications charges, the improvements achieved by the water industry were partly the result of the substantial increase in investment expenditure, funded by higher real charges as noted in Section IV.2. These improvements have included:

- an improvement in drinking water quality, as measured by the proportion of samples tested by the Drinking Water Inspectorate which comply with its prescribed concentrations or values, and also by a water quality index published by OFWAT;
- a marked improvement in river water quality, and an increase in the proportion of bathing areas complying with EC standards;
- a decrease in the proportion of the population at risk from water shortages, and a trend decrease in the incidence of hosepipe bans²⁸
- steady reductions in the proportion of properties at risk from either low water pressure or sewer flooding.

There are two main aspects of service quality in the electricity industry: the security and availability of supply; and standards of customer service (including activities such as responding to service requests, reading meters and handling complaints). Data on the security and availability of supply are generally

available for the period since 1985/6, therefore covering both before and after privatisation. There is little perceptible long run trend in these data, however, which are heavily influenced by bad weather conditions in particular years. Overall, it appears that the industry's performance has been at least maintained, and may have improved slightly.

In contrast, there is clear evidence of an improvement in customer service since the privatisation of the electricity supply industry. No data are available for the period before privatisation, but since privatisation the data show that the average performance of the regional electricity companies has improved significantly in each of the areas where OFFER has set service standards. The number of payments to customers made by companies for failing to meet service standards has also fallen dramatically, from 17 415 in 1991/2 to 3 795 in 1995/6.

Until recently, OFGAS collected relatively little information on British Gas' service quality, partly because of the existence of a separate consumer body, the Gas Consumers' Council. Following increasing concern about British Gas' quality of service, OFGAS and British Gas agreed (after several years of discussions) a set of 30 formal service standards, which were implemented in 1992 and extended the following year. British Gas' performance against these standards has improved in a number of key areas, but the volume of customer complaints (to both OFGAS and the Gas Consumers' Council) continued to rise between 1990 and 1995. In addition, in November 1995 British Gas voluntarily relinquished its Charter Mark, which had been awarded in 1993 for the delivery of high standards of public service.

Finally, the performance of British Airports Authority (BAA) is also difficult to assess. This is partly because the quality of service experienced by airport users depends on the performance of a number of different parties, including airlines, baggage handling firms and others not directly under BAA's control. Service quality is measured mainly through passenger surveys in relation to aspects such as cleanliness, comfort, helpfulness of staff and availability of trolleys. In general, the data show some improvement in overall service quality since 1986, especially at Heathrow and Glasgow and, since 1990/1, also at Stansted.

IV.4. Public sector finances

A conventional, if rather simple, view of privatisation is that the government receives sale proceeds in return for relinquishing its claim on the future profits of a company. In reality, of course, the relationship between privatisation and public sector finances is much more complex.

NERA (1996) examined this relationship for a sample of 31 privatised utilities and infrastructure providers,²⁹ and its findings are summarised in Table 2. Even before any of the companies were privatised, they were net contributors to public finances as interest payments on government debt and corporation tax payments more than cancelled out the amounts they received through external financing limits (EFLs) agreed with the Treasury. Collectively, the companies were also paying interest of more than £500 million on loans provided by parties other than the United Kingdom government.

At the time of privatisation, the government received proceeds from the sale of shares, which in some cases were staggered over a number of years. Where it retained some of the shares in the privatised company, the government continued to receive dividends on those shares, and also received corporation tax payments which in most cases increased significantly after privatisation (reflecting the companies' improved profitability). In some cases, moreover, companies were privatised while owing significant amounts of debt to the government, so the government continued to receive interest on and eventual repayment of these debts.

Table 2 shows that the privatisation process was associated with a substantial increase in government receipts in relation to these 31 companies. This reflected:

1. the sale of shares, which generated average proceeds of £3.2 billion a year (net of flotation costs) between 1984/5 and 1994/5;
2. annual corporation tax receipts of £2 billion or more since 1990/1, compared with an average of £135 million a year between 1979/80 and 1984/5;
3. interest receipts and debt repayments, which averaged £1 billion a year even before privatisation, but increased to £1.7 billion a year between 1986/7 and 1995/6;
4. average dividend receipts on the government's residual shareholdings of £285 million a year between 1985/6 and 1995/6.

The overall impact was an inflow to public sector finances which rose from an average of £1.5 billion a year between 1979/80 and 1985/6 to an average of £8.3 billion a year over the following nine years.

Table 2 also shows the net contribution of the private sector. In addition to purchasing shares, the private sector has continued to provide further finance to the privatised companies. These amounts have been increasingly offset by higher interest and dividend receipts, which reached £4-5 billion a year over the last few years of the period. Consequently, the private sector was a net recipient of funds from the 31 companies in 1994/5, for the first time since 1983/4.

Table 2
Financial Flows for 31 Privatised Utilities and Infrastructure Providers

Public Sector Flows ¹

(£ million)	Year ended 31 March	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
Net Privatisation Proceeds					44		1,255	1,246	2,726	2,355	2,244	450	4,690	6,400	6,002	4,497	3,336
Other Flows to Public Sector																	
External financing repayments ³	-449	-15	-451	301	154	-616	281	1,661	1,107	1,639	1,379	318	45				
Debt repayments and share redemptions				25		44	61	1,061	273	585	892	450	1,212	1,407	817	2,140	
Interest received on government debt	580	1,025	1,072	1,137	1,120	1,080	1,099	1,199	1,248	1,218	875	711	694	580	396	225	
Corporation tax received	22	20	180	212	238	137	391	929	1,521	1,551	1,321	1,996	2,043	2,711	1,977	2,614	
Dividends received	0	0			1	11	269	300	322	326	336	379	404	318	92	96	
Other														504	1	-0.4	
Total Other Flows	153	1,030	802	1,675	1,512	656	2,101	5,151	4,471	5,320	4,803	3,854	4,399	5,519	3,284	5,074	
Total Flows to Public Sector	153	1,030	802	1,720	1,512	1,911	3,347	7,877	6,826	7,564	5,253	8,544	10,799	11,521	7,780	8,410	

Private Sector Flows ²

(£ million)	Year ended 31 March	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
Share (and Debt) Purchases					-46		-1,409	-1,246	-2,901	-2,396	-2,244	-2,080	-4,937	-6,596	-6,506	-4,593	-3,393
Other Flows to Private Sector																	
External financing repayments ³				-25	10	108	-129	210	-892	-1,083	-1,767	-3,213	-2,536	-1,445	-1,530	-497	
Interest received	514	718	708	694	681	635	694	616	543	568	675	708	1,096	1,276	1,241	1,370	
Dividends received					1	2	212	247	552	684	789	1,325	2,107	2,537	2,849	3,774	
Total Other Flows	514	718	708	669	692	745	777	1,073	203	169	-303	-1,179	667	2,368	2,560	4,646	
Total Flows to Private Sector	514	718	708	623	692	-664	-469	-1,828	-2,194	-2,075	-2,383	-6,116	-5,929	-4,138	-2,033	1,254	

Source: NERA (1996)

(1) Cash flows from the companies to (the rest of) the public sector. Negative signs indicate that the companies were net recipients of public sector funds.

(2) Cash flows from the companies to (the rest of) the private sector. Negative signs indicate that the companies were net recipients of funds from the rest of the private sector.

(3) A negative entry indicates that the companies were net recipients of financing from either the public sector (this would be shown in government statistics as a positive EFL) or the private sector.

IV.5. Summary

While it is not possible to identify the "impact" of privatisation, the evidence set out above shows that the privatised utilities and infrastructure providers:

- increased labour productivity, and sometimes total factor productivity, at rates faster than those generally achieved before privatisation;
- offered real price reductions (except in the water industry, where higher charges were needed to fund significant quality improvements). In the telecommunications and gas industries in particular, prices have fallen at a faster rate than they did before privatisation;
- achieved sustained improvements in levels of service quality, especially in the telecommunications and water industries;
- provided very substantial contributions to public sector finances.

At the very least, a combination of privatisation, industry restructuring, regulation and liberalisation has allowed the companies to build upon the improvements achieved by better management of the nationalised industries in the early 1980s. In reality, it is hard to believe that these companies would have achieved these significant improvements had they remained in the public sector.

V. Conclusion

This paper has reviewed some of the available evidence on the performance of privatised utilities and infrastructure providers in the United Kingdom. It is not possible to identify a separate "privatisation" impact, both because privatisation was often accompanied by other significant regulatory, competitive or structural changes, and also because we can do little more than guess how these firms would have performed had they remained in the public sector. If we take a broad definition of privatisation, however, which also includes industry restructuring, liberalisation and regulation, then it seems very likely that privatisation has had a significant and largely beneficial impact.

Even though substantial improvements in the efficiency of the nationalised industries were achieved in the 1980s, including cases where privatisation was clearly not being considered by politicians at the time, it is difficult to believe that this momentum would have been sustained over a longer period,

particularly after initial inefficiencies had been removed and the achievement of further improvements would have required significant reductions in the workforce. More importantly, the introduction of competition, which has brought significant benefits to telecommunications users and industrial (and increasingly domestic) energy users, would have been more difficult to achieve if the dominant incumbent firms in these industries had remained in the public sector.

Improvements have been achieved even in the absence of competition. Strong regulation has achieved significant long term benefits for consumers. But regulation is only a substitute for competitive pressures, and mistakes have been made (and will continue to be made) from time to time. Considerable effort is therefore being devoted to the introduction of competition in electricity and gas supply markets.

Competition may be difficult to introduce into markets where the industry structure is not appropriate, for example because there is a vertically integrated monopolist. But once an industry has been privatised, then it is usually very much more difficult (if not impossible) to restructure that industry. If British Gas and British Telecom were privatised today, it seems likely that a very different approach would be taken to that adopted in the mid 1980s. Even in the electricity industry, which saw significant restructuring and the introduction of complex new trading arrangements before privatisation, the Regional Electricity Companies are having to ensure an arm's length relationship between their supply and distribution businesses in preparation for the full liberalisation of the supply market later this year.

So far, the introduction of competition has been largely controlled by the regulators. Competition has been prevented by legislative restrictions on market entry, or encouraged by constraints on incumbents (for example, limiting their opportunity to meet competition with regional or other targeted price reductions). There are important long run questions which have yet to be addressed, involving the sustainability of universal service obligations in a competitive environment, and whether there is a point beyond which the loss of scale and scope economies may outweigh the benefits of additional competition.

For the moment, however, the United Kingdom privatisation programme, along with associated structural, regulatory and competitive changes, seems to have had a significant and beneficial impact. And in the immediate future, consumers face the prospect of further price reductions as a result of competition, particularly in telecommunications and energy markets.

REFERENCES

- BISHOP, M and Green, M. (1995), "Privatisation and Recession - The Miracle Tested", Discussion Paper 10, Centre for the Study of Regulated Industries, London
- BISHOP, M and Thompson, D. J. (1992), "Regulatory Reform and Productivity Growth in the UK's Public Utilities", *Applied Economics*, Vol. 24, No 11 (November), p1181-1190
- BURNS, P and Weyman-Jones, T. G. (1994), "Regulatory Incentives, Privatisation, and Productivity Growth in UK Electricity Distribution", CRI Technical Paper No 1, Centre for the Study of Regulated Industries, London
- BUTTON, K. J. and Weyman-Jones, T. G. (1994), "Impacts of Privatisation Policy in Europe", *Contemporary Economic Policy*, Vol XII (October), p23-33
- HASKEL, J and Szymanski, S. (1992), "Privatisation and the Labour Market: Facts, Theory and Evidence" in Bishop, M, Kay, J A, Mayer, C P and Thompson, D J (eds.) (1992), *Privatisation and Regulation: The UK Experience*, 2nd edition, Oxford: Oxford University Press
- HASKEL, J and Szymanski, S. (1993), "The Effects of Privatisation, Restructuring and Competition on Productivity Growth in UK Public Corporations", Working Paper No 286, Department of Economics, Queen Mary and Westfield College, University of London
- NERA (1996), *The Performance of Privatised Industries. Volume 2: Finance*, London: Centre for Policy Studies
- NERA (1997), *The Performance of Privatised Industries. Volume 4: Prices and Service Quality*, London: Centre for Policy Studies

- OFTEL (1998), *Market Information Update: August 1998*, London: Office of Telecommunications
- PARKER, D. (1994), "A Decade of Privatisation: The Effect of Ownership Change and Competition on British Telecom", *British Review of Economic Issues*, Vol 16, No 40 (October), p87-113
- PARKER, D. and Martin, S. (1995), "The Impact of UK Privatisation on Labour and Total Factor Productivity", *Scottish Journal of Political Economy*, Vol 42, No 2 (May), p201-220
- PARKER, D and Martin, S. (1997), "Assessing the Impact of Privatisation on Company Efficiency", Occasional Paper 5, Centre for the Study for Regulated Industries, London
- WADDAMS Price, C. and Weyman-Jones, T. G. (1996), "Malmquist Indices of Productivity Change in the UK Gas Industry Before and After Privatisation", *Applied Economics*, Vol 28, No 1 (January), p29-39

NOTES

1. Rail infrastructure, which was privatised in May 1996, is excluded from this survey because of the limited amount of post privatisation experience.
2. The only exception is Kingston-upon-Hull, which was (and continues to be) served by a separate municipal telecommunications operator.
3. Formally, regulatory functions and duties are vested with an individual, the Director General of Telecommunications, who heads OFTEL. For simplicity, however, OFTEL is used interchangeably to refer to both the regulatory office and the individual. Similar comments apply to the Director General of Gas Supply and OFGAS, the Director General of Electricity Supply and OFFER, and the Director General of Water Services and OFWAT.
4. Unregulated charges include equipment rentals, calls from public telephone boxes, calls to mobile telephones and calls to "premium rate" services.
5. Interconnection is essential, as it allows customers of competing telecommunications operators to call each other. Clearly, large operators are likely to be net recipients of interconnection charges, as a high proportion of calls are likely to terminate with their customers, each requiring an interconnection payment.
6. Other markets were liberalised at an earlier stage. The supply of telecommunications apparatus (which accounted for 10-15% of BT's turnover at the time of privatisation) had been liberalised since 1981, and competing mobile telephone services were introduced in 1985 (though one of the two initial operators, Cellnet, is partly owned by BT).
7. Source: OFTEL (1998).
8. The MMC also made recommendations on the price formulae for both BG's transportation/storage business and its supply business.
9. This is in contrast to the MMC's role in other regulated industries, which is more like that of an appeals body.
10. This is known as the "single till" approach.

11. The older magnox reactors were excluded from this transaction, and remain in the public sector as Magnox Electric.
12. This is partly as a result of sales of National Power and Powergen capacity which, like the companies' voluntary price limits, were required to address concerns about their market power.
13. The MMC acknowledged that the mergers would have adverse impacts, but did not consider they were sufficiently serious to justify blocking the merger.
14. Scottish Power also owns a privatised water and sewerage company, Southern Water.
15. Take-overs and mergers between these companies have resulted in their number falling from 29 (at privatisation) to 18.
16. These functions were transferred first to the National Rivers Authority, and then to its successor body, the Environmental Agency.
17. The threat of bankruptcy is often added to this list, in contrast to the "soft budget constraint" placed on public sector firms. In reality, the threat of bankruptcy is quite a remote prospect for most privatised firms, particularly the regulated utilities.
18. The firms/industries were British Airports Authority, British Airways, British Coal, British Gas, British Rail, British Steel, British Telecom, the Electricity Supply Industry, London Regional Transport, the Post Office, the Regional Water Authorities and Scottish Transport Group.
19. The other firms in the same were British Aerospace, British Airways, British Steel, Britoil, Jaguar, National Freight Corporation and Rolls-Royce, all of which now operate in relatively competitive markets.
20. Making the same point in their earlier study (Parker and Martin, 1995), Parker and Martin refer specifically to "political intervention which postponed rationalisation".
21. Interpreting a similar earlier study by the same authors, Button and Weyman-Jones (1994) identified a once-off impact of privatisation and associated changes in the regulatory regime which was equivalent to a 2.3% annual increase in productivity. Of this, 0.5% was due to catching up between regions, and 1.8% was due to a shift in the whole production frontier.
22. The average number of BT employees fell slowly from 244 592 in 1983/4 to 237 400 in 1990/1, then dropped to 163 500 in 1993/4 (see Parker, 1994).
23. These were British Airports Authority, British Airways, British Coal, British Gas, British Rail, British Steel, British Telecom, Electricity Supply Industry, North of

Scotland Hydro-Electric Board, South of Scotland Hydro-Electric Board, London Regional Transport, Post Office (posts), Regional Water Authorities and Scottish Transport Group.

24. See NERA (1997) for more detailed information about the data series used.
25. The data for water prices, in particular, include prices charged by public sector suppliers in Scotland and Northern Ireland, and also by water supply companies which were already privately owned in 1989.
26. In the first five years after privatisation, the average annual capital expenditure of the privatised water companies was about £2.5 billion, compared with an average of £1.1 billion in the ten years before privatisation.
27. The movement of electricity charges immediately after privatisation reflects the liberalisation of supply to larger industrial and commercial users at a time when charges to smaller and domestic users were controlled by a rather lenient price cap.
28. The incidence of hosepipe bans fell between 1990/1 and 1994/5, but rose sharply as a result of serious drought conditions in 1995/6.
29. These were Associated British Ports, British Airports Authority, British Gas, British Telecom, the 17 privatised electricity companies in England, Wales and Scotland, and the 10 water and sewerage companies in England and Wales. The original study also included British Airways and British Steel, but the results from these companies have not been included in the totals shown in Table 2.

EVIDENCE FROM UTILITY AND INFRASTRUCTURE PRIVATISATION IN CHILE

by
Pablo Serra *

I. Summary

In Chile most telecom and electricity companies were privatised between 1985 and 1989. Prior to privatisation, new legislation opened all services to competition and established tariff regulation based on marginal-cost pricing in simulated efficient enterprises for services that were provided under insufficiently competitive conditions. Privatised companies have substantially improved their efficiency, but problems inherent to incentive regulation have prevented efficiency gains from being fully passed on to consumers. This situation has led to high rates of return in firms providing regulated services, with significant price reductions occurring only where competition has emerged. The Chilean experience shows how hard it is to achieve competition when a privatised public monopoly retains a large share of the market, especially when competition regulations are few and lax.

Privatisation came to a halt at the beginning of the 90s. The first democratically elected government after the military regime, which took office in 1990, did not have the privatisation of utilities as one of its priorities, and it was left to the subsequent administration to restart the privatisation process. Between 1994 and 1998 the majority of state-owned transportation companies were transferred to the private sector and electricity privatisation was completed; water companies are now also starting to be privatised. Since 1994, several construction projects in airports, highways and tunnels have been put out to tender, and the franchising of public ports is expected to start soon. There is not yet sufficient evidence to

* Pablo Serra is a professor at the Center for Applied Economics, Department of Industrial Engineering, University of Chile. This article builds on an earlier paper co-written with Eduardo Bitran (Bitran and Serra 1998), and has benefited from the able research assistantship of Daniel Hojman.

make an assessment of this process; however, the initial projects have suffered from the “so-called” winner’s curse.

II. Introduction

The military government (1973-1990) carried out three rounds of privatisation. Between 1974 and 1979 the government privatised all enterprises that had been nationalised or simply confiscated by the socialist government (1970-73), except for the utilities. However, many of the privatised firms fell back into government hands during the severe economic crisis of 1982, as either their owners were unable to continue servicing the debt they had acquired when buying these enterprises, or the government decided they were too important to go bankrupt. In the second wave of privatisation (1984-1985) these firms were re-privatised. The third round, which took place between 1985 and 1989, focused on the so-called traditional public enterprises, *i.e.* companies set up by the State itself along with utilities that had been nationalised by the previous government (Bitran and Saéz, 1994). According to government figures, total proceeds from the sale of shares in such enterprises between 1985 and 1989 amounted to US\$ 2 571 million, at December 1995 prices (see Table 1).

The first government elected after the military regime (1990-1994) virtually stopped the privatisation process. In 1990 it sold minority shareholdings worth US\$ 42.3 million in utilities that were already under private control¹, and between 1991 and 1993 it sold 48% of the *Zona Franca de Iquique* tax-free zone for US\$ 32.2 million, as well as its remaining 27% holding in the national airline. The second elected government, which took office in 1994, gave a new impetus to the privatisation process. Between 1994 and 1998 transfers to the private sector included a shipping company, two railways in the northern part of the country, the freight railroad in the central zone and a mining company. In addition, privatisation of the electric sector was nearly completed. Total revenue from privatisation amounted to US\$ 1 073 million up to December 1995 (Table 2). The government is currently preparing privatisation of the water sector, which will start by the end of 1998. Since the authorities were not totally satisfied with the way the regulation of privatised utilities was working, they strengthened the regulatory framework for the sector before privatising, with legislation setting a lower limit of 35% on the State’s participation in water companies once privatised. This limit will be phased out, however, as the government will not participate in capital expansions.

Table 1 Privatisation Of Chilean Public Enterprises 1984-1989
(US\$ Millions 31/12/95)

Company/Year	1985	1986	1987	1988	1989	Total
Electric Firms	16.4	124.3	393	632.5	77.9	1244.1
Telecom Firms	0.9	55.6	35.5	344	192.1	628.1
Soquimich	4.7	85.4	71.5	60.9	0.0	223.4
Cap	12.1	3.7	53.2	0.0	0.0	68.9
Cap (Ret.Capital)	0.0	135.8	0.0	0.0	0.0	135.8
Copec	25.3	0.0	0.0	0.0	0.0	25.3
Ecom	3.2	0.2	0.0	0.0	2.8	6.2
Iansa	0.0	8.8	1.0	50.8	8.0	68.6
Labchile	0.0	2.8	3.8	18.1	3.1	27.8
Schwager	0.0	0.0	6.1	2.2	7.0	15.3
Enaex	0.0	13.4	0.0	0.0	0.0	13.4
Isegen	0.0	0.0	0.0	0.0	5.6	5.6
Lanchile	0.0	0.0	0.0	7.0	75.9	82.9
Chilefilms	0.0	0.0	0.0	4.5	0.0	4.5
Soc.Chil.Litio	0.0	0.0	0.0	0.0	13.0	13.0
Isevida	0.0	0.0	0.0	0.0	8.8	8.8
Total	62.5	430.0	564.1	1 119.9	394.3	2 571.7

Source: CORFO annual reports

The Government has been looking at ways of expanding the role of the private sector in the economy. In 1992 a new concession law was passed allowing the private sector to finance, construct and operate highway and airport projects. Since 1994, several construction projects in airports, inter-urban highways and tunnels have been auctioned through build-operate-and-transfer concessions amounting to over US\$ 3.3 billion. In 1997, a law was passed permitting the franchising of public ports, and the bidding process is expected to start during the first half of 1999. At the same time, four private ports have been developed in the central-southern zone of the country for general freight (Ventanas, Lirquén, Coronel and Corral), in competition with state-owned ports and half a dozen privately owned specialised ports.

The main force behind privatisation during the military regime was its preference for a small State. There was widespread dissatisfaction with the performance of the economy before 1970, and the economic advisors to the military government attributed the low growth rates of the previous decades to the State's involvement in all areas of the economy; most economists were critical of the entrepreneurial role of the State. The inefficient operation of state-owned enterprises had resulted in significant losses. Political meddling usually led to significant labour

rigidities: it was almost impossible to dismiss low-performance workers, especially if they were political appointees. It was also difficult for state-owned utilities (SOU) to suspend services to customers who did not pay their bills, or penalise the theft of services.

Table 2 Privatisation Of Chilean Enterprises 1994-1996
(US\$ Millions 31/12/95)

Company\Year	1994	1995	1996	Total	% Sold	Purchasers	Procedure
Electric Companies							
Colbun S.A.	65.1		340.0	405.1	46	Iberdrola and Others	Public tender
Edelnor S.A.	86.4			86.4	30	South Electric Chile	Public tender
Tocopilla S.A. (**)			175.0	175.0	51	Iberdrola and Others	Public tender
Water Companies							
Essal-Valdivia	10.5			10.51	100	Aguas Decima S.A.	Public tender
Transportation Companies	40.8	4.5	12.0	57.3			
Mining Companies							
Minsal S.A.		7.4		7.4	18	Soquimich	Stock exchange
El Abra (**)	329.8			329.8	51	Cyprus	Public tender
Other							
Radio Nacional		1.8		1.8	99	Santiago Agliati	Public tender
Total	532.6	13.7	527.0	1 073.8			

Source: CORFO Company Management, Corfo Annual Reports.

Utility privatisation was conducted through three mechanisms. The first was the auctioning of whole companies or controlling shares packages to the highest bidder. The second mechanism was the sale of non-controlling shareholdings on the stock market, and the third involved the direct sale of stock to the workers of privatised companies, public employees, and small investors – so-called labour

and popular capitalism. Workers and public employees were able to finance the purchase of shares with the advance payment of severance benefits and loans from public institutions at subsidised interest rates². Private pension funds, which started operating in 1981, actively participated in the privatisation process through the acquisition of share packages on the stock market. Privatisation was also carried out through a mechanism that involved giving shares in return for the financial deposits users had to make to connect to public utilities (Bitran and Sáez, 1994).

Why were public utilities privatised last, and why are water and sanitation companies still state-owned? There are three reasons for this. Firstly, the military government saw these industries as strategic – particularly telecommunications. Secondly, it was afraid that their privatisation would generate opposition from workers and the public in general³. Thirdly, the privatisation of utilities, which had traditionally been considered natural monopolies, raised certain economic and social issues, for which a new regulatory legislation had to be introduced and the regulatory institutional capacity developed prior to privatisation. The new legislation establishes total separation between the regulatory function and service operations. Previously, regulation, operations and to some extent policy-making were all in the hands of the SOUs. Accordingly, for each utility a regulatory body was created, which in general terms is responsible for granting licenses, calculating charges for services provided under insufficiently competitive conditions and monitoring service quality. More recently, the regulatory bodies and the anti-trust institutions have been working on the design and enforcement of competition regulations. The antitrust system had been modified in 1973, with the introduction of new legislation. Decree Law 211 (1973) classifies as an infraction any action that tends to impede free competition. The Decree established three agencies in charge of defending and promoting free competition: the two Antitrust Commissions known as the Preventive Commission (*Comisión Preventiva*) and the Resolutive Commission (*Comisión Resolutiva*); and the National Economic Prosecutor's Office (*Fiscalía Nacional Económica*). The President of the Republic appoints the National Economic Prosecutor, or Fiscal. Each of the two antitrust commissions has five members, who hold unpaid office for a two-year term.

What have been the effects of privatisation? In the first place, privatised utilities have significantly expanded their services. Telephone density increased from 4.7 in 1987, the year before privatisation of the main local phone company, to 20 in 1997, with the waiting list for local phones being cut from 232 000 to 97 000 over the same period⁴. Outgoing international calls, which in 1987 amounted to approximately 21 million minutes, had grown to 300 million minutes by 1997, while the mobile telephone system, which began operations in 1988, could claim about 650 000 subscribers by mid-1998. Domestic electric power generation increased from 7 420 GWh in 1987 to 13 325 GWh by 1997.

This rapid expansion of privatised utilities can be explained by the relaxation of financial constraints faced by public enterprises; fast economic growth—a doubling of GDP between 1988 and 1997—to which privatisation itself has contributed; and a comparatively stable and impartial regime of contract law for privatised utilities (Levy and Spiller, 1994). Regulatory systems that grant too much discretion to regulators may not generate the high levels of investment and welfare expected from privatisation, as private utilities would invest less than the optimal amount in order to reduce their exposure to administrative expropriation. On the basis of the 1980 Constitution, decisions and rulemaking by regulators are subject to judicial review. Such arrangements are credible because the country has enjoyed a long tradition of judicial independence in these matters⁵.

Another positive effect of privatisation has been a substantial increase in the productivity of privatised utilities. The largest electricity distribution company managed to cut energy losses from 19.8% to 8.3% and raised the number of clients per worker from 376 to 703 between 1987 and 1997, while in the largest generating company, GWh generated per worker went up from 2.2 in 1989 to 7.9 in 1997. The privatisation of telecom firms has also led to substantial improvements in their internal efficiency, as exemplified by the number of phone lines per worker in the largest telecom company which rose from 74 to 347 between 1987 and 1997. Thus, privatisation has led to a tremendous labour productivity increase, explained partly by the outsourcing of certain activities.

Private-sector managerial capacity and technological advances, especially in telecommunications, explain labour productivity gains. The isolation of public services from political pressures has also helped to improve performance indicators. Last, but not least important, is the setting up of a regulatory system that encourages efficiency (Levy and Spiller, 1994). The Chilean price-setting system attempts to correct the main problems of the rate-of-return approach, by explicitly separating prices from firms' actual costs. The legislation defines rate-setting schemes based on marginal-cost pricing in simulated efficient enterprises. The new legislation attempts to provide incentives to promote efficiency, by separating rates from firms' actual costs⁶.

After two rate reviews, the prices of regulated services do not reflect the huge productivity gains that have been achieved since privatisation, charges have fallen dramatically only in those sectors where competition has emerged. Regulated local phone rates have risen by about 16% since privatisation, whereas prices on long-distance phone calls have fallen by over 50% since deregulation in 1994⁷. Moreover, the arrival of new mobile phone operators with the introduction of the PCS system in March 1998 cut charges by about a half. In the central zone the price of electrical energy, which is supplied by various generators, has fallen by 37.4% from US\$ 4.65 per kWh in April 1988

to US¢ 2.91 per kWh in April 1997 in constant April 1997 dollars. In the same period the regulated distribution price has come down by only 11.4%, from US¢ 14.73 per kWh US¢ 12.16 per kWh, despite the fact that the generation price accounts for about 50% of total cost.

Table 3. Rate of Return on Equity in the Largest Firm Providing each Service: 1987 and 1997

Industry \ Year	1987	1997
Electricity		
Distribution (regulated)	10.4%	35.0%
Generation (competitive)	5.2%	9.9%
Telephony		
Local fixed (regulated)	14.5%	19.1%
Long distance (competitive)	35.8%	4.9%

Source: Compiled by the author from companies' annual reports.

This situation has led to significant increases in the profits of firms in electricity distribution and local telephone services. Table 3 shows the rates of return on equity (ROR) of the largest firm providing each service in 1987 and 1997. The ROR of the biggest electricity distribution company goes up from 10.4% to 35% during this period, and that of local fixed telephony increases from 14.5% to 19.1%. Moreover, firms providing regulated services report much higher RORs than firms providing unregulated services in the same sector. This situation is striking when one considers that there are fewer risks in the regulated segments because they are monopolies. In 1997 the largest generating company achieved an ROR of 9.9%, while for the largest long-distance carrier the figure was 4.9%.

These results are no different from those reported for other countries resorting to incentive-based regulation, although most countries have opted for price capping rather than efficient-firm pricing⁸. Kridel, Sappington and Weisman (1996) review recent empirical studies of the performance of incentive regulation in the U.S. telecommunications industry. They conclude that "studies provide evidence that productivity, infrastructure investment, profit levels, telephone penetration, and new service offerings have increased under incentive regulation. Service rates have generally remained stable or decreased slightly, and service quality does not appear to have been affected adversely." Helm (1994), referring to the United Kingdom, states that "returns to shareholders have greatly exceeded the cost of capital, and exceeded those in other countries"

utility sectors. Shareholders have done much better than under rate-of-return regulation.”

Rate setting based on simulated efficient enterprises requires considerable judgement, and the regulatory process is increasingly becoming a bargaining process (Bitran and Serra, 1994). The Chilean regulatory agencies do not seem to be well prepared to deal with this: they have technical and other disadvantages with respect to the regulated firms. Moreover, privatised utilities have acquired significant political and social leverage and exert enormous influence in defining the efficient firm. Recent rate-setting episodes have also made explicit the problem of information asymmetry: regulators have had serious difficulties in gathering precise cost data from utilities. Even efficient-firm regulation requires actual data from firms, as costs depend, among other things, on customer density and traffic per line. It is therefore difficult for regulators to build a credible efficient-firm, when they do not have full access to companies’ data. However, the concept of the model firm has had the virtue of creating a framework around which to conduct negotiations.

The difficulties surrounding regulation ought to generate special concern for creating conditions that lead to competition, especially in Chile where competition is seen as the principal mechanism for disciplining privatised utilities. In fact, there are many legal provisions, which demonstrate the reliance of lawmakers on market forces. For instance, every five years the Resolutive Commission has to review which telecom prices need to be regulated. The regulated price of electrical energy for small customers has to be kept inside a band, centred on the average price of contracts freely negotiated with large customers. The legislation establishes objective and non-discriminatory guidelines for granting licenses and concessions, and licenses are non-exclusive even in price-regulated sectors (water distribution being the exception). The number of operators can be limited only for technical reasons (*e.g.* mobile telephony), in which case licenses have to be publicly auctioned.

However, the Chilean experience shows how hard it is to achieve competition when a privatised public monopoly retains a large market share. Unfortunately, the privatisation of Chilean infrastructure that took place in the 1980s perpetuated market structures that have little economic justification. Although the electricity sector was restructured prior to its privatisation, the dominant generating company in the central interconnected grid system kept ownership of the transmission grid and, most importantly, the majority of water rights for new hydroelectric projects. The telecom sector was not restructured before privatisation, and the local phone company was privatised owning about 95% of all phone lines, and an ambiguous regulatory framework gave the incumbent long-distance telephone company a legal monopoly for five years. This disregard for market-structure issues is probably explained by a lack of

experience in privatising public utilities in a country that pioneered privatisation in Latin America, as well as the need to attract foreign investors, the small size of the domestic market, and excess confidence in market development.

Excessive confidence in market development also led to few and lax competition regulations. As pointed out by Spiller and Cardilli (1998), probably the most important influence on competition in telecommunications is the enforcement of interconnection rights. Without them, the dominant firm can use the advantages resulting from network externalities to eliminate competitors. The 1982 Telecommunications Act required public service providers to interconnect their operations, but left it to them to decide the terms under which interconnection would take place. Small local phone companies encountered many difficulties in negotiating the interconnection charges with the incumbent monopoly which delayed reaching an agreement for as long as possible. Furthermore, regulators frequently lacked the resources to enforce the technical conditions of connections. The incumbent telecom monopoly has also exerted market power through its commercial policy.

Creating efficient, competitive power markets in an electricity industry composed of a transmission system, interconnecting generators, distributors and large customers requires the existence of an agency with the authority to define, impose and enforce rules for the operation of all companies so interconnected (Stalon, 1997). In Chile, the legislation defines a coordination committee (NEC) drawn from all major generating companies. However, constant disputes inside the committee paralyse the coordination process when it is most needed, such as during the severe drought that is currently affecting the country. Between 1994 and 1997 the Economics Ministry had to resolve 20 disputes arising within the NEC. Another aspect that hinders competition is the fact that the transmission firm is owned by the dominant generation company. The legislation establishes that the generation companies and the transmission firm have to negotiate transmission fees, with lack of agreement leading to a mandatory arbitration process. However, this process tends to be lengthy, onerous, and has uncertain results. Other generating companies have complained that the transmission company favours its parent firm.

However, since 1994, the number and strength of competition regulations has increased due to the difficulties encountered by new entrants. Since 1994 all charges and tariffs for services provided between public-service telecom companies, through interconnections, have been regulated. A new by-law in the electric sector that will come in force in December 1998, gives both the government and the Economic Load Dispatch Centre (ELDC) a greater role in determining the transmission and distribution charges paid by generators in the electricity sector, and also sets guidelines for computing these rates. In order to reduce conflicts between generators, the by-law establishes that the coordinating

committee should draw upon independent experts to obtain an opinion on the differences that frequently arise among its members.

Helm (1994) writes about the United Kingdom, “a process of managed competition has emerged, necessitating significant regulatory intervention. In most utilities this has extended to the deliberate reduction in the market share of incumbents, as well as the determination by regulators of transmission prices, grid and network codes, and divestment undertakings.” The Chilean situation is not different. In fact, over the last five years Chile’s antitrust institutions, especially the National Economic Prosecutor, have also become more active in promoting competition and curbing major market power abuses by incumbent monopolies. However, lack of resources and disagreement about the scope of antitrust legislation has limited their role. The Chilean antitrust law (Decree-Law 211, 1973) is very vague. It only states that “anyone executing any act or convention tending to impede the free-competition within the country shall be punished with petty imprisonment in any of its degrees.”

Some constitutional lawyers claim that the law only authorises the antitrust institutions to penalise conducts, but not to establish market regulations such as forbidding mergers. Moreover, they argue that any vertical or horizontal restriction impinges on property rights. Studying the Chilean jurisprudence does not provide a definitive answer either. For instance, in this case the Resolutive Commission wrote that “Antitrust legislation does not sanction or prohibit the existence of firms which occupy a dominant position in a given market, but only punishes acts and conduct that constitute an abuse of such dominant position.” In other cases, it has taken the opposite stand. For instance, Telefónica de España had a relevant participation in the two largest telecom companies. The Resolutive Commission upheld a Preventive Commission’s decision asking Telefónica to sell its stake in one of the two companies. Great Britain has had similar experiences.

The rest of this paper is organised as follows. Section III analyses the electricity sector, and the next section deals with telecommunications. Section V relates to the transport sector. Finally, Section VI draws some lessons from the Chilean experience of infrastructure privatisation and regulation.

III. The Electrical Power Industry

III.1 The Privatisation Process

The two largest State-owned electricity companies (Endesa and Chilectra) were restructured prior to privatisation, with distribution being separated from generation. ENDESA, the largest company, was divided into 14 smaller units,

eight of which are located in the central grid – five generators Endesa, Colbún, Pehuenche, Pilmaiquen (35MW) and Pullinque (49MW); and three distribution companies: Emelat (50 000 clients), Emec (143 000) and Emel (122 000). Four other companies are in the northern grid – a generator, Edelnor and three distribution companies (Emelari, Eliqsa and Elecda, totalling 180 000 clients)– and there are two isolated small companies combining generation and distribution in the southern part of the country (Edelaysen and Edelmag). Endesa was privatised jointly with the transmission system of the Central Interconnected System (SIC), the largest in the country. Chilectra was split into three companies – a generator company, Chilgener and two distribution companies, Chilmetro, which later become Chilectra, with 1 064 000 clients and Chilquinta with 322 000 clients.⁹

Most of the privatisation process took place between 1986 and 1990¹⁰ – only four electricity companies were State-owned by 1990, three of which have been privatised since then (Colbún, Edelnor and Electroandina). Edelaysen is to be sold in November 1998 by public auction. Some of the smaller companies were also sold through public auctions: Pilmaiquen, Emec and Emel in 1986, and Pullinque and Emelat in 1987. In the other cases, privatisation was done mainly through two mechanisms: the periodic auction of packages of shares on the stock market and the direct sale of shares to the company employees (labour capitalism), public employees and small investors (popular capitalism).

The privatisation of Chilectra, Chilquinta and Chilgener began in the second half of 1985. By August 1987, Chilectra and Chilquinta were fully privatised, and the privatisation of Chilgener, was completed in January 1988. In July 1987 the privatisation of Endesa was initiated. Private ownership of Endesa rose gradually from 30% in December 1986 to 72% three years later. Private investors took control of Edelmag during 1988 and of Elecda, Emelari and Eliqsa in 1989, although privatisation was only completed in 1990. Edelnor was privatised between 1991 and 1994, and now Southern Electric owns a 67% share of the stock. In 1995 a consortium formed by Tractabel (Belgium), Iberdrola (Spain) and Enagas (Chile) made a successful bid for the control of Tocopilla, later known as Electroandina, a thermal power plant located in the northern grid and owned by Codelco, the State-owned copper mining company. In 1996 a consortium formed by Tractabel and the Chilean Matte Group paid US\$ 341 million for a 37.5% stake in Colbún¹¹. The consortium has an option to buy a further 12.5% over the next three years. Prior to the sale, just over 15% of Colbún shares were being traded on the stock market. In December 1997 the government auctioned shares on the stock market corresponding to 4.65% of the equity of Colbún, collecting US\$ 27.8 million.

Table 4 **Privatisation Of Electricity Companies 1985-1989**
(US\$ Millions 31/12/95)

Company/Year	1985	1986	1987	1988	1989	Total
Distribution						
Chilmetro	10	36	83.3	0	0	129.3
Chilquinta	2.4	11.1	18.7	0	0	32.2
Emec	0	6	7.5	0	0	13.5
Emel	0	7.9	0	0	0	7.9
Emelat	0	0	9.7	0.9	0	10.6
Emelari	0	0	0	0	3.1	3.1
Eliqsa	0	0	0	0	4.8	4.8
Elecda	0	0	0	0	6.1	6.1
Generation						
Endesa	0	0	180.0	585.4	63.8	829.2
Pullinque	0	0	62	0	0	62
Chilgener	4	22.2	31.8	33.8	0	91.8
Pilmaiquen	0	41.1	0	0	0	41.1
Pehuenche	0	0	0	7.6	0	7.6
Integrated						
Edelmag	0	0	0	4.8	0.1	4.9
Total	16.4	124.3	393	632.5	77.9	1244.1

Source: CORFO Annual Reports.

III.2 Public policy

III.2.1 The regulatory framework

In 1978 the National Energy Commission (NEC) was established. This is managed by a board of directors composed of six or seven Ministers, and has an executive secretariat, technical staff and funds, albeit limited, to recruit advisors. The NEC proposes policies to be implemented through laws and by-laws, computes the regulated rates, and develops medium- and long-term guidelines for the sector. The Minister of Economics signs the decree setting the

regulated charges and grants licenses. The final government player in this sector is the Superintendence of Electricity and Fuels, which was set up in 1985 as an administrative branch of the Economics Ministry. It supervises compliance with the law and regulations, monitors service quality, grants temporary licenses, and deals with users' complaints.

The electricity sector legislation dates from 1982. It establishes that firms can operate without a license, although licenses provide rights of way and the right to install lines on public property. Licenses are granted for an indefinite period, but they can be withdrawn when service quality falls below the legal standard. The legislation distinguishes three separate segments in the electrical sector: power generation, transmission and distribution. Public-service distributors are obliged to provide the service within their license zones (although zones are non-exclusive), and licensed generators and transmission firms are required to interconnect their installations when the authority so requests.

All licensed generating and transmission companies operating an electricity system are obliged to co-ordinate their activities through an Economic Load Dispatch Centre (ELDC)¹². Decisions are taken unanimously inside the ELDC, and the Minister of Economics arbitrates disagreements, subject to a prior report from the NEC. The specific objectives of the ELDC are to achieve the minimum operating cost for the system as a whole, guarantee the right of generators to sell energy at any point in the system and ensure the safety of the service. Its responsibilities include planning the daily operation of the system (actual dispatch is handled by the transmission company), coordinating power-plant maintenance and computing instantaneous marginal costs. All power plants have to make themselves available, unless they are shut down for maintenance, and are programmed on a merit basis according to production costs. Programming daily production independently of existing supply contracts gives rise to energy transfers between generators, and these are priced at the marginal energy cost.

The regulatory system for the power industry makes a sharp distinction between large and small customers. Large customers, defined as those with power demand in excess of 2MW, negotiate their supply conditions directly with generators. Most resort to open bidding for long-term contracts. Such contracts represent about 40% of total consumption. In contrast, the rate for small customers is highly regulated, has two components: the node price –at which distribution companies buy energy from generators– and a value-added charge, which pays for the services provided by the distribution company.

This distribution charge is recalculated every four years for each typical area, through a procedure that consists of determining the operating costs of an efficient firm and setting rates so as to provide a 10% real return on investment. The distribution charge is obtained as a weighted average of estimates made by

consultants hired by the industry and by the NEC, respectively, where the weight of the NEC estimate is two thirds. These rates are then applied to existing companies so as to ensure that the industry average return on the replacement value of assets (RVA) does not exceed 14% or fall below 6%. If the actual industry average rate of return falls outside this range, rates are adjusted to the nearest bound. This rate of return is computed using the operating costs and the RVA informed by the Superintendence. Disagreements on the RVA lead to a process of arbitration by three experts.

The most recent rate-setting process for electricity distribution was interrupted when three distribution companies filed suits in the Law Courts, and this delayed the new rates coming into force from October 1996 until mid-1997. To prevent consumers suffering from these delays, Congress passed a law in early 1997 requiring distributors to compensate consumers for the difference in rates during the period from the date on which the new rates should have come into force and the date when they in fact did so.

The node price, for its part, has two components: the energy rate (node price) and the peak power rate. In order to provide more stable energy prices for small consumers, rates are computed every six months as an average of expected short-run marginal costs for the following 48 months in the Central Interconnected System (SIC) and 24 months in the Northern Interconnected System (SING). Node prices are computed by the NEC taking into consideration forecast future demand, the price of oil and coal, the level at the Laja reservoir, and the indicative plan prepared by the NEC. The peak power price is calculated as the annual cost of increasing power levels during peak hours using the most economic power plants. This is then increased to take into account the reserve margin in the electricity system. A provision in the law states that the node price for regulated customers has to be kept within a band centred on the average of prices freely negotiated with large customers. The width of the band is 10% below and 10% above the average price of contracts negotiated between generators and large customers. However, the situation has evolved in an unexpected way: most freely negotiated contracts have been set around the regulated price. In fact, they have tended to specify a price equal to the regulated rate plus or minus a given percentage.

Distributors need to have contracts just as large clients do. Thus every customer is covered by a contract. Members of the ELDC are entitled to make direct supply contracts with clients for amounts up to their available reliable capacity¹³. Any shortfall has to be purchased from other members at the marginal cost of peak power. The availability of thermoelectric plants is computed considering their average maintenance periods, while reliable capacity at hydroelectric plants is calculated by discarding the 10% driest years in the historical rainfall series and taking their generation in the worst remaining year. Power generation in the SIC is

mainly hydroelectric,¹⁴ which makes hydrology a main source of uncertainty. Chilean law considers the possibility of an energy shortage and mandates equiproportional cuts for all regulated clients. However, the utilities have to compensate their customers for each unit of energy that they reduce below normal consumption during an energy shortage. This compensation equals the net marginal outage cost, so when energy shortages occur, generators have incentives to mitigate it as far as possible. Moreover, when computing the node price for a state of nature in which an energy shortage is anticipated, the corresponding marginal cost equals the gross marginal outage cost.

It has been shown elsewhere (Serra, 1997) that Chile's energy pricing system is basically equivalent to spot pricing. However, this conclusion involves certain assumptions that need to be tested empirically, the first of which is that generators are risk-neutral. In contrast to spot pricing, the Chilean pricing system transfers all risks to generators. The second assumption is that the outage cost is correctly computed, and this depends, among other things, on the rationing strategy used. For instance, the current estimation of the outage cost assumes that customers themselves reduce their consumption, *i.e.* there are no energy cuts (Serra and Fierro, 1997). If the outage cost were underestimated, the reliability of the system (and the rate) would be less than optimal. The third assumption, and the most relevant, is that the probability distribution function for hydrology is known.

In computing the node price, it is assumed that the hydrologies from a 40-year series ending in 1981 have an equal probability of occurrence in the coming years. Clearly this is not the case: a particular year may be much drier than the driest year in the series considered for computing the node price, or much wetter than rainiest year. The implications of extremely dry years and of extremely wet years are not symmetric. In the first case, the marginal cost of generation may be many times higher than the node price (the outage cost in case of rationing), while in an extremely wet year the marginal price can only fall to zero. Probably for this reason, the regulatory framework establishes that generators have to respond to their clients in hydrology conditions similar to those of the driest year considered in computing the node price, although this seems to favour generators. Unfortunately, the legislation is not clear about the practical meaning of this provision.

Finally, we now discuss transmission charges. Generators pay the marginal transmission cost and a fixed basic charge. Given the existence of scale-economies in the construction of transmission lines, marginal costs do not fully cover total transmission costs. The difference between total costs and the revenue collected through marginal cost pricing, called the basic charge, is allocated among generators. Thus it has to be decided what lines each generator and how to assign the basic charge for a line among the generators using it. The

legislation only states that the basic charge has to be negotiated between the owner of the transmission grid and the generator, and that absence of agreement leads to a compulsory arbitration process. Different arbitration processes have resulted in dissimilar criteria. However, normally the transmission lines assigned to a power plant are those whose flows change when generation in the plant is marginally increased. The allocation of the basic charge is usually a function of the maximum flow transported by generators either during the day or peak hours. Such criteria have no economic basis, particularly assigning the whole transmission cost to generators.

III.2.2 Subsidies

Electricity coverage is almost 100% in urban areas, so government support has targeted rural zones. Subsidies finance self-generation projects, together with projects to extend the distribution network, and the aim is to achieve 100% electrification coverage among rural homes by 2005. For this purpose, resources have been raised substantially as from 1995, when a new fund specifically earmarked for subsidising rural electrification projects was established. Previously, such projects were financed through the general regional development fund. In the last three years (1995-1997) 55 603 rural homes have been electrified, thereby increasing rural coverage from 57% to 67%. At the end of 1997 there were still 173 828 rural homes without electricity. This Programme is administered by the Under-Secretariat for Regional Development in the Interior Ministry, with technical support from the NEC. It has had a yearly budget of approximately US\$ 24 million between 1995 and 1997.

Interested parties have to fill out an application in the municipality where they live to take the initial step in the subsidy process. The municipality in turn requests a technical project to be drawn up by the distribution company. In light of this information the regional government computes both the private and the social net present value of the project. The government subsidy is up to a maximum equal to the negative private net present value of the project. However, both the beneficiaries and the distribution companies are expected to contribute to its financing. In fact, the regional government ranks projects according to the social return they generate per peso of subsidy requested. The central government allocates funds to regional governments taking into consideration aspects such as the regional electrification deficit and participation in the fund in previous years, thereby establishing a sort of competition between regions.

III.3 Market Structure and Entry Barriers

In 1997 the Central Interconnected System (SIC) generated 23 960 GWh, representing about 78.0% of total power generation in the public system, and the Northern Interconnected System (SING) generated 6 622 GWh, or 21.5% of the total. The remaining 0.5% was produced by two small integrated companies located in the southern part of the country. In each system there are a few generation and distribution companies plus the grid companies. Generator companies compete among each other, but distribution tends to involve local monopolies, as overlapping operations are almost non-existent.

The electricity sector in the SIC has become more concentrated than initially anticipated. In 1989 Endesa was allowed to buy another generator – Pehuenche – and by December 1997 Endesa and its affiliates (Pangue and Pehuenche) held 55.2% of installed capacity in the SIC, while Gener and its affiliates (Guacolda, Santiago, and Energía Verde) owned 27.7% of installed capacity. More importantly, the dominant generating company owns the water rights on the most attractive future projects, in a system that is essentially hydroelectric. In fact, only 13% of total non-consumption water rights that have already been appropriated are currently being used. Endesa holds 60% of allocated non-consumption water rights, of which it has developed 13%. This company also applied for additional non-consumption water rights that would have given it 80% of all water rights in the country, but recently the Antitrust Preventive Commission advised the agency in charge of the rights to refuse such requests unless they were requested for a specific project.

Table 5 Central Interconnected System (SIC)

Company	Power		Generation	
	MW	%	GWh	%
Chilgener	756	14.4	3382	14.1
Guacolda	304	5.8	1830.4	7.6
Santiago	379	7.2	41.8	0.2
Energía Verde	17	0.3	102.2	0.4
Endesa	1832	34.8	7792	32.5
Pangue	450	8.6	2080.6	8.7
Pehuenche	623	11.8	3366.6	14.0
Colbún	527	10.0	3351.9	14.0
Arauco Gen.	121.3	2.3	605.2	2.5
Otros	251	4.8	1405.4	5.9
Total	5261	100.0	23959.8	100.0

Note: Santiago started operations in December 1997

Source: CNE and ELDC reports.

The importing of natural gas from Argentina, which began in August 1997, has already lowered entry barriers in the generating sector. According to the NEC (1997) the generating cost for combined-cycle gas turbines is US \$2.08, which represents a sharp cost reduction compared to coal-fired thermoelectric generators, which have a cost of US\$ 3.60 per kWh. Although the generating cost at a hydroelectric plant is lower at US \$1.87 per kWh, rainfall uncertainty together with more stringent environmental standards that will have to be met in the construction of dams is leading to a more balanced generation pattern. Thermoelectric capacity, which by mid-1997 accounted for 25% of all installed capacity, a year later had risen to 38%. Each major generating company has introduced combined-cycle gas turbines. The joint power of these plants is 1 080 MW, representing 18% of total capacity of the system. The distinction between thermoelectric and hydroelectric companies will become less clear-cut. At the end of 1997 Endesa and Colbún were 89% and 100% hydroelectric, respectively, but these figures had decreased to 79% and 60% by mid 1998. Gener (formerly Chilgener) has maintained its character of an essentially thermoelectric generator, (only 14% of its capacity was hydroelectric at the end of 1997) .

Vertical integration in the SIC is another controversial issue. In 1992, Enersis, the holding that owns Chilectra and Río Maipo, which jointly supply about 44.4% of all clients in the SIC, gained control of Endesa.¹⁵ Endesa also owns the SIC transmission grid (which it manages through a subsidiary). There have been complaints from Colbún including petitions to the antitrust bodies that Chilectra favours Endesa in its purchases. Gener and Colbún have been involved in lengthy arbitration processes with the Endesa transmission subsidiary. The combined-cycle gas turbine electric power plants built close to demand centres, in conjunction with Colbún's decision to build a transmission line between its generating units and the main demand node, is diminishing the impact of the transmission monopoly.

In the SING there are four companies, Electroandina, Edelnor, Celta a subsidiary of Endesa, and Norgener a subsidiary of Gener. This system is almost as concentrated as the SIC, but has lower entry barriers. Firstly, it is 100% thermoelectric; secondly, distribution companies are not related to the generators; finally, in the SING all generators and the largest mining companies own transmission lines. Another relevant difference is that in the SING a few large clients account for 70% of total consumption, whereas in the Central Zone unregulated clients represent only 30% of consumption. As a result, in the SING a higher percentage of consumption has a market-determined price: large clients usually purchase their energy by public bidding.

Table 6 **Capacity in the Northern Interconnected System (SING)**

Company	Power		Transmission	
	MW	%	Km	%
Electroandina	628	48.7	1047	28.9%
Norgener	274	21.2	267	8.1%
Edelnor	291	22.5	957	28.9%
Celta	98	7.6	116	3.5%
Mining companies			922	30.6%
Total	1 291	100	3 309	100%

During 1999 important structural changes are anticipated, which will significantly increase competition in the sector. At the present time two consortia are constructing a gas pipeline connecting the northern part of the Chile with Argentina, and this will reduce generating costs with combined-cycle gas power plants in the SING. Endesa is participating in one consortium and Electroandina in the other. Moreover, Gener is building a transmission line to join the SING with Salta, an Argentine province where a combined-cycle power plant has been built with a capacity of more than 1 000 MW. This situation will result in spare capacity in the SING, and to reduce this, it is hoped to interconnect the two grids, thereby making greater competition possible in the SIC, as concentration will be reduced by the incorporation of new operators.

In June 1997, the Antitrust Resolatory Commission issued a series of instructions in recognition of market imperfections in the electricity sector. Firstly, it asked the government to introduce legal amendments to clarify the mechanisms for determining transmission and distribution charges. Secondly, it instructed distributors in future to put their energy requirements out to tender among all generating firms, so as to pre-empt suspicions of distribution companies favouring related generators, and reduce costs to final consumers. Finally, it ruled that, within a "prudent" time, the Endesa transmission subsidiary should become a joint-stock company operating exclusively in the transmission segment, thereby opening the company up for parties other than Enersis to participate in ownership.

A new by-law that will come in force in December 1998 attempts to correct some of these problems¹⁶. Firstly, it gives greater responsibilities to the ELDC in the co-ordination of the system, and determines the minimum number of staff positions in the ELDC. In the future, energy dispatch will be done by the ELDC, whereas currently the transmission company does it. In order to reduce conflicts inside the ELDC, the by-law establishes that the ELDC should co-opt three independent experts to give their opinion on the frequent disputes that

arise inside the ELDC. It also gives a greater role to the ELDC and the NEC in the computation of transmission charges. The part of the transmission system “used” by each generator will be determined by the ELDC. The replacement value of equipment, as well as operation and maintenance costs, will be reported to the ELDC by the owner of the transmission line, with this information being made available to all interested parties. The ELDC will use this information to compute indicative transmission charges. The by-law also forces transmission companies owning a line with a capacity of 23 000 volts and over, and longer than 100 km, to become a member of the ELDC, and it gives generators with capacity above 9MW the option of becoming members of the ELDC.

III.4 *Industry performance*

III.4.1 *Sector development*

Considering demand forecasts, existing installations and plants under construction, the NEC determines a ten-year investment plan for generation and transmission that minimises the present value costs of investment, operation and rationing the system. Although the indicative plan prepared by the NEC only represents a guideline for the sector, generators in the SIC usually invest ahead of the indicative plan, as they tend to compete for the same “slot” in the plan. Such anticipation has normally been moderate, as over-capacity could have a tremendous impact on the firms’ profitability. The arrival of natural gas from Argentina provoked a rush to build combined-cycle gas turbines. In 1998 two combined-cycle gas turbines came into operation instead of the single turbine indicated in the plan. However, this did not generate over-capacity as 1998 was the driest year in history, and technical problems delayed one plant’s coming on line by a few months.

The Chilean electricity companies have greatly increased their supply. Total capacity in the country grew from 4 016 MW in 1988 to 6 587 MW in 1997, and annual generation from 16 914 GWh to 32 549 GWh. In the SING generation increased from 3 009 to 6 612. The largest generator, Endesa, shows a similar situation, raising generation (including subsidiaries) from 7 420 GWh in 1988 to 13 325 in 1997. This increase is explained by the significant investments undertaken by the company. In the same period the number of workers in Endesa decreased from 2 980 to 1 674, and labour productivity jumped from 2.2 GWh in 1989 to 8.0 GWh in 1997 (Table 7).

Despite the rapid expansion of capacity in the SIC, there have been energy shortages during the last ten years. In the SIC hydrology is a major source of supply uncertainty, although this is diminishing as gas turbines are incorporated. As rates are fixed (remember that all demand is under contract), a

prolonged drought may require reducing consumption. In fact, in 1989 and 1990 the electricity customers were asked to cut their consumption by 10% for approximately 45 days. In 1998, the driest year on record in the Central Zone, supply has been rationed in the SIC and cities have suffered blackouts. The drought was made worse by a delay in the start-up of one of the two combined-cycle gas turbines. As the plant was expected to be operating in early 1988, water stored in reservoirs was consumed.

Although, the regulation system has a price mechanism embedded in it for dealing with energy shortages, so far this has not worked. During the 1989-1990 droughts, in a misinterpretation of the law, the Supreme Court decided that generators did not have to compensate their clients for energy not supplied, and this led to a more precise rewriting of the legislation. In 1998, if generators had adequately co-ordinated their operations, blackouts could have been avoided. However, the legislation is not explicit on how to proceed when the rainfall is less than in the driest year considered when computing the node price. Reaching an agreement among generators is difficult as it involves significant monetary transfers between them, and regulators lack the authority to force an agreement¹⁷.

Table 7
**ENDESA: Investment, Generation, Workers,
and Labour Productivity**

Year	Domestic investment	Foreign investment	Domestic generation	Local workers	Labour productivity
	MM US\$	MM US\$	(GWh)		GWh/worker
1988			7 420		
1989	110	-	6 649	2980	2.2
1990	n.d.	-	6 608	2883	2.3
1991	131	-	8 521	2445	3.5
1992	47	102	10 022	2347	4.3
1993	107	165	10 627	2088	5.1
1994	94	51	11 277	1970	5.7
1995	180	119	11 783	2255	5.2
1996	235	391	12 898	1692	7.6
1997	415	1 023	13 325	1674	8.0

Source: Companies' annual reports.

Chilean electrical companies now have become major players in other privatisations in the region. They currently have a presence in the electricity sectors of Argentina, Brazil, Colombia and Peru. They are also quite active in diversifying their activities into other sectors such as real estate, water and telecommunications. Currently both ENDESA and Gener generate more energy through their foreign affiliates than in their domestic companies. At the end of 1997 Endesa's installed capacity was distributed as follows: 3 001 MW In Chile, 2 998 MW in Colombia, 1 320 MW in Argentina, 809 MW in Peru and 658 MW in Brazil. In 1992 when the internationalisation process started, 19% of all Endesa's generation took place outside the country. By 1997 this figure had risen to 54%. Apart from this, in 1997 Endesa-España acquired a 32% holding in Enersis.

Electricity distribution has also experienced rapid labour productivity growth since privatisation. For instance, Chilectra's energy sales more than doubled in ten years from 3 612 GWh in 1987 to 7 647 GWh in 1997, and the number of clients grew from 973 000 to 1.169 million. Over the same period its number of workers declined from 2 587 to 1 662, with the number of clients per worker rising from 376 in 1987 to 703 in 1997. In addition, energy losses were reduced from 19.8% to 8.3% during the decade (see Table 8).

Table 8
Chilectra: Sales, Workers, Labour Productivity and Energy Losses

Year	Sales	Clients	Workers	Clients / Worker	Sales / Worker	Energy Losses
	(GWh)	(Thousands)			(GWh)	%
1987	3612	973	2587	376	1.4	19.8
1988	3844	1008	2565	393	1.5	18.8
1989	4070	938	2144	437	1.9	16.1
1990	4230	935	2159	433	2.0	13.6
1991	4568	960	2125	452	2.1	13.3
1992	5338	988	2086	473	2.6	12.0
1993	6476	1018	1856	549	3.5	10.6
1994	6359	1064	1823	584	3.5	9.3
1995	6676	1100	1801	610	3.7	9.0
1996	7256	1133	1643	689	4.4	8.6
1997	7647	1169	1662	703	4.6	8.3

Source: Companies' annual reports

IV.4.2 Price Trends and Profitability

Table 9 shows the evolution of the node price both in the SIC and in the SING, expressed in constant Chilean pesos and constant US dollars. Generally speaking, the trend since privatisation has been towards lower prices, especially when measured in dollars, as the local currency has appreciated. In constant dollar terms, the node price has fallen by about 50% in the SIC and by 60% in the SING, which is explained by the lower price of fuels used by thermoelectric plants. These are the plants that usually determine the marginal cost. The price decline is also due to the fact that generators have passed on productivity gains to consumers, especially in the SING. The price fall in the SIC has been particularly dramatic since 1997 due to the arrival of gas from Argentina being anticipated in the formula for calculating the node price.

Table 9 Evolution of the Node and Distribution Price of Electricity

Date	Ch\$ (April 1998) per Kwh		US\$ (April 1998) per Kwh		
	Node price				Distribution price
	SIC	SING	SIC	SING	SIC
April 1987	21.1	52.9	4.65	11.66	14.73
October 1987	22.9	51.6	5.05	11.38	15.01
April 1988	24.7	46.9	5.43	10.33	15.87
October 1988	26.0	47.8	5.72	10.52	16.31
April 1989	26.9	47.1	5.93	10.37	16.97
October 1989	26.4	49.1	5.83	10.82	17.91
April 1990	27.9	53.5	6.14	11.80	18.15
October 1990	22.7	55.3	5.00	12.19	17.01
April 1991	23.9	51.4	5.26	11.33	15.83
October 1991	20.0	45.4	4.42	10.02	15.11
April 1992	19.2	42.0	4.24	9.26	15.72
October 1992	19.4	36.1	4.26	7.95	14.85
April 1993	21.3	40.7	4.70	8.97	15.08
October 1993	21.0	36.6	4.63	8.07	14.72
April 1994	21.4	37.7	4.72	8.30	15.31
October 1994	21.8	34.4	4.80	7.58	15.25
April 1995	21.4	28.7	4.72	6.32	15.44
October 1995	19.1	24.0	4.22	5.28	14.92
April 1996	19.0	24.9	4.19	5.48	14.65
October 1996	16.6	24.0	3.65	5.30	14.99
April 1997	16.9	22.1	3.72	4.87	13.77
October 1997	14.1	19.7	3.11	4.35	12.69
April 1998	13.2	19.0	2.91	4.18	12.16

Source: National Statistical Institute and CNE.

Table 10 Rate of Return on Equity Largest Electric Companies: 1987-1997

Year\ Company	Chilectra	Endesa
1987	10.4%	5.2%
1988	7.3%	13.7%
1989	22.1%	7.7%
1990	23.7%	6.4%
1991	21.4%	10.4%
1992	19.9%	13.5%
1993	16.1%	11.0%
1994	20.0%	15.7%
1995	30.6%	14.5%
1996	33.3%	12.7%
1997	35.0%	9.9%

Source: Author's computation from companies' annual reports

The rate of return on equity (ROR) at Endesa has increased moderately since privatisation, to reach a maximum of 15.7% in 1994 (Table 10), although declining in subsequent years due to unfavourable hydrological conditions. Energy rates seem to reflect actual costs better than in other services. A possible explanation for this is that the regulated node price has very close market benchmarks, one of which is the spot price (marginal cost) computed by the ELDC. The ELDC has incentives to compute it correctly as it is only used to value transactions between generators. The other benchmark is provided by the prices freely negotiated with large customers. Despite relatively high concentration and the existence of entry barriers in the SIC, the results do not suggest the existence of market-power abuses. One factor that has contributed to this situation is the strong rivalry between the two largest generators: Endesa and Gener. In addition, the government used Colbún before its privatisation to challenge the might of Enersis.

The regulation of electricity distribution companies is more problematic. As shown in Table 9, between October 1988 and April 1997, the distribution price fell by only 25%. This fall is minimal considering that the price of its main component, the node price, went down by 50%, energy losses were reduced substantially, and labour productivity experienced significant increases during the decade. This situation has led to a significant rise in the ROR of distribution companies. For instance, the ROR of Chilectra, the largest distribution company, rose from 10.4% in 1988 to 35% in 1997, despite a 7.4% price reduction in the rate-setting process that culminated in November 1996 (Table 10). The profitability of other distribution companies shows similar behaviour. Such rates of profitability are way above those being earned by generating

companies, yet these are subject to greater uncertainty as they do not have a secure market and they face periods of drought.

The rate setting process for value-added in distribution has many difficulties. One of them is the fact that the costs of the simulated efficient firm are calculated as a weighted average of studies carried out by the NEC and the firms themselves, giving rise to obvious incentives for each party to bias its estimates. In the 1992 price-setting process, discrepancies in estimating distribution costs and the replacement value of assets in some cases exceeded 50%. A better solution would be for an arbitrator to decide which study in his/her judgement best reflects the costs of a model firm.

IV. The Telecommunications Sector

IV.1 The privatisation process¹⁸

In the late 1970s, two SOUs dominated Chile's telecom sector: CTC, which provided local telephony throughout most of the country, and Entel, which provided all international long-distance services. The two companies shared domestic long-distance services. The State also owned two small regional phone companies: CNT and Telcoy. Apart from this, the State postal service, Correos y Telégrafos, operated a domestic and international telegram services, sharing the international market with two private companies: ITT and Transradio. Cross-subsidies between local and long-distance services were the norm.

Deregulation started in 1981 when the government awarded licenses to two small local phone companies, CMET and Manquehue, which were set up to exploit the shortage of lines that had arisen as a result of a lack of investment by CTC. That same year a concession was awarded to Cidcom, a company set up with Chilean and US capital to provide a mobile phone service in Santiago and surrounding areas. In 1982 the government sold Telcoy and CNT in a public auction, in which the purchaser was VTR, a traditional local telex operator. A third company, Telex Chile, a provider of telegram services that had been hived off from Correos and Telégrafos in 1982, was also sold to domestic investors in 1986. Although the process of privatising CTC and Entel started in 1985, control of these two companies only passed into private hands in 1988.

In CTC private participation had never completely disappeared, and in 1984, 8% of shares were privately owned. In 1985 and 1986 the government sold 0.04% and 2.66% of its shares on the stock exchange, respectively, and by the end of 1987, 25% of the equity was in private hands. In that year pension funds and the company's employees acquired most of the shares. In August 1997 the government called an international tender for the sale of 151 million shares out of a total of 455 million, with a commitment on the part of the winning bidder

to subscribe to a later capital expansion of up to 45% of the ownership of the company. The reference value of the 151 million shares was US\$ 102 million, with a price of US\$ 0.68 per share in the future issue. The ground rules for the bidding process were very brief, with applicants only having to state the sum offered for the shares and the proposed form of payment. There was no clause at all relating to an increase in the number of lines or service quality.

This share package was awarded to the Bond Corporation in 1988, priced at Ch\$187.34 per share. Bond also purchased 10.4 million series B shares, paying US \$0.76 for each . Apart from this, Bond took up 204.1 million shares out of a total of 403.8 million new shares issued in July 1988, paying US\$ 155.2 million, thus coming to own 50.1% of the company. Then in January 1990 the Bond Corporation sold 49.2 % of the company, corresponding to 365.6 million shares, for US\$ 392 million to Telefónica de España. In July 1990 CTC placed the equivalent of 110.5 million shares on the New York Stock Exchange via ADRs, for a total value of US\$ 89.3 million, whereby Telefónica's share of the ownership of CTC was reduced to 42.8%. This was the first ADR issue by a Chilean company. That same year the State sold off the remaining shares in its possession.

In the case of ENTEL, a controlling share package was never put up for sale. The sale mechanisms used were direct sale and auctions, as well as the sale of shares on the stock market. In 1985 the State owned 99.97% of Entel, and in 1986 and 1987 it sold 30% and 3%, respectively, of its shareholding, most of which was acquired by pension funds. In 1988, the State further reduced its stake in Entel to 37.7%, this time the main purchasers were the Chase Bank (9.3%) and the company workers (12.5%). The state-owned bank *Banco del Estado* financed employees' share purchases via a loan made to an investment company set up by them. In 1989 the State sold practically its entire stake in Entel, the main purchasers being Telefónica de España, Banco Santander and the Chilean Army, each of which acquired 10% of the ownership. In 1990 the Army sold its holding to Telefónica which thus ended up with a 20% stake.

Table 11 Privatisation Of Chilean Telecom Companies 1984-1989
(US\$ Million 31/12/95)

Company/Year	1985	1986	1987	1988	1989	Total
ENTEL	0.2	36.7	8.4	81.8	105.0	232.2
CTC	0.7	4.7	27.1	262.2	87.1	381.7
TELEX	0.0	14.2	0.0	0.0	0.0	14.2
TOTAL	0.9	55.6	35.5	344	192.1	628.1

Source: CORFO Annual Reports

IV.2 *Public policy*

IV.2.1 *The regulatory framework*

The legislation regulating the Chilean telecom sector was introduced in 1982. Since 1977 the regulatory body has been the Under-Secretariat for Telecommunications (SUBTEL) at the Ministry of Transportation and Telecommunications. SUBTEL shares its rate setting responsibilities with the Economics Ministry. Its other main duties are to present proposals for national policies in the area, develop and update technical standards, ensure compliance with regulation and legislation, administer and control the use of the radio-magnetic spectrum, and process concession applications.

Chile's telecoms sector is one of the most open in the world, with no discrimination at all against foreign investors. However, all telecom services are subject to some degree of regulation either via the granting of licenses used to regulate entry, or through technical standards, including those covering the obligation to interconnect. The law establishes that operators are free to set prices for telecommunication services, but local phone services (not including mobile telephony) and long-distance services are subject to price-setting procedures established by law when the Resolutive Commission determines that they are provided under insufficiently competitive conditions. The rate-setting procedure was established by legislation in 1987, following a decision by the Resolutive Commission that neither local nor long-distance services were competitive.

The local telephony rate-setting scheme is based on the long-term marginal costs of a simulated efficient firm. Local phone rates are set so that the net present value of expansion projects equals zero, when discounted at a rate reflecting sector risk. Rates are adjusted every five years after a ruling by the Resolutive Commission that there is insufficient competition in the provision of the service. The phone companies in accordance with government-set guidelines prepare cost-studies. Once a study is completed, regulators have 120 days to object and draw up counter-proposals. Differences both in the guidelines and/or objections made by Subtel are brought before a panel of experts, one of whom is designated by Subtel, another by the regulated firm, and the third by common agreement. Although the final decision rests with the regulators, these are likely to follow the panel's advice, in view of the fact that companies can take them to court. Moreover, since the law does not specify how to choose the third expert, the company can delay the process for as long as it likes¹⁹. In order to reduce the companies' incentive for delaying rate-setting processes; a modification in the legislation establishes that once the rates are set, they become retroactive to the day when the new rates were originally meant to take effect.

In 1993 the legislation was amended to facilitate competition in different services. The 1982 law required public service providers to interconnect their operations, but left it to them to decide the terms under which this would be carried out. Given the difficulties encountered by small local phone companies in negotiating their interconnection charges with CTC, since 1994 all charges and tariffs for services provided between public service companies via interconnection have been regulated. In particular, the law obliges all local telephone concession-holders to give access to long-distance carriers on a non-discriminatory basis, and the regulator sets the cost of interconnection (the access charge) between the public network (fixed and mobile) and the carriers. This regulation, together with other changes introduced in the same law, enabled competition to be introduced in long-distance services.

Since the privatisation of the long-distance monopoly, regulatory ambiguities have generated legal entry barriers to the industry. The profitability of the long-distance firm provided a strong signal to potential competitors, and in 1989 CTC and other local exchange operators attempted to enter the long-distance market by applying for licenses from Subtel to build and operate long-distance facilities. In June 1989, Subtel asked the Antitrust Commissions to decide whether the entry of local telephone companies into the long-distance market was in the public interest. In November 1989 the Resolutive Commission, reversing an earlier ruling by the Preventive Commission, ruled that there should be no segmentation of local and long-distance services, and called on the government to introduce a multi-carrier system whereby customers could choose their long-distance providers.

Entel appealed to the Supreme Court, which, in 1990, asked the Resolutive Commission to make a more in-depth study of the technical conditions that would allow fair market conditions, including the supervision of interconnection quality. The Resolutive Commission took three years to study this issue anew, before upholding its prior decision in 1993, and calling on the Government to implement a multi-carrier system within eighteen months. The legislation introduced in 1994, which removed legal barriers to competition in long-distance services, paved the way for the multicarrier system that was launched in October 1994. It also facilitated competition by enabling long-distance carriers to gain access to final clients directly through private circuits. Finally, the new legislation allowed local phone companies to enter the long-distance market through subsidiaries, which have to be organised as joint-stock companies, but put limits on each operator's market share in the domestic and international long-distance market for the first five years. Carriers affiliated to local exchange companies (mostly CTC) were subject to more stringent restrictions.

Certain details in the new legislation had an impact on the degree of competition in the industry. Local phone companies in Chile are obliged to let their customers choose their carrier for each long-distance call they make. Local phone companies cannot disconnect the multicarrier system from clients who have a signed contract with a carrier, even if the client requests this. As two dialling digits identify each carrier, using the multicarrier system is just as easy as making the call through a contracted carrier. On the other hand, the regulations did not consider certain particular situations (for example cases of access for cellular phones, subscribers with private numbers, etc.). Long-distance providers had difficulties in adjusting their invoicing system, and this held back their revenues for several months. Carriers complain that a subscriber can avoid paying a carrier's invoice without this meaning anything apart from discontinuing access to that carrier. It might be thought that this is a risk common to any supplier in a competitive market where sales are normally made on credit. However, in this case the firm does not have advance access to the customer's creditworthiness. Recently Entel reported having had to write off US\$ 50 million in uncollectable bills.

In 1988 the government established the rules for mobile telephony, although one company had been operating since 1981. The regulation defined three concession zones for cellular zones, with two companies operating in each. In November 1996 Subtel auctioned three further nation-wide personal telephony concessions, with geographical coverage as the auction variable. Operators freely determine mobile service charges. Subscribers pay the mobile telephony rate for both incoming and outgoing calls. In 1997 SUBTEL introduced a new telephone regulation establishing a calling-party-pays system, and this system is expected to come into operation by the beginning of 1999 once the authorities have determined the access charge to the mobile network. Mobile phone companies now have to charge per second, whereas previously they charged per minute or part thereof. Finally, in a move to facilitate competition, one and two year contracts were annulled.

IV.2.2 Subsidies

The relatively low telephone density in the country —18.3 lines per 100 inhabitants in 1997— is a clear indication that there are vast sectors of the population with no access to telecommunications services. Universality of service is for the moment a distant goal, although it is realistic to consider universal *access*, for which reason the government decided to create the Telecommunications Development Fund to subsidise public and community telephone services in remote and poor urban areas. SUBTEL prepares a needs list and draws up corresponding projects, which are put out to tender among interested firms and awarded to those seeking the lowest subsidy. Broadly

speaking the government subsidises projects whose social rate of return is positive, but which are not profitable from a private point of view. The government subsidy is up to the amount equal to the negative private net present value of the project.

The fund provided subsidies amounting to US\$ 2.1 million in 1995, US\$ 0.9 million in 1996 and US\$ 8.1 million in 1997 — much lower than the amount budgeted for by the government. The main reason for this is that competitive bidding led to much lower subsidies than initially expected. These subsidies will pay for the installation of public phones in 4 504 rural localities, serving 1 774 113 inhabitants²⁰. Once the phones have been installed, about 80% of the rural population will have access to a public phone. With the projects approved in 1998, the government expects that 90% of the rural population would have access to public phones by year 2000. The Fund is also able to subsidise urban projects, but no urban project has been subsidised so far, as calculations suggest that public phones in urban areas are privately profitable. It should be noted that it is only investments that are subsidised and not consumption directly. The subsidies have helped to provide services in isolated areas, but not to extend the service in urban areas. However, there is a scarcity of public pay phones in poor areas, and the government is considering a review of its methodology for granting subsidies.

IV.3 Market Structure and entry barriers

The government did not restructure the two main telephone companies prior to their privatisation. However, the decision of the antitrust agencies in 1992, ordering Telefónica to divest its 20% share in Entel, prevented the complete monopolisation of the sector. The dominant company is still CTC, which owns about 91% of all telephone lines, controls the largest cellular phone company (approximately 61% of all clients as of mid-1998), has a long-distance subsidiary with the second largest market share, and has a controlling 40% stake in the company that provides cable TV to 43% of all subscribers. In 1997 CTC obtained 67.7% of all revenue accruing to the sector and owned 72.5% of all physical telecom assets. Entel —a distant second— still retains the largest market share in long-distance calls (about 40%), and as of mid-1998 had about 20% of mobile phone subscribers, as well as running a small fixed telephony operation. A few other companies provide telecom services, of which the most important are Telex Chile, Bell South, VTR, Manquehue and CMET.

Foreign investors have an ownership stake in most Chilean telecom companies: Telefónica de España has a controlling 43.6% stake in CTC with; the Italian company STET and Samsung respectively own 19.5% and 12.5% of ENTEL; Southwestern Bell owns 49% of VTR, Bell South has been in the country since

1991, when it acquired the mobile phone company Cidcom, and Qualcomm has a joint venture with Telex Chile in mobile telephony. Foreign companies have had a positive impact on the development of telecommunications through the technical and financial resources they have brought to the sector.

The parent companies of VTR and CTC considered merging the two firms. Given that the Antitrust Preventive Commission stated that any merger between CTC and VTR would have to obtain its prior approval, the two companies considered a more limited approach. In December 1997, VTR asked the Preventive Commission for authorisation to sell its long-distance operation to CTC. The Commission approved the sale on the condition that infrastructure that can be used in local services should be retained by VTR. However, the Resolutive Commission decided to uphold VTR's appeal, approving the sale of its long-distance operation without conditions. The merger between CTC and VTR's long-distance operations is challenging Entel's dominance in this segment. VTR retains participation in a cable TV company providing services to about 57% of all subscribers, as well as two regional fixed-telephony companies: CNT and Telcoy.

Deregulation of the long-distance market and the ensuing competition has had the expected results up to now²¹. Ten firms have entered the market, including CTC through its subsidiary CTC Mundo. However, only three carriers, Entel, CTC Mundo, and Chilesat, have nation-wide networks allowing them direct access to the 24 primary zones into which the country is divided. The remaining carriers have to rent services from these three companies. This situation explains why these three companies between them have 90% of the national long distance market and concentration is increasing (see Table 12). In the international long-distance calls segment, there has been a slight decrease in concentration, as Bell South has become a relevant player with 10% of the market. The traditional monopolist, Entel, currently has 41% of domestic long-distance calls and 34% of international calls, but its share of the international long-distance market is declining.

It is unclear how the structure of the long-distance market will end up. Medium-size and small companies have faced difficulties in competing with the largest carriers. VTR's long-distance operation was sold to CTC, after absorbing losses from the beginning of the multicarrier system. Other carriers have also faced difficulties. Iusatel, which was part, owned by IUSACEL of Mexico, lost money for three years and then changed ownership. Meanwhile, Chilesat is currently going through serious financial problems, as reflected in the quotation of its ADRs which have dropped from a peak of US\$ 11.75 in January 1995 to US\$ 2.06 in May 1998. On the other hand, Transam a small company that offers the lowest rates to residential clients has grown rapidly since deregulation of the service.

Table 12
Market Share in Domestic and International Long Distance Calls

Company/Year	Domestic Traffic		Outgoing International traffic	
	1997	1994	1998	1995
Entel	40.9%	37.4%	34.0%	40.5%
CTC-Mundo	34.4%	28.9%	19.6%	20.7%
Chilesat	14.6%	21.9%	18.5%	19.4%
BellSouth	1.4%	1.6%	10.7%	7.0%
VTR	3.7%	7.9%	10.1%	10.2%
Transam	5%		3.1%	
Manquehue			1.6%	
Iusatel			1.6%	
CNT			1.0%	

Source: SUBTEL

In contrast to long-distance services, local telephony is still highly concentrated. In December 1997 CTC had 91% of all lines in service, followed by CMET with 2.5%, CNT with 2% and Entel with 1.5%. CNT was the dominant operator in the 10th Region, as CTC has only had a concession in that part of the country since 1996. In Santiago, the largest city, there have been overlapping franchises in local telephony since the early 1980s. However, the new entrants - Manquehue and CMET - have never represented real competition for CTC. Weaknesses in the legislation, especially as it regards interconnection standards, have inhibited the emergence of true competition. Indeed, these companies only obtained interconnection agreements after orders issued by the Antitrust Commissions.

The 1994 law regulating interconnection charges resolved this situation. Since then, two long-distance firms, Entel and Chilesat, have started providing local phone services through subsidiaries in areas overlapping with CTC, and VTR has a small-scale operation to jointly provide local phone and cable television services. These firms have realised that it is essential for them to have direct access to clients, but competition in fixed telephony is still a distant goal. For new entrants it is hard to compete with CTC's aggressive commercial policy. For instance, CMET has filed a complaint with the Preventive Commission alleging that CTC offers, through intermediaries, three months' free service to CMET subscribers who migrate to CTC.

In early 1989, after the government established the rules for mobile telephony, CTC started a cellular phone service in the Santiago-Valparaíso area, which in 1995 had about 70% of all subscribers, with Cidcom holding the other concession. Most of the other mobile phone service subscribers belong to the

second concession area which was awarded to VTR and Telecom, 33% of which was owned by Entel and the rest by Motorola. In 1996, Entel gained control of Telecom and changed its name to Entel Telefonía Personal²². Concessions in the third zone, corresponding to the southern part of the country and with fewer clients, were awarded to CTC and VTR. At the beginning of 1996 VTR and CTC merged their cellular phone companies and set up a new enterprise – Startel — serving the whole country. CTC owned 55% of Startel, with the other 45% belonging to VTR. The Preventive Commission ordered Startel to sell one of the licenses it held in the third zone, and Entel acquired this in December 1997. In that same month CTC paid US\$ 425 million to VTR for its 45% share of Startel, which shows the strategic importance of mobile telephony for CTC.

Three PCS concessions were awarded in March 1997: two to Entel and the third to Telex Chile²³, service coverage being the auction variable. Entel began providing the service in March 1998 with Telex Chile following suit in August. By mid-1998 there were about 650 000 mobile phone subscribers, of whom 61% were clients of Startel, 20% were with Entel, 16.5 % were clients of Bell South, and the rest were with Telex Chile. Subtel ignored a recommendation by the Preventive Commission that no company should hold more than one mobile phone concession in the same geographical area²⁴, and Entel finally ended up with two PCS nation-wide franchises and a cellular phone concession covering regions that concentrate about 30% of all clients. Bell South, which holds a concession in those two regions but not in the rest of the country, is the only mobile telephony provider that does not have national coverage²⁵. Previously it had roaming arrangements with Entel, but the latter lost interest in the arrangement when it was awarded the PCS concessions. Probably Subtel was happy to award two concessions to Entel as this would strengthen it in relation to the dominant company.

The legislation allows firms to provide multiple services, and there are two good reasons for this: firstly the economies of scale that exist in telecommunications, and secondly because it is attractive for the consumer to have a single provider of all telecom services. The problem lies in the fact that some services are monopolised while there is competition in others. For that reason, restrictions have been imposed: for instance basic phone companies can participate in the provision of long-distance services through subsidiaries organised as joint-stock companies supervised by the Securities Commission. Recently the Resolutive Commission called upon the government to introduce legislation requiring subsidiaries of basic phone companies providing other telecomm services to satisfy similar requirements. Although the legislation prohibits subsidies between the parent company and its subsidiaries, monitoring compliance with this prohibition is very hard.

It remains to be seen whether CTC's dominance of basic services will allow competition in other telecomm services, especially considering the expansion policy it has followed in recent years. CTC's aggressive commercial policy has also been questioned on many occasions. In December 1997 CTC-Startel offered a system known as "calling party pays plus" (CPPP), in which incoming calls to a cellular telephone were not charged to the recipient, while the person making a call to a cellular phone from a fixed telephone would only pay the fixed telephone rate. This change would have meant a significant fall in the company's revenues, because approximately 40% of all calls are incoming, a percentage which would have increased substantially due to call-back. The Resolutive Commission decided to suspend this offer indefinitely, on the grounds that it could represent predatory pricing. A final decision is still pending. Another example is that CTC has repeatedly refused to activate in its exchanges the numbering given to Entel by SUBTEL for value-added services. In April 1998, the Supreme Court decreed that CTC should interconnect such services. It is assumed that CTC in taking advantage of its dominant position faces no problems in ignoring the regulatory framework, as it knows that legal processes are lengthy and compensations – if any – are very small in relation to the benefits associated with delaying interconnections.

The authorities are worried about the lack of competition in local telephony and the implications of this situation for the other telecommunications services. In April 1998, in the framework of the rate setting process, the Antitrust Resolutive Commission (Resolution 515) decided to increase the number of interconnection services subject to regulation, including services provided to value-added service providers. It also defined the concept of the local loop which fixed telephony subscribers must pay for in communications with recipients in networks of other local companies of the same primary zone, a long-distance company or a mobile phone company. It also makes subject to regulation switching services or national long-distance telephone transmission provided by Entel, CTC Mundo and Telex Chile. The Resolutive Commission recommends that the government authorities aim for the maximum technically feasible disaggregation of services subject to rate setting. Finally, it should be pointed out that in each process the Commission has been steadily increasing the number of basic telephone services subject to rate setting. Services subject to regulation in fixed telephony include, the phone line, the telephone connection, communications between users of the same company, operator assistance and transfer of a phone line.

IV.4 Sector performance

IV.4.1 Telecommunications development

The combination of the new regulatory environment and privatisation of SOUs, has led to a remarkable expansion in the quality and diversity of services provided. Since 1988 the sector has experienced rapid development, as shown by various indicators. The total number of telephone lines in service increased from 581 000 in 1987 to 2 693 000 in 1997; *i.e.* the number of lines grew fivefold over ten years. This increase expanded telephone density from 4.7 lines per 100 people in 1987 to 18.3 in 1997. Average installation time by CTC fell from 416 days in 1993 to 31 days in 1997, and the waiting list which in 1987 was 232 000 potential customers long, had been cut to 97 000 by 1997 after topping 314 000 in 1992. Long-distance traffic also grew significantly in the same period: the total of incoming and outgoing traffic, which in 1987 stood at 50.3 million minutes, by 1997 had grown to 476 million minutes through the CTC network alone (in 1993 international long-distance traffic through the CTC network accounted for 93% of the total). In other words, in a space of ten years total traffic practically multiplied tenfold. Growth has been particularly fast since 1994 when the sector was deregulated.

Table 13 Lines in Service, Density and Waiting List: (1987-1995)

Year	Lines in Service (thousands)	Lines in Service CTC (thousands)	Density (lines/100 people)	Waiting List (thousands)*
1987	581	548	4.7	232
1988	631	591	4.9	236
1989	689	646	5.4	284
1990	864	812	6.5	308
1991	1 957	997	7.8	241
1992	1 283	1 213	9.6	314
1993	1 521	1 437	10.9	198
1994	1 634	1 545	11.6	117
1995	1 891	1 754	13.2	52
1996	2 264	2 056	15.6	72
1997	2 693	2 394	18.3	97
1998		2 537		97

Source: Compiled by the author from companies' annual reports and SUBTEL figures.

* CTC figures only.

Table 14 Long-distance International Traffic (millions of minutes)

Year	Outgoing	Incoming	Total	CTC
1987	212	291	503	
1988	275	373	648	
1989	363	518	881	
1990	463	603	1066	996
1991	567	748	1315	1224
1992				1406
1993	608	982		1589
1994	696	1147		1844
1995	1265	1305		2570
1996	1639	1578		3217
1997	2998	1762		4760

Source: Subtel and companies' annual reports.

Table 15 Mobile Telephony Subscribers

Year	Number of Subscribers	Density (subscribers / 100 inhabitants)
1990	13 900	0.10
1991	34 782	0.26
1992	64 438	0.48
1992	85 186	0.61
1993	85 186	0.61
1994	115 691	0.82
1995	197 314	1.38
1996	319 314	2.19
1997	409 740	2.78
1998 June	650 000	3.94

Source: Subtel

Liberalisation of the sector has also made it possible to develop new services and activities. From 1981 onwards various new telecom services have started up, such as pagers, data transmission and private networks. However, the new service that has developed most strongly has been mobile telephony. By the end of 1997, 16 years after Cidcom started to operate a mobile phone service in Santiago, there were about 410 000 cellular phone subscribers. Today in mid-1998, after the start of the PCS system, the estimated member of subscribers is 650 000. We can expect that with the introduction of "calling-party-pays" in mobile telephony and the substantial price fall caused by the entry of PCS

operators, the number of subscribers will increase substantially. Most countries in the region use a “calling-party-pays” system: Argentina, Brazil, Ecuador, Mexico, Nicaragua, Panama, Peru, Uruguay and Venezuela. Following the introduction of “calling-party-pays” in mobile telephony in Argentina, the number of subscribers has exploded, and it now has the highest density in the region at 7%, much higher than Chile’s 3%.

IV.4.2 Price trends and profitability

Despite big efficiency gains in the sector, local phone charges have not fallen since privatisation: on the contrary, they have gone up. According to the National Institute of Statistics (INE), in May 1987 an average family’s bill was Ch\$ 9 853, rising to Ch\$ 11 395 by May 1998 expressed in constant May 1998 prices. In dollar terms the price rise is much higher due to the appreciation of the local currency. Some of the rise is explained by the partial abolition of the subsidy paid by long-distance carriers to local phone companies, and by the abolition of the surcharge for phone-line installation. In 1998, rate studies were completed for the period 1989-93, as provided for in the 1987 legislation. Rising telephone charges were established in that period at the same time as the telephone installation surcharge was about to be phased out²⁶. The fixed charge went up from Ch\$ 1 096 in 1989 to Ch\$ 2 109 in 1993 (measured in constant June 1989 prices). The charge for allocating a line, which stood at Ch\$ 65 174 in 1989, was abolished in 1993.

Table 16 Monthly Local Residential Bill of Average Family
(charge plus variable rate plus tax)

Date	Current US dollars	Constant Ch pesos May 1998
May-87	11.62	9 853
May-88	11.00	9 151
May-89	11.24	8 347
May-90	13.44	9 475
May-91	15.69	10 213
May-92	17.75	10 156
May-93	18.91	10 817
May-94	19.96	11 742
May-95	24.36	11 584
May-96	25.33	11 489
May-97	25.65	11 932
May-98	25.11	11 395

Source: National Statistical Institute

Currently, for a residential subscriber the fixed charge is Ch\$ 5 598 with a peak-hour variable rate of Ch\$ 17.1 per minute and an off-peak rate of Ch\$ 2.85 in September 1998 pesos. In January 1988, the fixed charge was Ch\$ 2 597 and the peak and off-peak variable charges were Ch\$14.7 and Ch\$0.42, measured in September 1998 prices before tax, respectively. Apart from this, for each call, a charge equivalent to a one-minute call was made for establishing the connection, but this was later abolished.

Tabja (1996) analyses the second rate-setting process that took place in 1994, and concludes that rates are more the result of bargaining between the authorities and the firm, than the outcome of rigorous technical analysis. Reaching agreement on what the costs of a model firm are is not easy, which, when combined with the difficulty the regulator faces in obtaining precise information and the antagonistic nature of the process, leads to a continuous bargaining game. Another aspect that obstructs regulatory action is the publicity campaigns launched by the regulated firms. During the 1994 rate-setting process, CTC launched fierce attacks against the regulatory agencies in the media, making apocalyptic announcements regarding the impact the new rates would have on its profits. This caused a sharp fall in its share price, obliging the Superintendence of Securities and Insurance to suspend trading in CTC shares for a short period. Of course the CTC predictions did not come about. The 1994 rate-setting process also made explicit the problem of information asymmetry in the telecomm sector (there is no specific sanction for denying information).

Long-distance services. The opening of the sector to competition eliminated the need to set rates, and these are now market-determined. However, the regulator sets the cost of interconnection between the public network and long-distance carriers. This access toll approximately reflects costs (2/3 of a local call, for each origin-destination end point). However, the access toll for incoming international calls clearly exceeds the cost of providing this service (it is fourteen times the local peak rate).

Deregulation of long-distance services has led to a significant drop in charges. Following a hectic advertising campaign by each of the long-distance operators, long-distance rates fell by more than half of Entel's prices before September 1994. This can be illustrated using the prices carriers charge on calls to the US, which account for 42% of all long-distance traffic. In May 1998 the publicised peak rates fluctuated between US¢ 117 and US¢ 45 per minute. Off-peak rates fluctuate between US¢ 78 and US¢ 34 per minute. Carriers charge their large customers much lower rates. For instance CTC charges US¢ 18 per minute on a call to the US by a large client. The cheapest carrier for residential clients (Transam) has captured less than 5% of the market, with no noticeable quality differences in service, but its market share is growing following an advertising campaign. These prices can be contrasted with the pre-multicarrier regulated

rates: if the rate-setting scheme in force from 1988 onwards had been maintained, a call to the USA today would cost US\$ 2.40 per minute. The rate in September 1994, prior to the multicarrier coming into operation when there was already a minor degree of competition, was US\$ 2.15 per minute. As can be seen, the drop in the price of calls to the USA has been enormous.

The price fall has been less pronounced on other routes. International carriers settle their traffic imbalances at so-called accounting rates, which are a multiple of the actual cost of providing the service. A carrier handling more incoming than outgoing traffic receives significant net revenue from foreign carriers. In 1991 Chilean incoming traffic was 74.8 million minutes while outgoing traffic was 56.7 million minutes, which resulted in revenue of US\$ 22.7 million for ENTEL. With the sharp fall in domestic international phone-call rates the traffic imbalance has reversed on many routes. In 1997, incoming traffic through the CTC network was 176.2 million minutes while outgoing traffic was 299.8 million minutes (the corresponding figures for 1993 were 60.7 million and 56.7 million minutes, respectively). On routes where incoming traffic exceeds outgoing traffic, the marginal cost of the Chilean carriers includes the accountancy rate.

Mobile telephony. Firms freely determine prices. By the end of 1997 this was about Ch\$ 130 per minute for both incoming and outgoing calls, plus a fixed charge of about Ch\$ 15 000. The start of Entel's PCS system in March 1998, like the multicarrier system before it, has generated a publicity war between the different mobile phone companies, and rates have come down substantially. For example, CTC-Startel made an offer consisting of a monthly charge of Ch\$ 7 080 and up to 60 minutes of free calls at normal times; additional minutes are charged at a rate of \$ 124 at normal times and \$ 80 at off-peak times. In addition, people who sign a contract for 24 months receive the telephone as a gift. Another plan offers 200 free minutes for a fixed charge of Ch\$ 16 000. These rates represent sharp reductions on those existing before the entry of Entel-PCS.

CTC earns 63% of its revenues from local telephone services and another 6.8% from the sale and rental of equipment, which is closely related to local telephony. It is no surprise therefore that CTC's average rate of return on equity has increased since privatisation (Table 17). In the three years before privatisation its average rate of return was 16.0%, whereas during the following five years this figure climbed to 16.8%. Over the last five years (1993-1997) the average rate of return on equity has been 19.4%, despite the price war that has affected long-distance services. The main explanation for the rise in profitability is that CTC has not passed efficiency gains on to its clients, despite two rate-setting processes. The other two local phone monopolies (Telcoy and CNT) show similar RORs.

The picture in the long-distance market is quite different. Before 1994 Entel had a virtual legal monopoly in long-distance services, and this combined with inappropriate rate-setting schemes kept prices significantly above marginal costs for several years. In practice, the long-distance company achieved average rates of return on equity above 50%. Since deregulation, the drastic fall in prices has had an impact on the carriers' profits. For example, Table 17 shows that Entel's profitability has dropped from 37.4% in 1993 to 5.8% in 1997.

Table 17
Telecommunications Companies' Rates of Return on Equity

Year	CTC	CNT	TELCOY	Entel
1987	14.5%			35.8%
1988	17.4%	21.1%		49.3%
1989	18.4%	15.7%	20.7%	73.8%
1990	13.0%	16.8%	13.5%	52.7%
1991	16.4%	22.7%	15.1%	50.5%
1992	19.0%	29.2%	21.4%	49.7%
1993	22.5%	30.2%	25.7%	37.4%
1994	18.3%	24.9%	27.1%	17.2%
1995	17.0%	13.7%	24.8%	5.1%
1996	20.4%	21.0%	30.1%	2.7%
1997	19.1%	17.9%	33.7%	5.8%

Source: Compiled by the author from Companies' and SVS Annual Reports.

V. The Transport Sector

Since 1991, a variety of reforms have been introduced in the transport sector, of which the most important are listed below. In that year, the *laissez-faire* policy in the urban bus sector was reversed and the use of streets by urban transport was auctioned, producing significant efficiency gains in the sector. Also that same year a legislative bill was sent to Congress to allow the tolling of urban highways in order to reduce vehicle congestion. This initiative is still under discussion in Congress today. In 1993 a privatisation process was initiated in rail freight transport involving sale to the private sector (FEPASA). In 1996, the northern railroad Ferrocarril del Norte (Feronor) was privatised, as was the railway linking Arica and La Paz in 1997. The privatisation process in rail transport is set to culminate in the privatisation of passenger rail services in the central zone. The privatisation of the State-owned airline, Lan Chile, was completed in 1994, and the public-sector shipping company was sold in 1995.

In 1992 a new franchise law was passed allowing the private sector to finance and operate highway and airport projects. From 1994 to present, several projects in interurban highways and tunnels have been auctioned for an amount in excess of US\$ 3.1 billion. Also starting in 1996, concessions on the cargo and passenger terminals at five airports, including the country's major international terminal, were awarded by public bidding. Airport concession-holders will invest about US\$ 200 million, of which 180 million will be spent in Santiago. In 1997, a law was passed permitting the concessions on infrastructure and the operation of public-sector ports. The law stipulates that the Preventive Commission should approve the bidding ground rules in each case, which set a number of conditions restricting vertical and horizontal integration in order to ensure competition. For instance, a shipping company handling more than 25% of the cargo in a port cannot own or control more of 40% of the company holding the concession on that port. The main state-owned ports are expected to be handed over in concession in 1999. Meanwhile, four private ports have been developed in the central-southern zone of the country for general freight, competing with state-owned ports and half a dozen private specialised ports.

Table 18 Privatisation of Transport Companies 1994-1996
(US\$ Million at 31/12/95)

Company \ Year	1994	1995	1996	Total	% Sold	Purchasers	Procedure
Lanchile	10.7			10.7	24	Costa Verde S.A.	Stock exchange
Fepasa (***)	30.1			30.1	51	Cruz Blanca	Public tender
Ferronor s.a.			12.0	12.0	100	Pirazzoli Y Cia. Ltda.	Public tender
Empremar s.a.		4.5		4.5	99	Salinas Pta. De Lobos	Public tender

By the year 2000, about 2 000 km of interurban highways together with the main airports, all the railroads and the main seaports will be under private-sector operation, with the State retaining the role of regulator and promoter of competition. However, the challenge for the future is to ensure that private-sector participation also promotes efficiency in resource allocation. There are significant externalities in the transport sector that require an appropriate State role to promote efficient development of the sector. Below we analyse privatisation processes and regulation in the urban highway and transport sectors.

V.1 *Highway franchising*

The private sector is financing the construction of new highways and airports through build-operate-and-transfer (BOT) concessions, and is also going to finance port modernisation. Here our focus is on highways. In general the auctioning of highway concessions has operated as follows. The government specifies the technical conditions of the project and grants a concession for 20 or 30 years to the bidder offering to charge the lowest user price. In some cases a ceiling and floor price are imposed. If the ceiling is very low bidders may seek a subsidy, in which case the concession goes to the applicant that seeks the lowest subsidy. On the other hand, if the floor is very high the firm that offers the biggest payment to the State wins the concession.

The first project, a 20 million-dollar tunnel, was put out to tender at the end of 1992 and inaugurated in September 1995. The second project put out to tender is the highway known as the “lumber route” at a cost of around US\$ 25 million. The third concession project is the northern access to the city of Concepción with a cost of approximately US\$ 230 million. A consortium controlled by a Mexican company, which has the concession for 28 years, built the 75-km highway. The most important concessioned highway project is the Pan-American Highway (Route 5), with a total investment estimated at US\$ 2.4 billion, and total highway length of 1 511 km. The project was put out to tender divided in 8 sections, and it took two years for all the concessions to be awarded. The final stretch, adjudicated in May 1998, is the most expensive, at an estimated cost of US\$ 750 million. The auction ground rules involved a minimum highway user toll of Ch\$ 1 000 and a maximum of Ch\$ 1 200. All bidders sought the minimum toll, and the concession was awarded to the consortium offering the highest payment to the Government for the existing infrastructure. This concession will last 25 years.

The government is awarding highway projects in concession to take advantage of private-sector management capacity in running the highways, within an overall social welfare-maximising objective. In this context, concessions raise important regulatory issues. For example, concessions extend for periods ranging from 20 to 30 years, so explicit mechanisms need to be established to adapt the contract to changing conditions. Welfare maximisation may require the user fee, or toll, set in the contract to be changed. However, when contracts are renegotiated, the benefits of competitive bidding are largely lost and the door is left open for corruption. The most recent auctions give the Government an option to buy back the infrastructure concession before its termination if major infrastructure changes are needed. The purchase conditions are included in the auction ground rules, but there is still room for opportunistic behaviour by both parties. There were some worries that a majority of highway concessions might become concentrated in the hands of a single group.

Although prices are determined in the auction, a powerful concession-holder might attempt to renegotiate conditions, for which reason the Preventive Commission suggested that no single group should hold more than 3 concessions on Route 5. There are also end-point problems, especially as regards maintenance close to the end of the concession period.

The first infrastructure concession, the Melón Tunnel, has not been successful and is unlikely to recoup the investment (the firm has been making annual losses of about US\$ 1.5 million). The auction considered different aspects, such as the toll and the annual payment to the State, using different weights. The weights determined that the annual transfer to the State became the decisive variable. Hence, in practice, the Government set the maximum toll and granted the concession to the bidder that offered to pay most. The winners of the concession overestimated demand (a significant percentage of drivers choose the old alternative road). They now claim that the lower-than-estimated demand is due to the construction of new alternative roads and are offering to reduce the toll if the government lowers the annual payment. Such an agreement would probably be socially beneficial in the short run, but the Government has refused to renegotiate, on the grounds that it would set a bad precedent.

The problems encountered in the first concession ought to diminish in the future, because the toll has replaced the payment to the government as the bidding variable. However, concession-holders are finding that drivers' willingness to pay is less than anticipated when an alternative untolled route is available. Another aspect that concerns them is the variability of demand, even on roads where alternatives do not exist. Rates of traffic growth show sharp fluctuations on existing toll-roads. Moreover, the traffic over a specific road depends on the other links in the highway network. Thus, the Government affects the demand on each particular route through the decisions it takes with regard to the rest of the network.

Traffic uncertainty sharply reduced private-sector interest in participating in future projects. In recent tenders, the Government dealt with this problem by introducing minimum traffic guarantees. Giving guarantees to concession-holders makes it easier to obtain loans in the financial system, which translates into a larger number of bidders and therefore greater competition. Another advantage of providing guarantees is that it reduces the likelihood of the franchise-holder going bankrupt, and hence the need to renegotiate the contract.

Against this, the major problem with State guarantees is that they increase the chances that projects which are neither privately nor socially profitable will be undertaken. Private investors could evaluate their participation in the auction considering the minimum guaranteed traffic, knowing that actual traffic would probably be much lower. Usually, the main stakeholder in any consortium

participating in a bidding process is a construction company, and the construction sector has lobbied the government to provide significant guarantees. However, Engel, Fischer and Galetovic (1998) have pointed out that "guarantees create contingent liabilities for the Government. These are seldom valued and are typically not included in the year-to-year budget or counted as government debt." Moreover, it is not a good thing to eliminate all risks from the concession-holder during the highway operation period, because it would mean the benefits of private management are being lost.

Recently Engel, Fischer and Galetovic (1996) have proposed a new mechanism for auctioning infrastructure concessions. The regulator sets the maximum toll that the concession-holder can charge, and then awards the concession to the firm demanding the least present-value of revenue (LPVR) for building and then operating the highway, until the required revenue is collected through toll payments. Hence the duration of the concession is endogenous. This auction mechanism greatly reduces the risk, because the present value of the total income the concession-holder will receive is known in advance. There remains a lesser risk; associated with the time the franchise-holder takes to collect the required sum. The longer the time taken to collect the desired income, the greater will be the operating and maintenance costs incurred on the road. An additional advantage of the LPVR auctioning method is that the State could terminate the concession early by paying the operator that part of the income that still had to be collected. In this case, the operator would also benefit from termination of the concession via savings on maintenance and operation costs, so the concession-holder might lobby the authorities to effect the transfer. Accordingly, it is necessary to specify precisely under what conditions the operator can bring the contract to an early end, in order to preclude opportunistic behaviour.

The longer the period estimated for the concession, the greater is the incentive to solve construction problems in the best possible way. This points to a preference for lengthy concessions. On the other hand a problem of prolonged concessions is the rigidity associated with unchangeable tolls and a consequent welfare loss. However, if there is any flexibility for modifying tolls, this inconvenience is reduced. The authority sets a maximum toll in the auction; this ceiling price could be raised temporarily by the authority but not lowered. This is where we see one of the great advantages of LPVR auctions. If an increase in the maximum toll generates an increase in revenue, its main effect would be to reduce the duration of the franchise, which has advantages for the concession-holder, less so than in other forms of auction. If the socially optimal toll were below the ceiling price, the impossibility of lowering it would produce an efficiency loss.

The highway linking Santiago and Valparaíso was auctioned using the LPVR method. In February 1998 a Spanish consortium won the concession. It sought a

present value revenue of UF 11 938 207 (approximately US\$ 380 million), an amount it expects to collect in 15 years. The price-cap for the toll is Ch\$ 1 800 (about US\$ 4). Bidders seeking a minimum guaranteed income would have had to make an annual payment to the Government. Two out of four bidders, including the winner, did not seek the guarantee. Thus, in principle, the State did not assume any risk.

In the LVPR method, one risk that is faced by the concession-holder is that it may take longer than expected to recoup the pre-established income. A situation could also arise in which annual revenues were not sufficient to provide this income. As traffic and hence the duration of the concession can be affected by decisions subsequently taken by the authority, this possibility will cause the discount rate used by bidders in the auction to rise. One way of mitigating this problem is by establishing guarantees for the concession-holder. A simple alternative for a guarantee is to set a maximum duration for the concession. If the concession-holder has not collected the required revenue by the end of the period, it would receive a percentage of the difference between required and actual revenue. An additional advantage of this alternative is setting a maximum period for the duration of the franchise. However, what the guaranteed percentage should be is an open question. The greater the guarantee the lower the discount rate used by bidders, so the bids will be more attractive. On the other hand, one needs to consider that the lower the risks, the lower also are the incentives to operate efficiently. When the franchise-holder has incentives to recover the required income rapidly, he will be concerned to operate efficiently: for example, broken-down vehicles are likely to be quickly towed away.

Apart from toll revenues there may be additional incomes arising from fixed-point advertising and highway services. In the auction process the prices and quality of highway services need to be clearly defined (*e.g.* the towing of broken-down vehicles), otherwise charges might become abusive. It also needs to be decided whether or not these additional revenues are included as part of the concession-holder's income. If they are included, the challenge is to ensure they do not get under-reported, and this implies a cost for the State and a possible source of conflict with the concession-holder. For this reason it would seem preferable not to include them; yet, non-inclusion could cause its own problems. If the incomes in addition to toll revenues exceed the cost of maintaining and operating the highway, the concession-holder would have incentives to remain operating the route for as long as possible. One solution to this problem is not to count additional revenues, but to set an annual payment from the concession-holder to the state, corresponding to an estimate of the revenue arising from the additional sources.

The auctioning of urban highways has proven much more difficult. Firstly, the authorities have more possibilities for influencing the results of urban highway concession-holders. In highway concessions, traffic, and hence the concession-

holder's income, can be influenced by government decisions regarding the rest of the road network. Although this also occurs in inter-urban concessions, in the urban case the range of decisions influencing traffic on a given road is much broader. For example the construction of access roads, complementary or substitute routes, the expansion of the subway system, or the introduction of tolls on congested streets can affect traffic.

The construction of express highways generates urban problems. For example, the construction of a large-capacity urban highway can cause the deterioration of the surrounding area. In Santiago, people living in a well-to-do residential area adjacent to where a proposed highway is expected to run have mounted a thus-far successful campaign against its construction. Ecologists have opposed the project because they believe the highway will encourage car use and so increase pollution; instead they favour investing in public transport. On the other hand, urban highways can serve to improve a run-down area, although the complexity of the real estate business makes it difficult to co-ordinate urban remodelling with the construction of a new highway. However, there should be a commitment regarding the forms and times of remodelling so as to ensure an appropriate result. In this way the opposition of residents in zones affected by the passage of the road will be diminished.

V.2 *Urban public transportation*

In 1991 the government decided to auction the right to use the main downtown streets in Santiago to the bus companies. Bidders had to compete on the basis of fares, frequency, age of buses and other quality measures. The decision was strongly resisted by bus owners, and in the first auction there were no bids. The government then took two measures to break the cartel. First, on the grounds of pollution, it banned older buses from circulating in downtown streets, and this produced cracks in a hitherto monolithic cartel. Secondly, it lodged a complaint with the Preventive Commission against the leaders of bus owner organisations for collusive behaviour, the main argument being that no one had participated in the first auction (to sweeten the deal the government bought buses that were 20 years or older at an above market price). While the Commission was conducting its inquiry a second auction was called in which the bus owners did participate.

The results of the bidding process were a 10% fall in prices, a 30% reduction in the number of buses operating in Santiago, better quality buses and a substantial reduction in journey time (the auction combined with other regulatory measures reduced the time a bus takes to cross the downtown area to less than one third). Other positive effects were less traffic congestion and a decrease in pollution. In 1996 the government extended the bidding process to other areas in the city, and in 1998 it called a new auction for bus routes for the whole of Santiago.

Unfortunately, more than 90% of the routes were bid for by just a single company and over 95% of buses offered the same fare rate, involving an 18% price hike. The results of this latest auction suggest that the sector has once again become cartelized. Unlike 1991, when the government fought the cartel actively, on this occasion the new administration chose to reach an agreement with the bus owners' association, allowing a stepped increase of 12% initially, to be followed by a further 6% as bus owners introduce automatic ticket dispensers.

VI. Conclusions

Regulation of public services in Chile considers competition as the principal mechanism for market discipline. Even in price-regulated sectors, licenses are non-exclusive (water distribution being the exception), and the regulations establish mandatory interconnection on previously specified terms. Equal-access rules are also embedded in many regulations. This approach is based on a correct premise: competition is the ideal regulator. The evidence in both Chile and other countries has corroborated this, as only in services where there is competition have productivity gains made by the privatised firms been passed on to consumers. Sappington and Weisman (1996) write, "vigorous competition is often the ideal regulator. It can compel firms to minimise production costs, keep prices close to operating costs, and deliver high quality and innovative services to customers."

However, Chilean regulation in the 1980s made a mistake in assuming that it was sufficient to open up services to new operators for competition to be generated. In fact, the Chilean experience illustrates how hard it is to achieve competition when the privatised public monopoly retains a large market share. As pointed out by Spiller and Cardilli (1998), without interconnection rights, the dominant firm can use the advantage resulting from network externalities to eliminate competitors. Although the legislation obliges the interconnection of telecom firms, the incumbent telecom monopoly has delayed this as long as possible in an attempt to preserve its position. In addition, when different activities need to be co-ordinated, as in the electricity sector, appropriate regulation is needed for competition to exist.

In Chile, regulations aimed at facilitating competition either "on the field or for it" has steadily increased over time. For instance, the by-law regulating gas transmission sets a variety of conditions for awarding concessions for gas transport, including (i) concessions can be awarded only to firms specialising exclusively in this activity, with no links to final customers, mainly electricity companies; (ii) concessions should not be exclusive; and (iii) gas transport should be subject to an open access requirement; *i.e.* the service should be

provided under non-discriminatory conditions, and information on supply and conditions should be publicised. In telecoms, since 1994 rates have been regulated as well as the technical conditions for interconnections between telecom firms, and it remains to be seen in the future how the disaggregation of the local telephony network will be carried out. The new rules for setting electricity transmission charges is a step in the same direction.

Although initially the restructuring of the privatised sectors was insufficient, recent privatisation episodes have shown greater concern for this aspect. The new legislation for water and sanitation companies introduced at the beginning of 1998 puts limits on horizontal integration so as to permit competition by comparison. When the airport terminals in Santiago were auctioned, airlines were restricted to a 15% share in the concession companies. Finally, the port concession law sets limits on both horizontal and vertical integration.

A second characteristic of Chilean utility policy is the use of regulation by incentives in services where there is insufficient competition. This form of regulation has proved to have an important advantage in that it promotes efficiency in firms. However, its disadvantage has been the difficulty of passing on efficiency gains to users. This is partly explained by the difficulties inherent in regulation by incentives, but there are also aspects that can be and are being changed. One of these is the transparency of the regulatory process. Currently, regulators in the electricity and telecommunications sectors can only make the information used for rate-setting available to the regulated firms themselves, which prevents other interested institutions from counteracting pressure from regulated firms²⁷. The new regulation of the water and sanitation sector has taken the opposite course: all information has to be made available to the public. It also modifies the dispute settlement procedure so as to give incentives to truthfulness: in the event of discrepancies between the firm and the regulator, an arbitrator has to choose which, in his or her judgement, comes closest to the norms.

Another aspect of regulation that needs to be improved is access for the regulators to information on the regulated firms. Currently, when a firm refuses to hand over information, the regulator has to appeal to the ordinary courts of law, where processes are lengthy and sanctions low. SUBTEL has had to do this. In addition, both in electricity distribution and fixed telephony, firms seek to delay rate setting by using a variety of legal devices in order to continue enjoying the old rates. Today, in both sectors rates are applied retroactively from the date set by law for the new rates to come into effect.

Another of the failings of the regulatory system was the lack of resources available to both the regulatory bodies and the antitrust institutions, which together with the lack of prestige attached to this public function has prevented

more suitable people from being retained. However, this situation is changing. For example, the new sanitation services law involves a significant increase in the salaries of officials. The other regulatory bodies have also found mechanisms for raising their employees' salaries. Apart from this, the Government is preparing a legislative bill to create a Superintendence of Telecommunications in order to separate policy-design in the sector from its regulation. Congress has just passed a law to increase the attributions and resources of the National Economic Prosecutor's Office, which will also improve the salaries of people working there. In addition, the creation of an economic tribunal is being considered with full-time members whose appointment would have to be approved by the Senate.

Although regulation will never be a good substitute for competition, the amendments made to the regulatory legislation, and in the institutions responsible for applying it, should have a positive impact and enable the pricing model based on hypothetical efficient firms to finally benefit consumers, while also creating competition in services where this is possible.

REFERENCES

- BITRAN E. and R. E. Sáez (1994), "Privatisation and Regulation in Chile", in B. Bosworth, R. Dornbush, and R. Labán, eds., *The Chilean Economy: Policy Lessons and Challenges*, Brookings, Washington, D.C.
- BITRAN, E. and P. Serra (1994), "Regulatory issues in the privatisation of public utilities: The Chilean experience. *Quarterly Review of Economics and Finance* 34 (Special Issue), 179-197.
- BITRAN, E. and P. Serra (1998), "Regulation of Privatised Utilities: The Chilean Experience," *World Development* 26(6), 945-962.
- ENGEL, E., Fischer, R. and A. Galetovic (1998), "Infrastructure Franchising and Government Guarantees," in T. Irwin, M. Klein, G. Perry and N. Thobani (eds.) *Dealing with Public Risks in Private Infrastructure*, Washington, D.C., Banco Mundial.
- ENGEL, E., Fischer, R. and A. Galetovic (1998), "A New Mechanism to Auction Highway Franchises," Working Paper 13, Centro de Economía Aplicada, Universidad de Chile.
- HACHETTE, D. and R. Luders (1993), *Privatisation in Chile*, International Centre for Economic Growth, San Francisco.
- HELM, Dieter (1994), "British Utility Regulation: Theory, Practice, and Reform," *Oxford Review of Economic Policy* 10, 17-39.
- KRIDEL, D., Sappington, D. and Weisman, D. (1996) The effects on incentive regulation in the telecommunications industry: A survey. *Journal of Regulatory Economics* 9(3), 269-306.
- LEVY, B. and Spiller, P. (1994) Regulation, institutions, and commitment in telecommunications: A comparative analysis of five countries studies. In *Proceedings of the World Bank Annual Conference on Development*

- Economics 1993, ed. M. Bruno and B. Pleskobic, pp. 215-266. The World Bank, Washington, DC.
- SAPPINGTON, D. and Weisman, D. (1966) Designing Incentive Regulations for the Telecommunications Industry, The MIT Press and the AEI Press, Boston and Washington, DC.
- SERRA, P. and G. Fierro (1997), "The outage cost in Chilean industry," *Energy Economics* 19(4), 1997, 417-434.
- SERRA, P. (1997), "Energy pricing under uncertain supply," *Energy Economics* 19, 209-223.
- SPILLER and Carlo G. Cardilli (1997), "The Frontier of Telecommunications Deregulation: Small Countries Leading the Pack," *Journal of Economic Perspectives* 11(4), 127-138.
- STALON, Charles (1997) "Electric Industry Governance: Reconciling Competitive Power Markets and the Physics of Complex Transmission Interconnections," *Resource and Energy Economics*, 19(1-2), 47-83.
- TABJA, R. (1997) "Análisis de la Tarificación para la Telefonía Pública Local en Chile," Master degree thesis, Facultad de Ciencias Físicas y Matemáticas, Universidad de Chile.

NOTES

1. Minority packages from Endesa, Entel, Eliqsa and Elecda were sold in 1990.
2. The military government put forward three reasons for promoting labor and popular capitalism: (i) fostering the market economy by strengthening the domestic capital market; (ii) expanding capitalism to larger segments of the population; and (iii) in the case of labor capitalism, increasing productivity by aligning workers' and owners' interests. Other unstated reasons were the unpleasant experience with the highly leveraged and concentrated privatisation process of the 1970s, gaining public support for the ongoing privatisation process, reducing worker opposition to it, and making any policy reversal almost impossible.
3. The privatisation of public utilities, however, encountered little opposition. There are a number of reasons for this. First, there was a general presumption that SOUs were inefficient. Second, political opponents had concentrated their efforts in fighting for the prompt return of democracy to the country. Third, most of the restructuring of SOUs occurred before their privatisation, thus workers had little to fear from privatisation. Moreover, workers in enterprises being privatised and public employees could use their accumulated severance pay in order to buy shares.
4. Many potential subscribers did not apply for the service when they knew that their sector was not being served.
5. This situation, although positive in general, does raise certain problems in terms of its practical application: in general, legal processes are slow – especially litigation involving regulatory problems. In addition, due to lack of specific knowledge, the Judicial authority does not always have the capacity to solve such conflicts.
6. To the best of our knowledge, Chile was the first country to introduce incentive regulation.
7. The telephone bill of an average household increased from Ch\$ 9 853 in May 1987 to Ch\$ 11 395 in May 1997 in constant May 1997 Ch\$.

8. Price-capping consists of placing a cap on rate increases, where the cap moves according to price inflation minus a factor representing an ex-ante estimation of future efficiency increases. Price capping seems to have an advantage over efficient-firm pricing. It is easier for the regulator to identify future efficiency gains that would lead to lower costs, than to build a credible efficient firm case from scratch.
9. The client figures correspond to mid-1995.
10. Two distribution companies, Saesa and Frontel, subsidiaries of Endesa, were privatized in 1980.
11. A few days before the bidding date the authorities declared the process void as they realized that a short-list of six was going to produce only one offer. Negotiations produced a face saving agreement in which the consortium made a slight increase in the price it had originally offered in return for longer payment terms.
12. Only generators with an installed capacity of less than 2% of total installed capacity within the system are excluded.
13. The reliable capacity of each producer is the maximum power that its generating units can contribute at the peak period of the system with a reliability exceeding 95%.
14. In 1992, 97.2% of generation in the SIC was hydroelectric, while in 1990 the figure was 60%.
15. Chilectra serves 37% of all clients located in the SIC, and Río Maipo 7.4%. Other important distributors in the SIC are CGE with 16.8% of all clients, and Chilquinta with 11.1%.
16. The legality of this by-law is being challenged in court.
17. In 1997, following the driest year on record till then, similar disputes arose between generators. However, the spectre of rationing disappeared following the copious rains of that year.
18. This section draws on Melo (1993).
19. For instance, since CTC wanted to delay the process for determining access charges between fixed and mobile telephony, it finally chose two of the three arbiters.
20. Concession-holders have up to 24 months to install the phone. By the end of 1997 only 149 phones had been installed.

21. The Preventive Commission recommended changing Chile's signatory at ENTELSAT. Prior to the ruling, Entel was the only signatory of this convention, which gave privileged access to international connections, as ENTELSAT satellites have an absolute majority of international transmission.
22. In 1996 Entel increased its participation in Telecom to 59%, and raised it further to 75% in 1997.
23. Chilesat has a joint venture with Qualcomm, with each owning 50% of the PCS company.
24. The Commission argued that competition among potential competitors is an important factor in market discipline.
25. Bell South filed a complain against Entel with the Resolatory Commission. Entel's defense argued that it obtained all its licenses in public auctions and that it is not the dominant operator in mobile telephony.
26. The scarcity of phone lines led to users being willing to pay an installation price way above its cost. This surcharge recognized this situation and was introduced with the intention of giving CTC incentives to reduce the waiting list quickly.
27. However, consumer associations can be bought by large regulated firms. Recently the president of the largest consumer association resigned after acknowledging having received money from CTC.

PRIVATISATION METHODS AND THEIR IMPACT ON COMPETITION :THE BRAZILIAN EXPERIENCE

by
Stefan Bogdan Salej*

I. Summary

The Brazilian privatisation process started in 1990, with the introduction of the Brazilian National Denationalisation Programme (NDP) and was marked by two important legal milestones in 1995. These were: (i) the Law of Concessions for Public Services; and (ii) the Constitutional Reform which, among other things granted equal treatment to foreign capital, on par with Brazilian capital.

This institutional and legal framework was complemented by policies such as the removal of trade restrictions, monetary stability, deregulation of the economy, and the establishment of a new body of regulations and agencies aimed at promotion of competition, and supporting the new role of the State in the economy. The privatisation programme sought to address Brazil's serious fiscal crisis.

Brazil's privatisation methods have had a decisive influence on the competitive atmosphere of the privatisation process (procedures) itself, as well as its outcomes. Some of these methods have applied to the process as a whole, while others have been specific to the sector that was being privatised. Transparency of the process has been a key underlying principle and has provided the privatised companies, the consumers, the securities market, and the potential Brazilian and international investors in the "mirror-companies" with confidence in the efficiency, predictability, and generally credibility of the privatisation

* Stefan Bogdan Salej is the President of the Federation of Industries of the State of Minas Gerais. João Camilo Penna, Frederico Ribeiro, Paulo Henrique Magalhães Ferreira and Heloisa Regina Guimarães de Menzes have contributed to this paper.

programme. This approach has also contributed to the establishment of solid foundations for Brazil's economic policies.

The value of Brazil's privatisation proceeds and the resulting market structure have been determined by the following factors:

- prior restructuring of the sectors to be sold;
- evaluation by independent consultants;
- prevention of monopoly formation in the privatised sectors, either by prohibiting “crossovers” (i.e., preventing a company from participation in another sale in the same sector, and thus setting a ceiling on a company's participation in a given market), or through regulations; and
- adoption of a system of public auctions with “sealed envelopes”.

The need to control budget and current account deficits made the process of privatisation very important to the state, and accelerated the sale of existing assets, which were effected independent of considerations such as the need for new investments. The state restructured the companies that were to be privatised, and in order to facilitate the sale of these assets, it accepted public debt securities as a method of payment (the so-called “rotten currencies”). In sectors that were considered to be strategic, government participation has continued either through the use of golden shares or by means of partial sales. However, these sectors are now becoming increasingly subject to increased participation by the private sector.

II. Factors that contributed to the Brazilian privatisation process

The choice of privatisation models has to balance the need for ensuring a growing supply of products and services of adequate quality, at reasonable prices, with the goal of preserving the attractiveness and profitability of the company that is to be privatised.

Many of Brazil's state-owned companies, while effective and efficient at the start, were no longer so at the beginning of the 1990s, when the privatisation programme began. Therefore, privatisation offered an opportunity to achieve considerable productivity increases. In addition to efficiency considerations, the need to reduce domestic public debt, and to attract foreign investment made the need to privatise state-owned companies even more urgent.

The implementation of the privatisation programme benefited from the introduction of reforms that promoted competition, and facilitated proper functioning of markets. These reforms included the following:

- removal of commercial restrictions, with a phased-in reduction of tariffs from 1990 onwards;
- constitutional reform of 1994-1998 which, is still in progress, and is seeking to make the 1988 Constitution also a Competition Constitution¹;
- stabilisation of the currency, which became a reality after 1994; and
- deregulation which ended price controls and various governmental interventions, followed by the introduction of a modern and flexible regulatory regime.

These reforms helped create the conditions that are necessary for promotion of competition between private sector agents, and the proper functioning of markets.

The National Denationalisation Programme (NDP) was instituted in 1990, and its first acts were concentrated in industrial sectors such as steel, and petrochemicals, where firms could be made subject to market forces, relatively free of the difficulties inherent in the privatisation of public utility sector companies.

Also noteworthy is the Constitutional Amendment, Number 6, of 1995, which provided equality of status for foreign capital, on par with Brazilian capital, and thus allowed its participation in privatisation of public services. This completed the establishment of the necessary legal framework for the implementation of the privatisation programme.

The state-owned companies were put in place as instruments for promoting economic development, through achieving economies of scale, using the purchasing power of the government to develop suppliers, and funding essential projects where private capital was not available. However, by 1990s these companies had served their purpose and had become outdated. Over time they had become an instrument in the hands of politicians for promotion of “jobs for the boys”, nepotism and a situation had developed where commercial decision making was discouraged.

It has been argued that the economic benefits of privatisation are maximised when governments make increased efficiency their number one objective. In Brazil, government action is conditioned by the need to balance the budget. For

example, the use of privatisation proceeds to reduce domestic debt instead of using it for investment is a case in point. This real and immediate need seems to delay increases in efficiency. However, the reduction in debt reduces debt service payments and is conducive to investments that increase productivity. At present, the Brazilian state has negative savings, and the fiscal deficit continues to be very high. Therefore, the use of privatisation income to amortise the debt is an act that will ultimately lead to greater productivity.

A competitive market environment is necessary for ensuring that the full benefits of privatisation are realised. In this regard the state has an important role to play, as at first glance a large part of the privatised sectors, or those in the process of privatisation are considered to be “natural monopolies”. Therefore, in order to increase efficiency in the privatised sectors, an institutional and regulatory apparatus that guarantees competition and prevents abuse of market power by natural monopolies is necessary².

The privatisation methods themselves also determine the outcome, in that they have a decisive influence on the subsequent degree of competition that develops. International experience has shown that in the case of privatisation of public services the methods used, the degree of liberalisation and transparency in the process and the scope of regulation, all have significant implications for the price level, the quantity of investments and the quality of the product or services after privatisation.

In addition it is necessary to adopt methods that are appropriate for each sector. Specific requirements occasion different models, creating difficulties in the negotiations, as on the one hand the state has to represent the interests of the community, and private enterprise, while on the other, it is seeking the greatest possible proceeds from the sales. In the case of Brazil the situation is further compounded by the political context.

The Brazilian National Denationalisation Programme (NDP) has benefited from the experience of other countries with privatisation. By studying the experience of other jurisdictions, the Brazilian government has been able to learn from their mistakes, adapt the successful models to the Brazilian context, and avoid the errors that the pioneering countries had committed in their approach to privatisation.

However, NDP has been in existence only for a short period of time, thus making an assessment of the impact of the model on the efficiency of the various sectors difficult. Today, one phase of the process has been completed, and in some sectors, such as infrastructure, privatisation has only recently begun.

III. Methods and aspects of privatisations

III.1 Existing versus new assets

One of the difficulties faced by the NDP is the need to combine the selling of existing assets with the need to realise new investments that are fundamental to the growth of private enterprise. The buyers were initially directed to the purchase of existing assets in order to enable the government to meet its urgent need for reducing the public and external debt. This was also due to a lack of regulations in the Brazilian legislation for dealing with competition. It was necessary to establish clear and dependable rules for the functioning of the markets involved, so as to render acceptable the uncertainties about the return on the investment, with a reduction or transfer of risks to the seller.

The delay in the establishment of the new framework created difficulties for the privatisation process during the last four years, but these have now been overcome. To aggravate the matter further, the timing of the Brazilian Privatisation Programme had coincided with that of several similar international privatisation programmes, especially Latin American ones. As a result the competition for attracting buyers depressed the price of the Brazilian state-owned assets, new investments were delayed and the privatisation programme itself was jeopardised.

To address this problem, the Brazilian Government made the rules of the privatisation programme more flexible. Initially the BNDES, the federal financial development institution, started financing a large part of the acquisitions. In addition, government securities and other “public currency” started to be accepted as a part (very often a substantial part) of the payment. The constitutional amendment, which removed restrictions on foreign capital, thus treating it in the same way as Brazilian capital has also been an important feature of this increased flexibility.

Acceptance of government securities represents a depreciation of the price of the assets sold, as these securities were bought in the market for well under their face value, but were then accepted for their full value in the auctions.

Given the above, it has been absolutely necessary to ensure the full mobilisation of those interested in the auctions, and to bring in not only domestic resources, but also foreign investors by putting on road shows in the world’s principal financial centres.

As a consequence, in many cases high premiums were realised relative to the minimum prices evaluated by independent appraisers. Learning by experience

in the process led to the use of sealed envelopes in the auctions, which represented a big advance, with a significant increase in the final selling price.

III.2 Evaluation of risk

Once a company has been privatised, the new owner should assume the inherent risks, as the free functioning of competitive markets includes the administration of risks associated with investments. However, it is necessary to make a distinction between the risks associated with the purchase of a state-owned enterprise and those associated with the purchase of a privately owned company.

In some sectors, and in specific situations, the state will be required to assume part of the risks, either directly, or indirectly through a third party. On the other hand the presence of a strong regulatory component forces businessmen to take decisions that they would not have taken, had they enjoyed complete freedom of action. This gives rise to risks that are independent of the businessmen's own process of business assessment.

For example in the Brazilian electricity sector, the requirement of an integrated operation of the system entails risks for the new owners of power plants. These risks lie outside the owners' decision making process, and therefore in this context it would be fair for the government to assume those risks that stem from its own actions, *i.e.* the requirement of a global operation of the electrical system.

It is important to note that the private owner should assume only those risks that are endogenous to the business process. It should be the responsibility of the government to encourage them to adopt mechanisms in order to protect against uncontrollable risks (such as hedging and insurance operations). As for government-imposed risks, the government must assume them and create funds to cover such risks.

An important innovation of the Brazilian NDP is in the Concession Law, where the mutual obligations and terms of the contract are clarified in advance. This approach has led to a substantial reduction in the risks and disputes that often arise in the course of post-auction negotiation of contracts. It has also reduced the length of the process, allowing for the transfer of ownership to take place soon after the auction.

Finally, an additional benefit of risk reduction in the privatisation process, is the appreciation in the value of the assets sold, as reduced risks tend to increase the future profitability of the assets .

III.3 Strategic sales versus pseudo-privatisations

The design of the privatisation process should adopt mechanisms that help prevent “pseudo-privatisation” of sectors or companies. The phenomenon of “pseudo privatisation” refers to a situation where some degree of state or federal participation continues, even after a company has been privatised. This could potentially offset the effects intended by the privatisation programme. Brazil’s experience with pseudo privatisations has been due to the following.

1. BNDES becoming the buyer of last resort through partial financing of the purchase, and by assuming shares in guarantee. In some cases the BNDES buys shares directly to make the deal financially feasible, and sells them later;
2. pension funds linked to the nationalised companies purchasing a substantial part of the company;
3. foreign government-owned companies buying of the controlling interest in the privatised companies; and
4. state-owned (as opposed to federal) companies, or pension funds associated with them entering into privatisations of federal companies, or vice-versa.

Foreign investors have played an important role in ensuring the success of privatisation auctions, and prevention of “pseudo privatisations” described above. However, as a result of the Asian financial crisis and the shrinking of capital available from international markets, the use of this mechanism has been undermined.

IV. Effects of privatisations

IV.1. Efficiency of the companies

A study by Armando Castelar³ published by the Institute for Applied Economic Research (IPEA), has examined the micro economic effects of privatisation for the periods 1981-1991 and 1991-1994, and reports that as a result of privatisation companies had become more efficient and profitable. The study reports that:

- for the whole sample, as well as the various sub-samples, sales per employee and net profit showed significant growth;

- a complete sale and transfer of control has been associated with a more significant improvement in performance than has been the case with minority participation, a finding which is consistent with the idea that together with the change of ownership the incentives for workers and administrators are improved;
- changes were more significant for privatisations of the 1990s decade than those of the 1980s, confirming the idea that the impact of privatisation on company efficiency is greater when combined with other liberalisation and austerity measures; and
- the results obtained are quite conclusive as far as job losses associated with privatisation are concerned, and are evident in the declines in both the average and median number of employees.

It must be noted that often the government has prepared the companies for privatisation, by totally or partially restructuring them prior to their sale. In some cases such as iron and steel, the companies were privatised only after the functioning of new investments aimed at increasing their productivity had been tested. In addition, the new economic environment itself has contributed to the general increase in productivity, including that of private sector companies.

The basic requirements for maximising the benefits of privatisation are:

- prior establishment of an atmosphere conducive to competition;
- a clear definition and transparency of the legal structure within which the companies should operate;
- articulation of policy objectives in areas such as the rights of users, service quality, preservation of the environment; and the reduction of barriers to entry and exit.

Privatisation has both static and dynamic effects on the sector in question. The static effects relate to the initial organisation of the sector, in terms of the number of companies that constitute it, the range of products, their cost and price structures, degree of vertical integration with suppliers, and levels of investment that characterise the sector.

The dynamic effects refer to the changes in the organisation of the sector over time. In this regard, the prevention of predatory practices and the control of variables such as barriers to entry and exit of companies, discouraging vertical integration and promotion of competition, are indispensable for the maintenance of a competitive sector.

IV. 2. The search for maximisation of benefits

The revisions to Federal Constitution of 1988 and the dictates of social democracy led the Brazilian Government to implement a process of deregulation, privatisation and re-regulation, where the role of government in the economy is modernised.

Unlike some international experiences where the privatisation process has followed the sequence of: privatisation - restructuring – regulation. In Brazil the order has been as follows:

privatisation $\Rightarrow$ restructuring $\Rightarrow$ regulation $\Rightarrow$ privatisation
(*concept or decision in principle*) (implementation of sale)

It is essential to understand that in the concession process it is not always possible to introduce competition into a sector. As Coopers & Lybrand, the principal company contracted for the Project of Restructuring of the Brazilian Electrical Sector, have stated, “One of the basic concerns of the government is that the sector is as efficient as possible. Experience shows that where activities can be organised sensibly and on a competitive basis, the competitiveness brings more favourable results than the regulating of monopolies. This is not only a question of what can be accomplished in theory, but one which requires a recognition of the tension between the advantages of competition, on the one hand, and the probable losses of economies of scale and scope and co-ordination...”

V. Trade off: mechanisms for the defence of competition versus the needs of large scale operation.

The Brazilian process of restructuring, re-regulation and privatisation has been driven by the search for efficiency, both micro and macro-economic, in order to meet the demands of the domestic market and to make Brazilian goods competitive in world markets.

Companies’ competitiveness depends on their ability to improve their productivity and quality, and often-large investments in research and development are required. In certain capital-intensive industries, production needs to be on a large scale to be feasible and efficient.

In this sense, the pre-privatisation restructuring of companies such as telecommunications and electrical power, must be cognisant of the natural monopoly components of such industries, and the effects of restructuring on their efficiency. Breaking up the natural monopoly segments reduces the companies' capacity to operate and benefit from efficiencies of large-scale production. Currently, the companies, that were formerly parts of the Telebrás and Eletrobrás systems, are now operating independently and in competition with others.

After the year 2000 new companies will be permitted to enter to operate in the various regions of Brazil, in parallel with the public service concessions. These "mirror companies" will be competing freely and without the territorial and sectoral restrictions that are imposed on the state-owned companies.

This in effect eliminates the state monopolies, and creates a system which allows the private sector to operate in competition with state-owned companies in key infrastructure sectors such as: power, telecommunications and transportation.

Within these sectors, certain activities are still considered to be "natural monopolies", where the participation of a second company is not efficient. For example electricity transmission and local distribution remain a natural monopoly. In such cases, the private company with a concession for such activities will be overseen by the regulatory agency until technological advances make the introduction of a competitive regime possible.

In those sectors that are not considered "natural monopolies", for example power generation, privatisation has brought about market rules that benefit consumers. Given that such activities require interaction with natural monopolies, they too are subject to tariff regulation in order to prevent any possible abuses of monopoly power, to ease the tensions between productive and distributive efficiency, and to introduce mechanisms to promote dynamic efficiency.

The principles of competition are present in the whole process of restructuring, both in the tradables and in the non-tradables sectors.

For example, the privatisations of the 1991-1995 period has brought about significant changes to the iron and steel sector market environment. Up until then the government was heavily involved in the industry and it was slowly losing its capacity to invest. Under the private sector ownership, the industry has witnessed mergers, take-overs, and reciprocal participations, which have changed its market structure drastically, and have led to increased vertical and

horizontal integration in the industry. This has been a constant source of concern to the Brazilian anti-trust agency.

A competitive market system, with no barriers to entry and no discrimination as regards the origin of capital, is more conducive to efficiency and is preferable to a system where monopolies, oligopolies or artificial protections are put in place and maintained in the name of the power to compete in international markets.

A removal of restrictions on foreign investment without providing equal treatment, an exclusive preoccupation with the consumer, and the inadequate capital formation in Brazil, all require special attention. These issues need to be addressed in order to achieve sustainable growth, and progressive improvements in the standard of living.

The low level of capital formation in Brazil requires not only the consolidation of stability but also a series of reforms and measures that guarantee the attractiveness of new investments. The state's negative savings can be made positive through implementing fiscal reform. Company growth can be ensured by reinvestment of profits, which are at present low, but which will grow under the new regime. Family savings will be encouraged through the adoption of new attitudes, and the new Social Security model, based on the private sector. It cannot be assumed that foreign capital will be the solution to the present deficiency, as it is unlikely to exceed \$25 billion per annum, and it is likely that this figure will be reduced in the future. Often foreign capital is initially directed to the purchase of existing assets, and not new investments, and is being used to build up external reserves (as profits are remitted). Therefore, it is absolutely essential that the regulatory agencies, in the case of public services, and agencies such as CADE and SDE, do not act exclusively in the interest of consumers. Instead, they should seek to strike a balance between the producer and consumer interests, so that companies can grow and generate healthy profits that can be reinvested.

It must be noted that Brazil cannot go through another round of tariff reductions, or a devaluation of the Real. The buyers in the privatisation auctions would be deterred if this were to happen.

The flexibility and dynamism of companies operating in the market provides them with the capacity to formulate strategy, which may include the goal of achieving market power associated with large-scale operations. Therefore, the decision about size should come from the market itself.

The Brazilian System of the Defence of Competition emphasises the need for a competitive market to ensure economic welfare through a vigorous regulation of market structure, conduct and performance. In this regime, the structure refers

to the number of competitors, the organisation of production and distribution, and barriers to entry, among other things; conduct refers to the competition strategies of each company using instruments such as price, advertising, innovation and investments; and performance refers to the quest for allocative efficiency and technical progress.

VI. Conclusions

There are two types of privatised companies; companies that provide public infrastructure services and are subject to the Concessions Law; and companies that produce purely commercial goods and services, including those that are traded in the international markets. In the case of latter, the Brazilian System for the Defence of Competition (SBDC)⁴, acting in an antitrust sense in Brazil, seeks to promote efficiency. Privatised public infrastructure companies such as telecommunications, electrical power, and oil are regulated by regulatory agencies.

The regulatory agencies organise, supervise and regulate the operation of services within their jurisdiction, and as regards competition, they look after the questions of conduct. Issues concerning the structure remain under the supervision of CADE, SDE and SEAE.

The SBDC prevents and checks for abuses of economic power, both in conduct and in the construction of oligopolistic and monopolistic market structures. Its jurisdiction extends over the whole economy, including private sector companies and those that operate within a concessionaire regime.

The new role of the Brazilian government in a post-privatised economy is essentially a pro-market approach with regulation aimed at protection of competition, the rights of consumers, and achieving balance between these and concern for the commercial interests of companies and their role in the economy.

The viability of this environment is critically linked to the transparency of the privatisation process, given that economic agents need to have confidence in the independence and competence of the new players in the market and the regulatory role of the state.

Actions taken by the Brazilian Government, as defined by the Brazilian Denationalisation Programme, include the restructuring of the sectors to be sold, valuations carried out by third parties, prevention of the formation of monopolies in the privatisation auctions, prohibition of “cross-over” (a company cannot participate in another sale in the same sector), establishment of

regulations and the use of public auctions for disposal of assets. These have all played a critical role in raising the level of competition in the markets.

The transparency and legitimacy of the privatisation process has been critical in ensuring its effectiveness. The efficiency and predictability of the process has lent credibility to state action and its economic policy.

Excessive participation of foreign state-owned companies in the auctions, the initial lack of commitment to new investment, when selling the existing assets, the acceptance and utilisation of “rotten currencies” for example, are all being re-considered to ensure that the sales do not transfer only the benefits, but that also some of the liabilities are transferred.

The “modus operandi” of the Brazilian privatisation process established by the Brazilian Denationalisation Programme, already described, is to address the problems of constraints on investment caused by the lack of capital, fiscal deficit, as well as the need for technological progress. It also includes transparency of the process and the need to establish a competitive market structure in order to achieve improved quality and lower prices for consumers, while at the same time ensuring that companies have the capacity to compete internationally. In some specific cases the state has decided to continue participating in recently privatised companies through partial sales and the possession of special classes of shares (golden shares).

The continued involvement of the state in privatised companies, through ownership of golden shares, is intended to introduce a government perspective into the operation of companies. In this case the golden shares are not intended to have an effect on competition.

The Federal Government retained golden shares in the Companhia Vale do Rio Doce with the intention of preserving control over the strategic aspects of the planning and decision-making of the company and the Brazilian economy itself. Through this the union was able to force the maintenance of the CVRD’s principal economic activity and restrict contracting out or termination of any stage involving the production and sale of iron ore. In other words, it preserved the mine/rail transport/ port system, and prevented any change in the location of the head office of the company.

Consequently the strategic decision-making nucleus of the company (excluding equity holdings), includes the participation of the union which, in accordance with the Brazilian legislation, retains the ownership of the mineral resources of the subsoil in Brazil, with the company merely having the mining rights.

The model chosen for the CVRD, with a modern administration of shared control makes it possible for strategic investors (companies and professionals with experience and a background in the company's fields of operation) to accumulate know-how and capital. It has also allowed a transition process to take place from a state to a private company, with fewer upsets and greater long-term commitment.

It should be noted that golden shares limit the participation of competitors and customers in the controlling core of the privatised company, which in fact favours competition, as it prevents horizontal and vertical integration.

Union possession of golden shares imposes restrictions on the total control of the company, and would likely reduce the value of sale proceeds. However in this case, this did not occur, because the amount raised at the auction exceeded the originally expected premium. On the other hand the complete diffusion of the company shares would make any type of participation in its control ineffective.

Another feature of the Brazilian privatisation methods is the use of partial privatisations. In Brazil, partial privatisations were introduced for several reasons. These included the acute need for investment and unfeasibility of public financing given the government's fiscal constraints, the urgency of introducing a competitive regime in sectors which until then were thought of as "natural monopolies"(such as electricity generation), and the existence of constitutional restrictions in certain sectors of the economy.

Like golden shares, partial privatisation can depress the value of the remaining shares, held by the government, as investors interested in the control of the company will not participate in the auction. The position of the partial controllers may act as an obstacle to the valorisation of the shares in the hands of the state. Therefore, in the absence of any justifiable strategic reason for continued state-ownership, the sale should be total, in order to ensure that the full value of the asset is realised.

In those sectors where constitutional restrictions apply, privatisation is by means of the entry of new companies through new concessions, and partial sales. For example according to Law number 9478/97 (the Petroleum Law): "the Union may allow state or private companies that are constituted according to Brazilian law and have their head office and administration inside Brazil to explore and produce petroleum and natural gas in Brazil, by means of concession contracts, preceded by tender.....". Government studies indicate that privatisation in the oil sector will be through partial sale of Petrobrás and entry of new companies. This approach would allow the necessary investments to be undertaken and for the transition to be secure and orderly.

In the electricity sector, the new model envisages total competition in the area of generation, for which concession will be granted by means of public tender, establishing total competition between state-owned and private companies.

As far as the distribution sector is concerned, provision of services for cargo over a certain size is no longer a state monopoly, as private sector companies can now operate in competition with the state to supply services to large consumers. However, consumers with cargo below a certain size will continue to be served by a monopoly and will have their prices regulated by Aeel. These consumers represent more than half of the market.

Appendix I

HISTORY OF THE BRAZILIAN DENATIONALISATION PROGRAMME

In 1990, the Brazilian Denationalisation Programme was created, after it was observed that the old model of economic growth, based on the active participation of the state as entrepreneur, had exhausted itself. The fiscal crisis of the 1980s undermined the government's capacity to invest in state-owned companies, jeopardising the ability to expand supply to meet demand. The use of tariffs as a tool of inflation control made the financial results of these companies even worse, and further limited their capacity for future expansion.

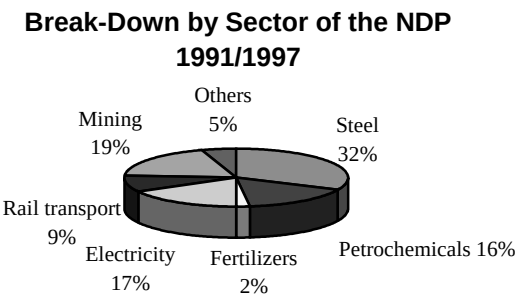
This situation, coupled with the growing need for improved productivity in order to introduce Brazil into the international markets, led to the adoption of a new approach to economic development. Under the new approach, private sector would assume a larger role, while the state assumed responsibility for oversight and regulation.

The first phase of the Programme (1990/1994) focused on privatisation of industrial companies, particularly those concentrated in the iron and steel, petrochemicals, and fertiliser sectors. During this period, privatisation currencies were used on a large scale (sundry credits on the Federal Government), and there were significant restrictions on participation by foreign investors.

In the period 1995/96, the programme entered a new phase. The Brazilian Denationalisation Council (CND); a body directly responsible to the President of the Republic, and composed of various economic ministers was established. An accounting fund known as the Brazilian Denationalisation Fund (FND) was also created, where the shares of companies included in the Denationalisation Programme were deposited. The Brazilian Bank for Economic and Social Development (BNDES) administers the Fund itself. Included in the privatisation agenda were concessions of public services, such as electricity, telecommunications, road and rail transportation. Another important decision during this phase was the inclusion of the Companhia Vale do Rio Doce in the portfolio of the FND. Other characteristics of this period were the start of privatisation at the state, as opposed to Federal, level, reduction in the use of "rotten currencies" for payment, and reduced discrimination against participation of foreign investors in the purchase of the state-owned companies.

The year 1997 was distinguished by the sale of the CVRD, one of the largest mining companies in the world. This sale constitutes a milestone in the Brazilian privatisation programme, due to the polemic about CVRD's strategic importance for the country and the advisability of selling a profitable and undoubtedly efficient company. With this sale, privatisation of industrial companies was practically completed, and the attentions of the CND turned to public service concessions and to the support of state privatisation programmes. The graph below, which illustrates the breakdown by sector of the privatisations already effected, shows how the NDP concentrated, up to 1997, on predominantly industrial sectors:

Graph 1



Finalisation of the sale of the Federal Rail Network (RFFSA), the sale of Centrais Elétricas do Rio de Janeiro (CERJ), of Espírito Santo Centrais Elétricas S.A. (Escelsa), and Cia. de Eletricidade do Estado da Bahia (COELBA); and the auctions for the sale of shares of Cia. Riograndense de Telecomunicações (CRT) and of Centrais Elétricas de Minas Gerais (CEMIG) were other important events of the year. In the telecommunications sector, the privatisation programme began with the call for tenders for the Band B mobile phone concession. In addition, the privatisation of the Banco Meridional do Brasil SA marked the start of privatisations in the financial sector. Table 1 presents the results of the NDP in the period 1991/1997.

Table 1.
Results of the Brazilian Denationalisation Programme (NDP)

Year	Number of Privatised Companies (N°)	Income from Sale (\$ million)	Total Sale Receipts (\$ million)	Share of Income from Sale as a % of Total Receipts
1991/1992	18	49	4 015	1.2
1993/1994	15	1 590	4 593	34.6
1995	8	327	1 003	32.6
1996	11	3 057	4 080	74.9
1997	4	4 073	4 265	95.5
Total	56	9 096	17 956	50.6

Source: Brazilian Bank for Economic and Social Development (BNDES)

It should be noted that in the years 1996 and 1997 total sale receipts were roughly double the yearly average of the first four years of the programme, and four times the value for the year 1995. In terms of the number of companies sold, the figure fell from 8 and 11 in 1995 and 1996 respectively to 4 in 1997, this was a result of the process concentrating on large, high value companies.

In the eighth year of the NDP, privatisations in the electrical sector, considered to be among the most profitable, have yet to be completed after which the programme will move on to the area of concessions in the field of highways and ports, and consolidation of the state and municipal privatisation programmes.

In addition the first signals are being sent that in the event of a second term for President Fernando Henrique Cardoso, sales of other state companies will be considered.

For 1998/99, the BNDES envisages the privatisation of state banks, ports, underground and/or metro railway lines, and state energy and basic sanitation companies, among others.

Table 2 shows the results of privatisations in the period 1991/1997.

Table 2.
Yearly Results of the NDP for the period 1991/1997 and 1998

Year	Number of Companies	\$ Million	
		Receipts from Sales	Debt Transferred
1991	4	1 614	374
1992	14	2 401	982
1993	6	2 627	1 561
1994	9	1 966	349
1995	8	1 003	625
1996	11	4 080	669
1997	4	4 265	3 559
1998*	12	-	-
Total	56	17 956	8 119

*Refers only to the Telebrás auction

Source: BNDES

Appendix II

INITIAL LEGAL REGULATORY FRAMEWORK IN BRAZIL

The legal framework in Brazil is governed by several articles of the Federal Constitution of 1998, which confers upon the state the role of a standardising and regulating agent of economic activity. Provision of public services is the responsibility of the Public Authorities, either directly or under a regime of concession or permission. Law number 8.987/95, which deals with the regime of concessions and permissions for the rendering of public services and Law number 9.074/95, which deals with the granting and extending of concessions and permissions complement the constitutional provisions on the subject.

The legal framework defines public utility services that are provided under a public regime through concessions and permissions, and those rendered by the private sector in compliance with the constitutional principles of economic activity, where “full, free and fair competition should prevail” .

Specific regulatory agencies have been created to organise, oversee and regulate provision of public utilities. The authority to regulate services provided by the private sector, and economic activities in general is vested in the existing “Brazilian System for the Defence of Competition” which is structured to consist of three bodies; Administrative Council for Economic Defence (CADE), as an independent autarchy, the Secretariat of Economic Law (SDE), of the Ministry of Justice, and the Secretariat for Economic Supervision, of the Finance Ministry.

The principal characteristic of any initial legislation is the creation of a regulatory agency. The regulatory agencies created under the legislation cited below have ensured that the establishment of clear rules and objectives has preceded the sales. Clear rules attract both Brazilian and foreign investors interested in gaining concessions or permissions for the exploitation of electrical energy, telecommunications and petroleum. They also establish parameters that set out government goals and objectives and guide government policy for the sector.

Economic literature and international experience identify two models for the design of regulatory agencies: specific or multisectoral/general. In the first case the jurisdiction of the agency is limited to a given natural monopoly, or oligopoly in a specific sector. In the second, the same agency may be

responsible for more than one monopoly and in different sectors (air, rail, road and sea transport, for example). Sectoral regulatory agencies represent the more frequently adopted model.

Sectoral agencies act as a proxy for the market mechanism in order to achieve allocative efficiency (the primary goal of competition), and to achieve objectives such as universal access to services, regional integration, consistency between long-term strategy and social considerations among other things.

In Brazil, the federal regulatory agencies (both existing and those under consideration), possess specific legal competencies, and their jurisdiction is restricted to a certain industry and sector. Some states such as Minas Gerais and Rio Grande do Sol, have created multisectoral regulatory agencies given that the number of state public services conceded and permitted there are still relatively few.

The state agencies act in co-ordination with specific federal agencies, and in a sense through agreements with specific federal agencies. They complement the activities of the latter in overseeing and regulating services conceded or permitted to the private sector.

Basic Judicial Ordering of the Regulatory Agencies

Agencies	Aneel	Anatel	ANP
Law	9. 427	9.472	9.478
Date	26/12/96	16/07/97	06/08/97
Decree	2 335	2 338	2 455
Date	06/10/97	07/10/97	14/01/98

Source: Legislation

The regulatory structure of the electrical sector is defined by Law number 9.427/96 which instituted the National Agency for Electrical Energy (Aneel), an autarchy under a special regime connected to the Ministry of Mines and Energy, with the following objective: *“to regulate, and supervise the production, transmission distribution and commercialisation of electrical energy, in conformity with the policies and directives of the federal government”*.

The telecommunications sector is regulated by Law number 9.472/97 which dealt with the organisation of the sector and created the National Telecommunications Agency (Anatel), an autarchy under special regime connected to the Ministry of Communications, whose objective is *“to adopt the necessary measures to satisfy public needs and to develop Brazilian telecommunications, while operating with independence, impartiality, legality, impersonality and publicity”*.

In the case of petroleum and gas, Law number 9.478/97 deals with the national energy policy and activities related to the petroleum monopoly, instituting the National Energy Policy Council and creating the National Petroleum Agency (ANP), an autarchy under a special regime connected to the Ministry of Mines and Energy, with the objective of *“promoting the regulation, the contracting and the supervision of economic activities within the petroleum industry”*.

Autarchies are “autonomous administrative entities, created by specific law, with a judicial personality in internal Public Law, own patrimony and specific state attributions”. A special autarchy is defined as “any autarchy for which the instituting law confers specific privileges, and increases its autonomy relative to that of normal autarchies, without infringing on constitutional precepts pertinent to these entities of public personality”.

The establishment of the agencies as autarchies has provided them with judicial independence that is fundamental for the fulfilment of their legal obligations. Such independence, however, is not unlimited and unrestricted. The agencies adhere to previously negotiated management contracts with the Ministries to which they are attached. These contracts act as instruments for controlling the administrative functioning of the autarchies, for evaluation of their performance and the submission of accounts.

The laws that created the agencies and their specific regulations have also established mechanisms for dispute resolution between the conceding power and the concessionaires.

The Law of Concessions has defined the two fundamental functions of the conceding authority to be regulation and permanent oversight of its operation. Specifically, the conceding authority has to undertake the following:

- regulate the service and permanently supervise its operation;
- declare the assets envisaged in this law a public necessity or utility;
- apply the regulatory contractual penalties;
- strive to ensure that the best possible quality of service is provided;
- promote competitiveness and improvement in quality, productivity, preservation and conservation of the environment;
- encourage the formation of consumer associations to protect consumer interests (such as service quality); and
- intervene in the rendering of the service, terminate the concession, ratify readjustments and undertake tariff revision.

REFERENCES

- BEKERMAN, Marta. (1992), Abertura e Integração na América Latina. Uma Perspectiva Dinâmica. Contexto Internacional, Rio de Janeiro, v. 14, nº 12, p. 269-283, jul./dez.
- DUTRA, Pedro. (1996), Órgãos reguladores: futuro e passado. Revista de Direito Econômico, Brasília, v.24, p.59-64, jul./dez.
- ELETROBRÁS; COOPERS & LYBRAND. (1997), Projeto de Reestruturação do Setor Elétrico Brasileiro. Ministério de Minas e Energia, relatório. Brasília, maio
- FARINA, Elizabeth M. M. Querido. (1994), Desregulamentação e o controle do abuso do poder econômico: teoria e prática. Revista de Economia Política, São Paulo/SP, v. 14, nº 3, p. 78-93, jul./set.
- INSTITUTE FOR CONTEMPORARY STUDIES. (1987), Privatisation and Development” Steve Hanke Edition, San Francisco, California,
- LINHARES PIRES, José Cláudio; PICCININI, Maurício Serrão. (1994), Modelos de Regulação Tarifária do Setor Elétrico. Revista do BNDES, Rio de Janeiro, v.1, nº 1, jun.
- LEGISLAÇÃO FEDERAL.
- LEGISLAÇÃO DO ESTADO DE MINAS GERAIS.
- NASCIMENTO, Cynthia A. (1996), A Política de Concorrência no Brasil e o Novo Paradigma Regulatório. Revista do BNDES, Rio de Janeiro, v.3, and nº 5, p. 155-170, jun..
- REZENDE, Fernando. (1992), Estado e desenvolvimento na década de 90: desafios da reforma institucional. Revista de Economia Política, São Paulo/SP, v. 12, nº 4, p. 37-50, out./dez..
- UNITED NATIONS. (1997), World Investment Report: Transnational Corporations, Market Structure and Competition Policy. New York and Geneva

NOTES

1. The 1994/1998 constitutional reform intends to allow legislation to increase business competition, while at the same time it guarantees the basic social rights.
2. In the case of public utility services this will be achieved through regulatory agencies, and in other sectors, through the Competition Defence Agencies.
3. 'Microeconomic Impact of Privatisation in Brazil', Pesquisa e Planejamento Econômico - IPEA, of /1996, RJ, v.26, n° 3.
4. Includes the Administrative Council for Economic Defence (CADE), The Secretariat of Economic Law of the Ministry of Justice (SDE) and the Secretariat of Economic Supervision of the Ministry of Finance.

THE ROLE OF THE REGULATORY ENVIRONMENT IN FOSTERING INNOVATION AND GROWTH

by
Mark Dutz*

I. Introduction

In a number of developing and transition economies, regulatory reform and increased competition often risk to be considered by the public as merely top-down technocratic rules dictated by remote experts in the central government bureaucracy. The broader rationale for market-opening and competition-enhancing processes is not explained in a convincing way to the public at large. Therefore, it is not surprising to find a general lack of support for infrastructure liberalisation among the broader public, especially in light of accompanying initial layoffs and often inappropriate actions such as favouritism towards specific entrenched business interests.

To create the basis for sustainable desirable policy changes and avoid a political backlash, policy makers and advocates at the local and national levels – particularly competition agencies—should be more involved in documenting and disseminating the benefits of regulatory reform and increased competition. As an illustration, there should be a visible effort to create a constituency for appropriate reforms through media relations and more systematic relationships with representatives of consumer and producer interests (chambers of commerce, small business and entrepreneurship organisations, consumer protection institutions, consumer groups, local training and research institutes, and other relevant interested parties). To be effective, such advocacy efforts

* Mark Dutz is with the World Bank and EBRD. This paper is based on speaking notes prepared for the 12th meeting of the OECD Advisory Group on Privatisation. A portion of the underlying research was prepared under funding from the World Bank research preparation grant ‘Competition And Barriers To Entrepreneurship’ (RPO-682-57). This paper reflects the views of the author, and does not reflect the views and policies of the World Bank, EBRD, nor the countries they represent.

should be based on a more compelling case of the economy-wide benefits of regulatory reform and increased competition. In particular, while academic and policy studies have emphasised the benefits of infrastructure liberalisation in terms of increased quantities and lower prices of such services, little emphasis has been placed on the arguably much more sizeable downstream benefits to the rest of the economy in terms of new entry, and new goods and services that the more competitive supply of business infrastructure services makes possible.

Evidence of the benefits of increased competition in the upstream provision of business infrastructure services on the introduction of new products and business start-ups could help to provide stronger political support for further regulatory reforms. It also could help avoid backtracking of existing reforms. The documentation of the impact of past reforms on downstream entry is particularly relevant since the new entrants typically are not yet present as forceful reform advocates at the time of the initial policy changes.

This paper explores an important role of the regulatory environment in fostering innovation and growth. First, it provides a general framework to address the question of what officials who want to promote competition in transition or developing economies should focus on. A key area of emphasis is the removal of access barriers to infrastructure, especially to those essential business services that reduce economy-wide transactions costs and therefore have the potential to affect downstream firms in a significant way, leading to new entry and new products. Second, the paper addresses why this may be important for the economy by providing some suggestive evidence of the downstream benefits of increased competition in road freight and enhanced telecom services. Increased competition matters because inefficiencies of inappropriate regulation and pricing appear to be huge, especially in sectors where there is the potential for substantial innovation and sizeable economy-wide spillovers.¹ Finally, the paper provides a few suggestions regarding how best to achieve such welfare gains from competitive pricing and technical innovation, based on the road freight and telecom experiences. Where feasible, the appropriate policy recommendation is to introduce as much effective competition as soon as possible. Such efforts would benefit from complementary institutional reform and closer interaction between competition and regulatory agencies.

II. Regulatory reform, new goods and the promotion of entrepreneurship

The impact of reform and increased competition in infrastructure services goes beyond the traditional emphasis of antitrust policy on reducing price-cost margins and Harberger triangles. In addition, regulatory reform benefits the economy to the extent that removing bottlenecks leads to the introduction of new goods and services in usage-intensive downstream business industries. The underlying idea is that even small improvements and innovations in essential

upstream business services brought about by regulatory reform and increased competition can stimulate downstream entry and new goods. The impact can thereby propagate through the whole economy and create a sizeable impact on economic growth. To the extent that barriers to entrepreneurial dynamism are found to be related to access problems to essential business infrastructure, competition and regulation officials in developing and transition economies should take a much more pro-active stance in freeing up local impediments to entrepreneurship. The appropriate policy focus becomes one of promoting grass-roots entrepreneurial entry and facilitating access to essential business services.² Often, these barriers are likely to reside in less traditional but easier to address areas of the business environment, such as introducing a movable assets registry and liens on motor vehicles as in the case of the Ghanaian trucking industry.³ In technical terms, appropriate competition policy for developing and emerging market economies calls for a focus on supply stimulus and Dupuit triangles, creating huge new areas of consumer surplus complementary to the removal of traditional dead-weight loss triangles.⁴

An interesting literature related to this emphasis on the promotion of innovation by removing access barriers to infrastructure services is the recent work on the allocation of entrepreneurial talent. In particular, this literature explores how changes in the rules of the game that specify the relative payoffs to different entrepreneurial activities can play a key role in determining where entrepreneurship will be allocated.⁵ Conceptually, the entrepreneur is a creative individual with the capacity to convert abstract business ideas into profits. The entrepreneur can operate in both micro and small firms as well as in larger corporate firms. The innovation can consist of the new design, production and delivery of existing goods and services, or the development of entirely new products. All countries have a pool of such talent. The assumption is that, while the total supply of entrepreneurs varies between countries, the productive contribution of society's entrepreneurial activities varies much more because of their allocation between productive activities (such as innovative acts of technology transfer) and largely unproductive activities (such as rent-seeking lobbying for government favouritism or organised crime). This allocation is heavily influenced by the relative payoffs society offers to these activities. Policy can influence the allocation of entrepreneurial talent by ensuring that prevailing laws, regulations and institutional procedures favour the former, more productive types of activities. Under such a framework, lack of availability and lack of competition in the provision of business infrastructure leading to high cost or no access to essential inputs could lead the potentially productive entrepreneur to remain as an employee in an existing establishment or in the pursuit of some other less productive rent-seeking activity. Conversely, improvement in competition conditions and greater availability and innovation in infrastructure services would result in more productive entrepreneurial activity. Of course, other factors also affect the allocation of

entrepreneurial talent and the relative importance of any given set of factors remains an empirical question.

A recent analytical model by Aghion and Schankerman (1997) provides a rigorous and complementary treatment of the benefits of adequate infrastructure provision by focusing on those types of infrastructure that intensify product market competition by lowering transaction costs and reducing local market power. In particular, they identify three channels through which infrastructure availability affects the intensity of competition of downstream enterprises: (1) the relative position of incumbents – infrastructure facilitates the expansion of more efficient relative to less efficient firms; (2) restructuring – infrastructure facilitates the restructuring of more efficient relative to less efficient firms; and (3) entry – infrastructure facilitates entry, both the overall level and the entry of more efficient relative to less efficient firms.

III. The benefits of infrastructure reform

The question of why increased competition in the provision of infrastructure services is important for the economy can best be answered through empirical evidence from specific sectors. To illustrate, examples are provided from road freight transport and enhanced telecom services. Business services in road freight transport (including multi-modal services and transport-related logistics services as well as trucking) and enhanced business services in telecommunications (business-related uses of cellular, Internet and other advanced data-related services) are ideal examples of infrastructure sectors where increased competition can have major economy-wide impact for several reasons.

- First, in the absence of government-imposed regulatory barriers, there is maximum scope for competition. There are no economic grounds for restrictions to entry in trucking and multi-modal services, nor in the provision of cellular, Internet and other advanced data-related services.
- Second, regulatory reforms and technological innovations have proceeded at a faster rate in these sectors than in most others. Technological progress is rapidly eroding monopolistic practices and “protected markets” even for fixed line local telecom providers. As an illustration, virtual private networks, the Internet and satellite communications are creating growing opportunities for business users to bypass the dominant operator.
- Third, transport and telecom are types of physical infrastructure that generate pervasive economy-wide spill-overs. Hence the benefits of more competition at the upstream level are likely to be greater than

in most other sectors. As an illustration, the operational innovations of more competitive trucking/logistics providers allow downstream users to outsource transport service functions, converting fixed costs into variable costs and thereby lowering entry barriers. Increased availability and affordability of data and information services such as Internet, call centres, tele-conferencing, high-speed data provisioning and collaborative working help new more efficient rivals to enter the market and efficient incumbents to grow at faster rates.

The benefits of regulatory reform in the road freight industry - Among developing and emerging market economies, Mexico provides a useful example of downstream benefits from increased competition in trucking.⁶ From a particularly extreme degree of rigid regulation with a high degree of government interference, Mexico put in place beginning in 1989 a new policy framework for the road transport industry based on free entry and market-based price setting. Besides expected gains from reductions in trucking prices, there have been a number of additional sources of downstream gains. Delivery times have decreased substantially, with the impact directly linked to trucking deregulation. Better equipment and a reduction in the number of stops taken by drivers were cited by downstream users as the key factors responsible for the decrease. Transit losses have also decreased substantially, with higher quality equipment (together with higher levels of security provided on federal toll roads) cited as the main factors. More reliable and rapid transport services have also permitted user companies to make more intensive use of both just-in-time delivery of raw materials, parts and components as well as build-to-order manufacturing for outbound shipments. Associated reductions in inventory levels are additional to more standard direct reductions in trucking costs.

Faster and more reliable trucking has allowed user companies to offer new goods, both introducing previously unavailable products as well as making it possible for existing products to reach new areas. As a specific example, a producer of fertiliser products reported increasing the range of products sold from 12 to 32, with sales of new products accounting for 30 percent of total current sales. Of this increase 70 percent was directly attributable to lower cost and higher quality trucking services, with the remainder attributable to growth in demand due to the higher level of fertiliser use in Mexican fields. As an example of expanded sales of existing products to new areas, a large Mexican producer of time-sensitive electronic components used by other downstream firms has sales to new areas accounting for 50 percent of current total sales. Of this increase, 30 percent is attributed to higher quality trucking services, with other explanatory factors behind the increase in new clients being NAFTA-related tax changes and other internal logistics changes such as the introduction

of bar code tags and computerised systems for faster and more reliable documentation handling.

Cheaper and more customer-responsive trucking services have reportedly led to a number of other logistics-related innovations within user firms. Centralising manufacturing, using cheaper and more efficient trucking to concentrate manufacturing in fewer locations has led to cost savings in specific firms. Rationalising loads, both through adopting standard lot sizes and containerisation, has led to further cost savings. Finally, some user firms, instead of continuing to invest and maintain a private own-account fleet of trucks, have outsourced and purchased the services on the now more efficient open market. Although such costs are not largely sunk, tapping capital markets may not be an option for prospective entrants lacking reputation. An important additional benefit of a more competitive trucking service market, therefore, is to allow firms to outsource their transport requirements, in effect converting a fixed cost into a variable cost.

Regulatory reform experience in enhanced telecom services- The costs of making inappropriate or untimely regulatory choices are particularly large in enhanced telecommunications given the fast-moving technological advances in this sector. Examples from cellular telephony and Internet services provide suggestive illustrations of the magnitude of foregone benefits from delays in the introduction of new technologically-available services.

While the cellular telephony concept was discussed in the late 1940s and was available to be marketed to consumers by 1973, it was only in 1983 that the Federal Communications Commission (FCC) in the US began to issue licenses using a non-market duopoly licensing mechanism. AT&T, the inventor of cellular, had argued that only one cellular provider should be present in each service area because of scale economies in spectrum usage. Potential entrants, on the other hand, argued that AT&T should be barred from cellular since this technology could eventually provide competition to AT&T's cable-based local monopoly. It was not until 1983 that the FCC, in charge of cellular spectrum management, decided to allow two cellular providers in each service area. Service began in Chicago and Los Angeles in 1983-4 and reached most other major US cities by 1985.⁷ This delay in licensing cellular services has been estimated to cost the US economy more than US\$25 billion per year (1983 dollars), amounting to about 2 percent of GDP in 1983 when cellular service began.⁸ Throughout the 1980s and early 1990s, cellular communications remained a fairly small segment of the telecoms industry, with national subscribership at only 16 million and penetration of about 6 percent by end-1993. It was not until after Congress authorised the FCC to use competitive bidding to award certain licenses for the right to use the electromagnetic spectrum, with four blocks of spectrum for broadband PCS auctioned over 1995

and 1996, that cellular penetration expanded substantially. By end-1997, mobile communications (cellular and PCS) had a national subscribership of 55 million and a penetration rate over 20 percent.⁹ More generally, growth of mobile penetration has been faster in countries with competitive market structures than those with monopoly or duopoly markets.¹⁰

In Central and Eastern Europe, cellular services only began to be introduced following liberalisation in the early 1990s. In Poland, Centertel (a joint venture between TPSA, the majority state-owned monopoly provider of long distance and international services and France Telecom's mobile subsidiary) began providing analogue NMT-450 services in January 1992. However, it was only after the licensing of two digital GSM cellular providers in late 1996 that subscribership really took off.¹¹ The cellular market subsequently grew rapidly, from 217 000 subscribers in fall 1996 to over 1 million by spring 1998. By the third quarter of 1997, Poland had become the biggest cellular market in Central and Eastern Europe in terms of number of subscribers, outpacing Hungary which had previously been in the lead. With respect to Internet services, it was not until more liberal licensing conditions in 1995-6 subjecting enhanced services to significant competition that Internet services were made more broadly available in Poland, despite the technology being long more accessible in some other countries. Without coincidence, strongest gains for Internet access in Central and Eastern European countries between 1995-6 were realised by Poland, with an increase of 129 percent (versus a world average of 71) and the licensing of 34 providers.

IV. Reform options

The policy challenge is how best to achieve the sizeable welfare gains from competitive pricing and technological innovation. The general regulatory reform prescription should be to create as much effective competition as feasible, as fast as possible.

Road freight services. The experience from regulatory reform in the Mexican trucking industry highlights the substantial economic benefits from introducing competition into a previously highly regulated sector where extensive competition is fully viable. An important complementary lesson learned is that regulatory reform causes profound changes in the sectoral institution of government that formerly had responsibility for the regulation. Any regulatory reform effort should assign sufficient resources to assist the organisation in making the transition to post-regulatory reform conditions, assisting with such tasks as defining the organisation's new role, re-organising its structure and facilitating re-deployment of staff. Ideally, any new regulations to be introduced as appropriate complements to a more market-oriented framework

(such as programmes of highway safety, control of vehicle weights and dimensions, and inspections of vehicle emissions in the case of trucking reforms) should be implemented at the same time as the deregulation actions. In this way, there can be a smoother transition from the government-controlled to the post-reform market-determined regime.

Finally, the national competition agency can play a critical role in helping lay the groundwork for reform, by making as compelling a case as possible for the costs of the pre-reform regime and for the expected benefits of reform. In addition to this pre-reform advocacy and education role, the competition agency must play a careful post-reform enforcement role to ensure that cosy cartel-like behaviour stimulated by tight entry restrictions does not persist. It is very natural that public policies of segmentation and control of prices and quantities leave a strong imprint on post-reform market conduct. Inefficient, anti-competitive public regulation should not be allowed to be replaced by socially inappropriate anti-competitive inter-firm agreements. The experience of Mexico is instructive in this regard. At least three separate strong interventions were required by the Mexican Federal Competition Commission to discipline attempted anti-competitive practices by the trucking industry in the years following the initial regulatory reforms.¹²

Enhanced telecom services. International experience suggests that, for services other than fixed telephony, competition provides the most effective means of promoting market development. Policymakers in all emerging and developing countries should therefore include, as part of their strategy for telecom sector reform, liberalisation and the introduction of maximum feasible competition in markets for a wide range of telecom services, including not only cellular and Internet services but also customer premises equipment, other value added and data services, radiopaging, public call offices, and satellite services.¹³ Key outstanding policy issues concern the extent to which it is appropriate to introduce competition in the market for fixed telephony services, together with desirable interconnection rules to ensure fair access to all providers of enhanced services. An important area of inquiry in order to devise sharper policy recommendations concerns the interface between fixed line and enhanced service regulation. On the one hand, it will be important to understand better under what conditions and in which manner rules imposing limitations on the provision of basic fixed line services affect the provision of enhanced telecom services for downstream business users. Conversely, it is important to understand better the impact of different types of liberalised regimes of enhanced services on the provision of basic fixed line services.

Irrespective of the form of competitive restructuring for the provision of basic fixed line services, there exist a number of complementary actions that can help ensure as much competition as possible. One regulatory policy thrust is to

make entry barriers as low as possible. Entry barriers associated with customer inertia can be eroded by requiring that number portability and carrier pre-selection be designed up-front into the switching gear.¹⁴ A second initiative is to allow entrants to choose between ‘facilities competition’ (where entrants are given more favourable access terms if they build their own infrastructure) and using regulated sharing of essential facilities on fair and reasonable terms.

Finally, as a complementary approach on the institutional side to help achieve maximum welfare gains from competitive pricing and technological innovation, it is important to stress the benefits from closer interaction between competition and regulatory agencies. Ideally, technical issues –including regulation of tariffs and access charges-- should be entrusted to a specialised regulatory agency, leaving the competition agency to monitor and intervene in case of predatory pricing or violations of agreements. Competition issues such as industry structure, restraints on a company’s operations and the question of expansion or contraction of regulatory authority should also be kept with the separate competition agency. In this way, the competition agency remains the natural agency to review whether regulatory decisions taken are in the public interest, thereby limiting the potential for governmental opportunism and capture. The competition agency also should be the natural advocate for promoting pro-competition regulatory changes, including educating the broad public about the innovation benefits of increased competition.

V. Conclusions

The benefits of regulatory reform and increased competition in the provision of infrastructure services go well beyond the traditional emphasis on lower prices, greater quantities and traditional Harberger deadweight loss triangles. By spurring innovation and improving access to essential business services, increased competition can lead to sizeable economy-wide benefits in the form of innovations by downstream users of these services, new entry, and new goods and services, as reflected by the generally much-larger Dupuit triangles. More empirical research is needed to better quantify the magnitude of these gains, and thereby allow an even stronger and more tangible case to be made for the benefits of competition.

REFERENCES

- AGHION, P. and Schankerman, M. (1997), "A Circular Model With Asymmetric Firms: Competition, Entry And Social Returns To Infrastructure", mimeo, EBRD, London.
- BAUMOL, W. (1990), "Entrepreneurship: productive, unproductive, and destructive", *Journal of Political Economy* 98, 893-921.
- DUTZ, M. and Hayri, A. (1998), "Road Freight Transport, Competition And Innovation: A Research Proposal", mimeo, The World Bank, Washington, DC, December.
- DUTZ, M., Hayri, A. and Ibarra, P. (1999), "Regulatory Reform In Transportation: Mexico", mimeo, The World Bank, Washington, DC, January.
- DUTZ, M. and Vagliasindi, M. (1998) "Telecommunications, Competition And Innovation: A Research Proposal", mimeo, The World Bank, Washington, DC, December.
- DAVIES, G., Carter, S., Macintosh, S. et.al. (1995), "Key Technological And Policy Options For The Telecommunications Sector In Central And Eastern Europe And The Former Soviet Union", mimeo, Coopers and Lybrand and the Telecommunications Team, EBRD, London.
- GUASCH, J.L. and Spiller, P. (1998), "Managing The Regulatory Process: Design, Concepts, Issues And The Latin America And Caribbean Story", mimeo, The World Bank, Washington, DC, October.
- HAUSMAN, J. and Tardiff, T. (1996), "Valuation And Regulation Of New Services In Telecommunications", MIT Discussion Paper, Cambridge, Mass.
- MURPHY, K., Shleifer, A. and Vishny, R. (1991), "The Allocation Of Talent: Implications For Growth", *Quarterly Journal of Economics*, 503-30.

- NEWBERY, D. (1999), "Liberalising The Telecommunications Industry", Chapter 7 in "*Privatisation, Restructuring And Regulation Of Network Industries*" (revised manuscript of the Walras-Pareto Lectures, Lausanne, 1995)
- OECD (1998), "Regulatory Reform In Telecommunications", Chapter 6 in "*Regulatory Reform In The United States*", mimeo (draft), OECD, Paris, France, forthcoming.
- ROHLFS, J., Jackson, C. and Kelly, T. (1991), "Estimate Of The Loss To The United States Caused By The FCC's Delay In Licensing Cellular Telecommunications", NERA Discussion Paper, Washington, DC, November.
- ROMER, P. (1994) "New Goods, Old Theory, And The Welfare Costs Of Trade Restrictions", *Journal of Economic Development*

NOTES

1. The quantification of the impact of improved road freight infrastructure services and innovation in enhanced telecommunications services on downstream business users is the subject of ongoing World Bank-EBRD research. See Dutz and Hayri (1998) and Dutz and Vagliasindi (1998).
2. These local and largely non-traded inputs that stimulate entrepreneurship and new entry may include telecom services, distribution networks and transport-logistics services (road, rail, ports, air freight and multi-modal exchange facilities), financial services, industrial real estate markets (land, premises), access to electricity and water, and professional business services (legal, accounting, engineering consulting, architectural and other information-related and market-making services).
3. In Ghana, it has been reported that competition problems in trucking which make it difficult for local entrepreneurs to bring their goods to market have been driven to an important extent by the inability to make liens on trucks, so that no loans are made to potential independent operators who want to own their trucks – with negative effects on the entry and expansion of firms.
4. Empirically, the introduction of new products appears to have a bigger impact on overall welfare than the increased consumption of existing products. See Romer (1994).
5. See Baumol (1990), and Murphy, Shleifer and Vishny (1991).
6. The following findings are based on a recent Mexico-specific empirical study. See Dutz, Hayri and Ibarra (1999).
7. See Hausman and Tardiff (1996).
8. See Rohlfs, Jackson and Kelly (1991).
9. See OECD (1998), pp. 6-7.
10. See OECD (1998), p.6.
11. PTC, Polska Telefonia Cyfrowa, operates under the commercial name Era GSM, is a joint venture comprising Eletkrim, the largest industrial and

commercial conglomerate in Poland, plus DeTeMobil, the biggest network operator in Germany and part of Deutsche Telecom, plus US-based MediaOne Group, one of the world's largest broadband communications companies). It was licensed in September 1996. Polkomtel, which operates under the commercial name Plus GSM, is a joint venture of AirTouch, TeleDanmark and KGHM. It was licensed in October 1996.

12. See Dutz, Hayri and Ibarra (1999).
13. See Davies et.al. (1995), especially p. 51-5.
14. Number portability allows subscribers to keep their phone number when shifting to a new provider. Carrier pre-selection allows subscribers to pre-select any carrier without needing to dial extra digits by mandating the same length of access code for each provider.

COMPETITION AND REGULATION IN PUBLIC UTILITIES

by
Alberto Heimler*

I. Introduction

In public utility services it is frequently alleged that one single firm is able to operate with lower costs than it would be the case if more firms were supplying the same level of output. However these natural monopoly characteristics are not always present and, when they exist, are often strictly limited to some, not all, of the activities of the firm. In any case natural monopolies emerge naturally out of the working of a market process. There is no need to introduce legal barriers to entry in order to protect the monopolist from competition. Indeed, since the characteristics of different markets are not known in advance, free entry would allow coherence of supply with technology and demand conditions: market structures are endogenously determined.

Very often a number of constraints are imposed on a public utility company; a minimum level of services is to be provided to all and a prohibition of price discrimination in the face of differing supply costs. Especially this last obligation may entail the need for some sort of protection from entry; in fact if a new entrant is not obliged to serve all segments of the market, he could enter where unit costs relative to price are lower. The consequent reduction of revenues by the company obliged to provide public services to all could be so strong as to make it unprofitable to stay in the market.

In most circumstances however the loss of revenues originating from cream skimming is over emphasised and the beneficial effect that competitive free

* Alberto Heimler is Director of the Research Department, Autorità garante della concorrenza e del mercato, Italy. The views expressed in this paper are those of the author and do not necessarily represent the views of the Autorità garante della concorrenza e del mercato.

entry can have on efficiency, quality of services and pricing far outweighs any burden on the dominant company deriving from the conflict between competition and public service obligations. Free entry into the industry is generally the optimal solution, with price regulation playing a marginal role in order to prevent the use of excessive market power in those markets where monopolistic conditions continue to prevail.

There is no definite theory as far as ownership of public utility companies is concerned. State ownership has been supported on the basis of its alleged ability to maximise allocative efficiency and, at the same time, to serve other important public interest objectives. However, the frequent interference of politicians and government officials in the actual running of government owned firms may distort the system of incentives, reduce the importance of budget constraints, and in the long run weaken the drive for efficiency. Furthermore, if a public utility is a statutory monopoly owned by the government, by restructuring it before privatisation it would be possible to create a competitive market structure in the face of market liberalisation.

For these reasons, and not because public ownership is bad in itself and necessarily leading to inefficient behaviour, there is a growing movement towards privatisation of public utilities. At the same time, there is greater concern about optimal regulation in order to make sure that there is strict coherence between social welfare and the private interest of the regulated firm. First of all this can be achieved by effectively separating regulators from producers, and improving the effectiveness of public controls. Where, regardless of the evolution of technical progress, potentially competitive activities continue to be regulated, competition and market mechanisms could be effectively introduced, attaining a "first best" outcome without the need for any regulatory control.

The purpose of government interventions in public utility services is to control not only the technical and qualitative aspects of service provision, but also economic performance, wherever market forces are ineffective or have only a marginal role. Until real competition has developed, market liberalisation should not necessarily lead to the lifting of price regulation. As competition starts to develop, antitrust policy can play an extremely important role in preventing firms from imposing restrictions on competition and abusing their dominant position.

This paper is organised as follows. After a short overview of the main Community rules and guidelines regarding the opening up of public utility services to competition, the most relevant steps that have been taken to encourage competition in the different public utility sectors are analysed. A brief discussion on how markets can be regulated follows, considering the

various alternatives for controlling the process of tariff formation, making a clear-cut distinction between services provided in a monopolistic and in a more competitive setting. A short discussion on the close complementarity between regulation and competition policy concludes the paper.

II. Legislative role of the European authorities in the liberalisation process

The interest of the European Union towards public utility services was prompted by the strong segmentation of national markets, as a result of consolidated national monopolies protected by regulatory restrictions on market entry. The initiatives adopted in order to complete the process of integrating individual national markets and to fully implement the fundamental principles of the Treaty of Rome have fostered significant changes in public policies towards regulated sectors in most public utilities.

In these sectors, the Union objective of completing the single market is connected with the need to promote the development of genuine competition within Member countries. Therefore the Union recommendations have usually insisted on gradually removing domestic constraints, particularly of a legal and administrative nature, on the free operation of market forces. Taken as a whole, the measures adopted by the Community with respect to public utility services may be grouped under two main headings: the actions taken against Member countries in order to encourage competitive access to particular markets, and the reappraisal of criteria for implementing competition rules in regulated sectors.

The European Authorities have intervened quite extensively in the liberalisation process with a number of legislative tools aiming at promoting competition and preventing the segmentation of national markets. The instruments that the Community has at its disposal are differentiated according to their legal base and to the degree by which they constrain national governments:

1. Competition driven directives: they are based on article 90 of the Treaty (and on competition law) and imposed on Member States directly by the Commission, without any intervention from the Council of Ministers. These directives, particularly frequent in telecommunications, can be appealed at the Court of Justice.
2. Harmonisation directives: they set minimum standards and are usually based on the principle of mutual recognition. These Directives, which lead to the harmonisation of national legislation, are issued by the Council of Ministers. Furthermore they are usually not based on article 90 and on the competition rules, but

derive their legality from the articles in the Treaty aiming at the creation of a unified market. These directives have led to the opening up of markets traditionally closed to (foreign) competition such as public procurement, banking, insurance, electricity, rail, airport services etc. At the same time they forced Member States to adopt more liberal regulations. These Directives cannot be appealed.

3. Communications: the Commission on a number of specific issues, like universal service obligation, interconnection charges etc., has completed the Directives with not binding instructions to Member states on specific matters.

From the ten years experience that the Community has had with these liberalising tools it is quite difficult to clearly identify in what circumstances one instrument is preferred to the other. Article 90 directives have been common in telecommunications where there was a lot of consensus among Member States for the need to liberalise. On the other hand, where a common view was much more difficult to attain, the relevant directives have been issued by the Council of Ministers. For these reasons a sectoral classification of all Community interventions seems quite appropriate.

In the different sectors the actions usually taken or suggested by the Community have been mainly directed towards guaranteeing:

- a clear-cut distinction between the actual running of the companies and regulatory responsibilities;
- an accounting and organisational separation between monopolistic and competitive activities, should they be carried out by the same firm; and
- transparent and objective conditions for third party access to network facilities.

These developments in the European Union policy towards public utilities are intended to foster competition ultimately in order to prevent trade between Member countries from being restricted as a result of national regulations. Therefore the measures adopted by the European Union, while being extremely effective in encouraging the introduction of market mechanisms in sectors that have generally been protected from competition, merely deal with regulatory problems holding up the construction of the Single European Market. In other words they do not solve all the organisational and legislative problems relating to the opening up of regulated sectors to competition. Member countries are

vested with the exclusive powers to identify the specific types of regulation needed, and the areas where it is possible to introduce competitive mechanisms. Also the issue of whether or not to privatise is left to the Member State to decide.

a) *Telecommunications*

The Commission has been quite active in the liberalisation of telecommunication services. The industry was characterised in most Member countries by restrictive legislation that would give the national operator of telecommunications special and exclusive rights even for those activities where public service obligations were not a real issue. The Commission started to liberalise these markets, minimising the degree of conflict. The first directive was issued in 1988 and it introduced competition in the market for telecommunications terminal equipment. According to the Commission it was no longer necessary for ensuring the provision of telephone services that statutory telephone monopolists to also maintain their monopoly in the distribution of handsets and terminal equipment for data transmission (modem). On the basis of article 90 the Commission maintained that these markets be immediately opened to competition.

The interesting phenomenon is that Member States participated fully in the discussions that led to the setting up of the Directive. However when the Directive came into force Member States were apparently taken by surprise and five of the members (France, Italy, Belgium, Germany and Greece) challenged it in the Court of Justice. The Court ruled in a very straight forward manner in favour of the Commission interpretation of article 90. After this decision the liberalisation process became much speedier and more effective. In 1990 the Commission issued directive no. 388 which liberalised value added services and data transmission. Only voice telephony was left as a monopoly. The Commission then published in October 1992 a review of the competitive structure of the telecommunications sector, offering for discussion to Member States two possible options: regulating the prices of vocal services or completely liberalising them. After France and Germany offered support for the option of full liberalisation, all Member States finally agreed on the "Principle and timetable for the liberalisation of telecommunications infrastructure" (Council resolution of December 22 1994). It was decided that by January 1 1998 the telecommunications sector would be opened up to full competition.

It is not enough for Member States to simply adopt the Directives. Such a process needs to be strongly supported by national governments in order to accommodate rules and procedures for the new market environment. In fact full

liberalisation does not immediately lead to a competitive market. It takes time for entry. Before consumers can actually benefit from the existence of new suppliers, investments need to be planned and then carried out. In any case the regulatory structure needs to be in place well before competitors can actually become ready to supply, since for deciding whether to enter or not new entrants need to know all relevant costs, such as time delay for approval purposes, regulatory burdens related to the setting up of new lines, the level of interconnection charges, universal service obligations and so on. Most governments have been quite reluctant to introduce in a timely way a regulatory structure that would ease entry. Eight months after liberalisation in most Member States traditional monopolies are still the sole suppliers of voice telephony.

The 1998 liberalisation was conditional on the definition of minimum standards for public service obligations to which, according to a communication of September 1996 on services of general interest, Member States can add, but not subtract. In fact the existence of universal service obligations has been a very important constraint in the process of liberalising public utilities in Europe. Accordingly the Commission has put a great deal of effort in making sure that such schemes, when eventually adopted at the national level, would not conflict with competition law. However, even though the Commission has chosen to find workable definitions of universal service obligations (“the difference between the net cost for an organisation operating with and without universal service obligations”¹), there are a number of difficulties in the practical application of such categories.

First of all the existence of universal service obligations implies that some services need to be supplied to some users at prices below cost. Especially in telecommunications where most costs are fixed it is not really clear how such a test can be performed. In a situation where marginal costs are very close to zero it is very unlikely that prices would indeed be set at a level below marginal cost. In fact where there are common costs to a number of different activities, economic theory has proved that the most efficient way to allocate these costs among different uses is accomplished by considering the different demand elasticities involved (Ramsey prices). In most cases just allowing a company to price discriminate would lead to optimal results and universal service obligations would not be a burden for anybody. For example if low income people would be willing to have a phone only for emergencies and would be willing to pay very low prices (but still above marginal costs), for such services it would be profitable for the telephone company to set up a special tariff that would eliminate the possibility of making long distance calls for those users. The problem of universal service obligations would be solved by the profit motive, without having to resort to any sort of regulation. Indeed most universal service obligations are compatible with a competitive environment.

b) *Electricity*

The degree of consensus among Member States in relation to the need for introducing competition in telecommunications has not been in any way comparable to what happened in the electricity sector. In fact from December 1990 to June 1996 the initial Commission position to allow direct transactions between as many producers and consumers as possible in the electricity sector too, was blocked by the opposition of those countries that believed that a vertically integrated structure for the industry was quite beneficial to consumers. In June 1996 after a very long debate the Council of Ministers agreed on a draft Directive concerning common rules for the internal market in electricity. The directive, although it represents a clear improvement with respect to the competitive situation of most Member States, does not necessarily lead to a fully liberalised market, as in the telecommunications sector.

For instance the directive allows Member States either to allow for free entry in electricity generation, or to introduce a tendering procedure in order to identify the actual generator that enters the market, while maintaining central control on the technology to be used and of the timing of entry. Furthermore there can be either a grid operator responsible for transmission and for guaranteeing the physical equilibrium of the system or Member States can create a single buyer responsible for a centralised system of buying and selling. In both options an increasing share of consumers become eligible every year for purchasing electricity supplied by independent producers.

Indeed the electricity directive, opens the sector up to competition, although very gradually. In any case, national governments are left free to introduce as much competition as they like, keeping the provisions of the Directives as a minimum standard. Contrary to what happened in telecommunications, the electricity directive, by not identifying the organisation of the industry most appropriate for benefiting consumers, does not assure a level playing field in the Community. It might well be that in time, probably a very long one, the structure of industry would evolve in a common way in Europe. Indeed if countries were to choose different systems for the supply of electricity and if the most competitive systems were to show better results (as it already does, although for a limited number of countries), then reluctant Member States would be forced to move sooner or later along the competition oriented path.

c) *Railways*

Council Directive n. 440 of 1991 on the development of Community railways and the two complementary Directives 95/18 and 95/19 adopted in 1995 aim at creating a unified market of railways services throughout the Union. The system

of regulation is based on common accounting rules, and in particular on a compulsory accounting separation between infrastructure and services, and on the creation of access rights to railways infrastructure for international services. Up until now these liberalisation directives have been quite ineffective in creating competition in rail services, probably also because scale and scope economies make it unlikely that a competitive system would emerge at all. Some countries, as in telecommunications and in electricity, have created, through privatisation, a potentially competitive system. However in most countries rail services continue to be monopolistically supplied, strongly regulated and very heavily subsidised.

In 1995 total revenues were around 30% of total costs in Italy, 46% in France, 50% in Germany and 80% in the United Kingdom. It seems that such poor financial results, especially in continental Europe, represent the major problem that is facing European rail services. The cause of such financial difficulties is not unrelated to the ownership structure of most rail companies: public authorities have required these companies to meet a number of objectives that are inconsistent with efficiency (employment considerations, maintaining the level of service irrespective of demand etc.). Furthermore because of the ownership structure many rail companies face a very soft budget constraint that reduces internal incentives for efficiency. Rail companies need to be restructured at the national level in order to push them along the cost minimisation path. In this respect it is not clear that the vertical separation in the Union proposal is the right solution. It can certainly make the calculation of access prices easier, but at the same time it eliminates the possibility of gearing tariffs to demand and might well lead to losses anyway².

In rail services, interventions at the European level are of a very general nature. The Directive makes it implicitly clear that competition can be quite limited in passenger service where co-ordination needs are very important, but it can provide lower prices and great quality improvements for freight transportation. In fact in 1997 European rail freightways (comprising Switzerland, but not France) were opened up. Along these lines railway operators may run freight trains, provided they purchase the rights to access the rail infrastructure. In the coming years, the Commission will intervene in order to open up the freight market to competition. To this end it will have to provide national governments with guidelines for proper calculation of access prices.

d) *Airports and air transport*

Starting from April 1 1997 there are no longer regulatory barriers within the European Community that prevent community carriers to operate in any Member State. Such a liberalisation was based on the objective of creating a

unified market in Europe, and eliminating all unjustifiable restrictions to trade. It is too early to make an assessment of the beneficial effects of such a liberalisation move. Up until now however there have not been many new entries into the European markets. Many agreements however, between major European carriers, and between them and their US counterparts have been made. These agreements are under the scrutiny of the Commission in order to assess their restrictiveness and the impact that they may have on maintaining market segmentation in Europe.

From the analysis of these strategic alliances it is quite clear that competition in air transport can only be increased if airport capacity is not scarce. In congested airports this implies setting the incentives right in order for airports to find it profitable to increase capacity, while at the same time promoting inter airport competition. Furthermore it becomes necessary to introduce market mechanisms in the process of slot allocation (both in the primary and in the secondary markets), and to set up landing and take off charges in a way that leads to an efficient use of such scarce capacity.

Such developments in the airport industry are complicated by the existence of national carriers in every Member State that is considered to be part of national sovereignty, by grandfathering rights that implicitly allocate the property of existing slots to the carriers that have been using them for years, and by the difficulties involved in providing airports (usually government owned) with market oriented incentives. For such reasons the Community has not yet formulated a clear policy on these issues, that are so important for achieving a competitive system in air transport.

On the other hand the Community has been quite active in promoting competition in the markets for services provided at airports (ground handling and commercial services). In fact airport operators may have strong incentives to exploit their market powers by limiting competition and extracting rents with regards to the provision of these services. Council directive 96/67 sets the timetable for the liberalisation of ground handling services in the European Union which by January 1 2001 will all be liberalised.

III. A policy for efficiency and quality improvements in public utilities

For many years in most countries of continental Europe there was a widespread understanding that public ownership was sufficient to encourage the pursuit of efficiency and the attainment of satisfactory levels of quality in the provision of public utility services. It was thought that through public ownership monopoly profits would be eliminated and, at the same time, adequate investment would be carried out and reliable supplies guaranteed.

On the other hand, despite the fact that the relation between ownership and efficiency is by no means clear cut, the evidence from many countries has shown that State-owned enterprises have frequently failed to react adequately to changes in demand and to technological developments. Most of the times, public enterprises have actually been considered as being part of government. For this reason they have often been forced to pursue political objectives, such as keeping prices low irrespective of cost developments or keeping employment up, making it very difficult for them to behave consistently with a cost minimisation objective. As a result, incentives within the firm have been distorted, leading to high costs and low service quality.

The privatisation of these companies, which is being carried out at the national level without any Community intervention, may force them to be more efficiency oriented. Moreover, privatisation represents a very effective way to introduce competition in the market because it can allow for the setting up of a competitive industrial structure. This implies that before privatisation a detailed analysis, based on the prospects for a quick development of a competitive market, should tell us whether public utilities could be broken up and reorganised into a number of smaller enterprises that could then be sold to independent producers.

For example even though local distribution and long-haul transmission of electric power could be considered to be natural monopolies as a first approximation, technological progress has made it economically viable to build small electric power stations, so that each local distributor could be served by a sufficiently large number of electricity producers. It might be possible to sell off the various generation units to economically independent producers, that would compete for supplying electricity to different independent distributors. In such a way a wholesale competitive market for electricity could easily be established.

The state of technology in telecommunications has already made it possible to fully deregulate the basic telephony service, allowing any company to interconnect with the network, in exchange for a fee eventually subject to regulation. However the fixed network is becoming increasingly less essential, and competition among different networks is already taking place. For instance, where cable TV is sufficiently well established the television transmission network can easily compete with the telephone network (and vice versa). Moreover, cellular telephony is rapidly becoming a viable substitute for traditional telephony. If this is so, removing every kind of barrier to market access would make it possible to do away altogether with economic regulation.

In such circumstances, which are common to many other public utilities, privatisation of a restructured former statutory monopolist can actually help to create a competitive market, especially in those situations where the amount of

fixed investment needed to operate is large and gestation lags are long, so that a simple liberalisation policy (opening up the market to competitors) would take a long time to become effective.

a) *Liberalising market access*

An effective competition policy in public utility services requires an understanding of the reasons that in the past had led many industrial countries to introduce regulatory restrictions to entry. In fact natural monopolies should represent the outcome of a market process and in general do not require any protection from outside entrants. Only in very special circumstances, when a natural monopoly is not sustainable, the protection from outside entrants leads to efficient outcomes. However in public utilities, where sunk costs are large and the amount of investment needed to operate is quite high, the probability of an unsustainable equilibrium becomes minimal.

Therefore the reason for protecting the incumbent firm from the entry of outside competitors must be related to something different than natural monopoly considerations. In particular regulation often imposes the introduction of cross subsidies in the tariff structure for a certain public utility, so that some services are provided at a loss and others show high profit in order to make up for these losses. In such situations, should markets be completely opened up to competition without removing regulated cross subsidies, new companies might enter the market not because of any real advantages in terms of their efficiency, but simply in order to exploit the profit opportunities created by a distorted tariff structure. The resultant cream skimming of the most profitable areas of business by the incoming company would damage the incumbent firm, which might be forced out of the market.

In those situations where cross subsidies are imposed with respect to the tariff structure of a public utility, existing regulation generally prevents entry into the market. This protects the monopolist from cream skimming entry, but at the same time delays the introduction of technological progress in the provision of services and prevents the range of services to be supplied from being broadened and improved. A legally protected monopolist is in fact slow in innovating, especially when the assets with which it is operating are still economically viable.

Should it be necessary for the network operator or the dominant firm to provide services of general interest (such as stocking electric capacity for emergency), an access tax to the network might be imposed on all users in order to finance this general service. In those cases where cross subsidies are actually instruments of an income redistribution policy they should be eliminated and

substituted by transfers funded through general taxation. They would have the advantage of not distorting relative prices.

b) *Competition for the market*

With respect to non contestable natural monopoly situations, where the presence of one firm in the industry would guarantee that costs of production are the lowest possible, many proposals have been advanced in order to eliminate price regulation by introducing competition for the market. In particular it has been argued that the use of competitive procedures for the assignment of the rights to operate in a certain market allows for an exact appraisal of the value of the activity which is put up for tender, avoiding discretionary decisions by regulatory authorities and thereby substituting other direct forms of regulation. However, assigning the right to perform a particular activity to the highest bidder will certainly not eliminate inefficiencies in resource allocation. For the consumer would in all likelihood have to pay the monopoly price, while competition for the market would tend to completely wipe out any extra profits that could be earned. Users would still have to pay the full monopoly price, but all profits would be transferred to the government.

In order to overcome these inefficiencies in resource allocation it is possible to introduce a tendering system under which the right to perform a particular activity is assigned to the bidder that promises to supply the service at the lowest possible price, thereby removing any possible monopoly profit through the tender procedure. However this solution implies considerable additional difficulties because the time horizon for investment in public utilities is generally quite long and the conditions which affect the provision of services cannot be known with certainty. It is then impossible to write down a complete contract and it becomes necessary to make provision for a certain degree of regulation.

Furthermore even if such difficulties could be overcome, the regular repetition of the bidding might distort the incentives for the incumbent firm to increase efficiency, especially at the end of the period for which the franchise has been granted. Finally, the bids made on the lowest price to serve the market are easily comparable only when the firm supplies a single homogeneous product. When the firm is multi-product the comparison among the different bids becomes very complicated (if not impossible), since detailed estimates of demand need to be available.

c) *The promotion of competition and third party access*

When the supply of public utility services is constrained by the existence of a fixed network which is not economically replaceable, it is essential to regulate the conditions for network access. More specifically, deregulating the markets for the services supplied through the network can only be effective if the owner of the network is under an obligation to permit access.

This is a particularly important issue when the network owner operates also in the market for services. Under these circumstances the owner of the network may have a vested interest in not allowing a competitor to enter the market, and may therefore impose particularly restrictive terms of access. Occupying an exclusive position in the market for services increases the profit opportunities of the owner of the network. If the prices for these services are not regulated, the carrier operating as a monopolist in these markets is in a position to appropriate all available profits, thanks to its direct information on market demand and user preferences and does not have strong incentives to allow third party access. If the price of services is regulated, profits of the regulated utility are maximised if the regulated monopolist is able to supply the whole market. Also in this case, incentives to provide access are quite weak.

In such circumstances it is necessary to regulate access conditions. When a multiple output technology is in place the optimal access price is not easily defined. Indeed it is possible to identify an interval, that has as a lower bound the marginal cost of production and as an upper bound the stand alone cost, where the access price should lie. In fact in the presence of economies of scope in production, the most efficient way to allocate common costs among different uses is accomplished by considering the different demand elasticities involved, an outcome that implies some sort of price discrimination and that cannot accommodate pricing rules solely based on cost considerations. If such a discrimination is not allowed the network owner may not even be able to recover its total costs of production.

Regulating access charges is sometimes not enough, since the network owner may abuse its dominant position by discriminating among users with non price instruments. Such a behaviour could be very effectively ruled out, provided that a structural transformation of the industry were carried out, separating the management of the network from the provision of services. Separating network management and service provision can create sufficient incentives for the network owner to encourage access to the network by anyone wishing to enter. This condition is not always guaranteed when the separation between the two is not a proprietary one, but is purely of an accounting nature, since in such a case it is much more difficult on the part of a regulator to implement full transparency. However, should economies of scope or other economies from

integration be important, accounting separation can allow the exploitation of the related cost efficiencies.

d) *Regulating tariffs*

Liberalisation of market access does not exclude the need for tariff regulation even in services where there is a competitive potential. When competition in the market is still weak, it might become necessary to guarantee firms some limited freedom to fix their tariffs. However, as competition increases and consumers can choose among different alternative suppliers tariff regulation should be further relaxed, and once competition is sufficient it should cease altogether.

In this framework of progressive introduction of competition, price cap regulation tries to overcome the difficulties faced by rate of return regulation in providing the right incentive for efficiency improvements. In particular the regulator provides the company with a rule according to which the rate of increase of tariffs for a basket of services should not exceed the difference between the increases of input prices, measured by the retail price index³, and the rate of growth of total factor productivity in the production of that particular basket^{4, 5}.

Price-cap regulation has been proposed because it is considered easier to enforce, and is apparently less likely to produce inefficiencies. The method would also provide for considerable flexibility in laying down the prices of individual services supplied, since it is usually applied to a basket and not to individual services. The companies are obliged to comply with the aggregate pricing rule. The companies can then retain all profits that are generated as a result of the attainment of a level of efficiency which is greater than expected. In this manner the incentive to produce efficiently is enhanced and, even though profits might be greater than under alternative price regulation methods, service prices would be lower due to the greater level of efficiency achieved by the firm.

While price-cap regulation controls the process of adjusting tariffs to variations in cost, it does not offer any solution to the problem of setting optimal tariffs. It is therefore indispensable that before applying price-caps, current tariffs be geared to levels that make it possible to attain allocative efficiency, because otherwise price-caps applied to "wrong" tariffs would lead to a wholly inefficient tariff structure.

Adopting price-cap regulation is not without its difficulties. First of all, in order to carry out its task stringently and thoroughly, the regulator is required to have a detailed knowledge of the technological and cost conditions that are likely to

prevail in the future, and this is extremely complex. From this point of view, price-cap regulation is not very different from traditional regulation under which companies are guaranteed a fair return on their investment. Furthermore, as with rate of return regulation, because of the concern with allocative efficiency, tariffs must be regularly adjusted to productivity variations, in order to prevent extra-profits, or alternatively to enable the company to earn adequate profits. Therefore, in order to conceal any extra-profits earned in a particular period, the regulated company might be induced not to adopt substantial technological innovations that would lead to considerable cost savings and thus bring about a more stringent price regulation in the following period.

e) The institutional structure of regulation

One of the most important aspects of the reform of regulation is the setting up of appropriate institutions. In particular the promotion of a sharp separation between firms and regulators makes it more difficult for the regulator to be captured, so that greater efficiency for the benefit of the consumer can be promoted. By placing a "distance" between regulators and regulated companies, there is a gain in transparency, but also in the efficiency of the controlling function.

Regulators should lay down the technical aspects for the provision of services (technical standards, minimum quality levels) and be responsible for controlling the process of tariff formation. Furthermore, since the competitive conditions of regulated industries do not remain stable over time, due to technological progress and changes in market conditions, it is important that regulators be required to advise the Government on the ways to promote an effective competition. In order to prevent any regulation from remaining in existence when it is no longer warranted A periodic review of the level of competition by competition authorities can be put in place to assess the situation. The purpose of this assessment is to remove any regulatory measures that act as a constraint on firm behaviour once the market structure is adequate to guarantee a fair degree of competition.

IV. Conclusions

Privatisation is not merely the sale of shares in a nationalised industry. The underlying intent is to improve industry performance by increasing the role of market forces. Therefore, privatisation should be accompanied by a number of other initiatives: a) restructuring of the former monopolist in order to achieve a market structure that could maximise net consumer benefits; b) full

liberalisation; c) identification of clear rules that would govern provision of uneconomic services.

Removing barriers to market access may not be sufficient to introduce full competition. After the opening up of a monopolistic market, the former monopolist frequently maintains its dominant position for a long time due to its technical and financial advantages, or the reputation that it has acquired with its customers. This implies that antitrust legislation is very important to discipline its behaviour. In general the existence of regulation does not imply exemption from the application of competition law. For example, the European Community competition law is designed to establish the need for regulated companies to be subject to the rules of competition wherever possible. Only firm conduct that is strictly related to the attainment of specific goals of general economic and social interest may be excluded from the scope of the antitrust law.

The relationship between antitrust and regulatory authorities should be of a co-operative nature. Regulators could report to the antitrust authorities any violation of competition law by the regulated public utilities, and antitrust authorities could in turn invoke the introduction of regulation, should their powers prove insufficient for the establishment of competitive conditions. Furthermore, since one of the goals of regulation is the attainment of a competitive environment, regulators should seek the advice of competition authorities whenever there is a structural change in the market, such as the issuing of a new licence, a change in the system of price regulation etc. Finally, since bureaucracies tend to protect themselves and very rarely propose their own elimination, regular assessment of the competitive conditions in regulated public utilities could help to determine the need for continued regulation, and help promote the introduction of a free market whenever possible.

NOTES

1. The Interconnection Directive, article 5(3).
2. For an analysis of these issues see Kessides, I.N. and Willig, R.D. (1995), "Competition and regulation in the railroad industry". In Frischtak, C.R. (Ed), *Regulatory Policy and Reform: A Comparative Perspective*, The World Bank.
3. When assessing this form of regulation it should be borne in mind that price trends for the inputs of public utilities and services may be completely different from the retail price index.
4. Precisely for this reason the system is generally indicated as the RPI-X method, where RPI stands for the Retail Price Index, and X is a percentage laid down by the government, which may be changed at the end of the reference period.
5. There is also an alternative interpretation of the formula used in which RPI is the retail price index that approximates the output price while X is the difference between the productivity from supplying the service and the productivity of the reference aggregate.

Annex I

REGULATION OF WATER DISTRIBUTION IN ARGENTINA

by

Mariana Conte Grand*

Summary

In 1989, the Argentine government began a very deep reform of the country's economic system. Among the biggest changes, there was a wave of privatisations, accompanied by an accelerated transfer of functions from the national government to the provinces. The first ones included the telephone company and the national flag airline and were conducted with the goal of financing the stabilisation programme and gaining national and international credibility for the government, rather than increasing efficiency. A second privatisation wave took place in 1992, when the public enterprises that provided electricity, gas, petroleum and water were sold. This time the process was characterised by a greater concern towards efficiency. The latest transfers of public utilities to the private sector took place in 1997, and involved the airports and the national post office.

Among the firms privatised by the Argentine government, there was the water and sewerage supplier for the Buenos Aires Metropolitan Area (Obras Sanitarias de la Nación, or OSN). It was also a trigger for other privatisations, since many provinces followed the national government's example and sold their own water companies. Water and sewerage is the infrastructure sector where Argentina is in the worst relative position. The coverage of sewerage services is low compared to other countries with similar levels of GDP per capita, and it is even lower for water services. The main difference between the privatisation of water and sewerage services and most other privatisations was that, while in other sectors the government directly sold the public firms, in this

* Mariana Conte Grand is a professor at CEMA University, Argentina.

case the ownership of the company's assets was not transferred. Instead a fixed term 30 year concession was awarded to the firm that offered the lowest rate level without any disbursement.

Focusing on the Buenos Aires Metropolitan Area's concession, the regulatory tools for price regulation consist of a hybrid of price-cap and cost-plus systems. On one side, water and sewerage prices are individually capped, but whenever a cost index is greater than 7%, the firm can file an "extraordinary revision" to be allowed to increase tariffs beyond the cap ("passthrough"). Caps are based on a complex tariff structure determined by house and land values giving the firm no incentives to improve the quality of service and the clients do not have any incentive to use services rationally. The concession contract includes other regulatory instruments (goals for coverage and quality) and a specified level of investment. Related to that, there are also "periodic revisions" (every 5 years) to examine the attainment of quality and coverage goals, the fulfilment of investment plans and the financial viability of those plans according to the rates. In terms of institutions, a special agency was created (ETOSS). ETOSS has six members that are chosen by political authorities, without parliamentary approval and is financed from a 2.7% tax on the firm's revenues. Some authors believe that the ETOSS has been captured in some way. But while the outcome of the latest renegotiations cannot be said to have been against the regulated firm, it took place without any intervention by ETOSS.

The changing instances that followed the concession of the water and sewerage services in Argentina have clearly demonstrated that public utility regulation is an issue that may be subject to considerable uncertainty when renegotiations and contract revisions occur. The privatisation of OSN was probably unique in the sense that it was based on the idea of competition for monopoly rights, and its philosophy was that such competition was able to drive prices down to competitive levels. That idea proved to be right in the very beginning (since water rates immediately dropped by 27%), but it also created an environment where productive efficiency was not encouraged and almost everything was subject to renegotiation whenever the regulated firm was interested in it. Conclusions of this paper propose some changes which may guide the concession towards efficiency (a simpler rate system, quality and coverage goals only instead of investment level goals, and an automatic rate adjustment mechanism based on the evolution of some simple index).

I. Introduction

The aim of this paper is to analyse the outcome of the privatisation process of water and sewerage services in Argentina, and to propose a few recommendations directed towards its improvement. Its first section deals with

the context within which privatisation took place, and compares it with other privatisations in other sectors of the economy. The next section describes the privatisation process in several provinces of the country, and is followed by a more detailed analysis of the regulatory framework and institutions designed for the concession of the firm that provides water and sewerage in the Buenos Aires Metropolitan Area. This is considered to be the largest water company in Latin America.

II. Regulation, competition and privatisation in Argentina

In 1989, the Argentine government began a very deep reform of the country's economic system. Among the biggest changes, there was a wave of privatisations, accompanied by an accelerated transfer of functions from the national government to the provinces. In fact, in the five years from 1990 to 1994, cumulative sales from privatisations amounted to 9% of the GDP (Abdala, 1996).

Before the first wave of privatisations, the Argentine public utilities were largely state-owned (table 1). At the beginning of the privatisation era, public enterprises were characterised by their inadequate investment and maintenance, overstaffing, shortage of qualified staff, and their revenues had been used by successive governments as a source of funds for financing growing fiscal deficits.

It was within this context and after several episodes of hyperinflation, that the first important privatisations occurred at the end of 1990. These included privatisation of the telephone company (Entel) and the national flag airline (Aerolineas Argentinas). In the first case, the firm was divided and sold as two regional monopolies, granting the operators exclusivity for 7 years with an option to 3 more years. In the second case, a monopoly was granted for 5 years in domestic flights. The reason for those decisions was that those first two privatisations were conducted with the goal of financing the stabilisation programme and gaining national and international credibility for the government, rather than increasing efficiency (see Gerchunoff, 1992).

A second privatisation wave took place in 1992, when the public enterprises that provided electricity, gas, petroleum and water were sold. This process was characterised by a greater concern for efficiency, since competition was introduced in some areas and new regulatory agencies were created prior to divestiture. The latest transfers of public utilities to the private sector took place in 1997. They included sale of airports and the national post office.

Table 1. Public Firms in Argentina at the end of the 1980s

Sector	National government	Provincial governments
Petroleum	Around 50% of the market	Did not participate
Natural gas	Monopoly in transportation and distribution	Did not participate
Water and sewerage	Monopoly in the Buenos Aires Metropolitan Area	Monopolies by provinces, municipalities or cooperatives
Electricity	Most transportation and generation, distribution in the Buenos Aires Metropolitan Area	Monopoly in distribution and some participation in generation
Telecommunications	Monopoly almost everywhere	Did not participate
Banking	Several banks	One or two banks per province. Municipal banks in some cases.
Railways	Monopoly everywhere	Did not participate
Airlines	International flights and majority of domestic flights	Some small firms
Harbours	The main facilities	Some small facilities
Others	Petrochemicals, steel, TV, some radio stations, etc	Participation in several activities

Source: Artana, Navajas and Urbiztondo (1997).

III. Privatisation and regulation of water distribution in Argentina

Among the firms privatised by the Argentine government in 1992, there was the water and sewerage supplier for the Buenos Aires Metropolitan Area (Obras Sanitarias de la Nación, or OSN). From 1870 to 1980, OSN's area of influence was the whole country, but after 1980, by decree 258/80, its radius of action was limited to the city of Buenos Aires plus 13 districts of the nearby Province of Buenos Aires. Water coverage had expanded until the 70's, but that expansion ended sharply in the 80's. The reason for that change can be attributed to the reduction in OSN's revenues (due to the erosion of the prices charged), the lack of qualified personnel, and a low level of investment, which

put the company in a situation that was probably among the worst of national publicly-owned firms.

The transfer of OSN's operation to the private sector was the largest privatisation of a water company in Latin America. It was also a trigger for other privatisations, since many provinces followed the national government's example and sold their own water companies. It is estimated that nowadays 50% of the Argentine population is served by privatised firms (ECLAC, 1998). In Cordoba, Corrientes, Salta, Santa Fe and Tucuman the privatisation process is already complete, while in the Provinces of Buenos Aires and Mendoza it is still under way (table 2).

The coverage of sewerage services in Argentina is low compared to other countries with similar levels of GDP per capita, but the coverage of water services is even lower (graph 1). Only 64% of the population has access to potable water, while 89% of all the inhabitants has *some kind* of sewerage (World Bank, 1997)¹. In fact, water and sewerage is the infrastructure sector where Argentina is in the worst relative position.

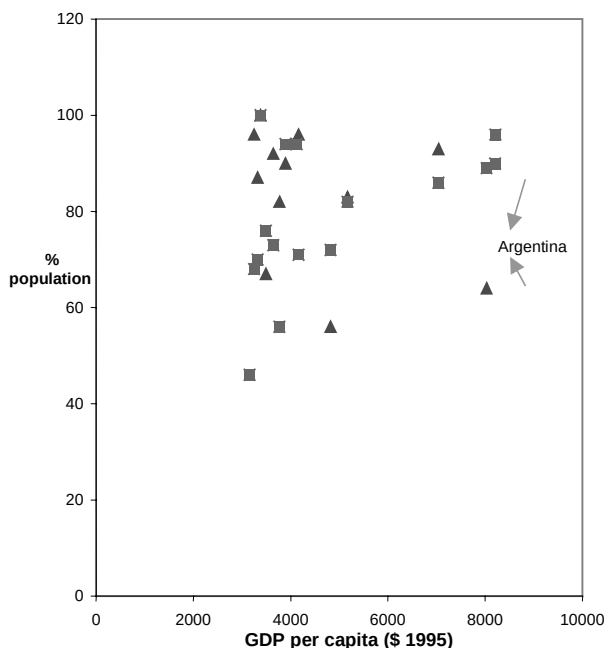
Table 2 Privatisations of Water Distribution in Argentina

Area	Year	Private firm
Metropolitan Buenos Aires Area	1992	Aguas Argentinas Majority: Lyonnaise des Eaux (France)
Province of Cordoba	1997	Aguas Cordobesas Majority: Lyonnaise des Eaux (France)
Province of Corrientes	1991	Aguas Correntinas Majority: Sideco Americana & Ingeniería Tauro (Arg.) Minority: Thames Water (UK)
Province of Salta	1998	Aguas de Salta and Necon
Province of Santa Fe	1995	Aguas de Santa Fe Majority: Lyonnaise des Eaux (France)
Province of Tucuman	1995 *	Aguas del Aconquija Majority: Générale des Eaux (France)

Source: ECLAC (1998).

Note: * This privatisation has had several problems and the contract was terminated in 1997.

Graph 1: Water and Sewage Provision
(comparison with countries with similar income levels to Argentina)



Source: World Development Report (WB, 1997)
Note: The triangles refer to water, the squares to sewage.

IV. Regulation of water distribution in the Buenos Aires Metropolitan Area

The main difference between the privatisation of the Buenos Aires water and sewerage services and most of the other Argentine privatisations was that, while in other sectors the government sold the public firms, in this case the ownership of the company's assets was not transferred but given in concession for a fixed term of 30 years. The bidding process was based on awarding the firm to the bidder who proposed the lowest rate level. No disbursement was required, neither at the moment of the concession nor later.

Water production for the Buenos Aires Metropolitan Area is relatively cheap because it comes from the withdrawal of water from the River Plate, which is treated at two plants (San Martin and Belgrano) before being supplied.

Sewerage is discharged on the same river, and only 5% of it receives any kind of treatment (Abdala 1996)². The consumption of water in Buenos Aires is considered excessive by international standards (600 litres per person per day, compared to a standard of 400), partly because of technical losses and partly due to a rate structure which lacks incentives for rational use .

The winners of the bidding process for the concession of OSN were Lyonnaise des Eaux, Aguas de Barcelona and Anglian Water, whose joint venture adopted the name of “Aguas Argentinas” (Argentine Waters). The other two bidders were joint ventures headed by Thames Water and Northwest Water International. The concession began to operate in May, 1993.

i. The regulatory tools

In Argentina the regulatory tools used for regulation of privatised companies vary considerably across sectors (table 3). In the case of water and sewerage, price regulation consists of a hybrid of price-cap and cost-plus systems. On one side, water and sewerage prices are individually capped, but whenever a cost index is greater than 7%, the firm can file an “extraordinary revision” to be allowed to increase tariffs beyond the cap (“passthrough”).

Table 3 Tools For Price Regulation In Argentina

Sector	Regulatory tools
Petroleum	Free prices
Natural gas (production)	Free prices
Natural gas (transportation and distribution)	Price cap + passthrough
Water and sewerage	Hybrid price cap
Electricity (generation)	Free prices
Electricity (transmission and distribution)	Price cap + passthrough
Telecommunications	Price cap
Airlines	Free prices
Harbour	Free prices

Source: Artana, Navajas and Urbiztondo (1997).

The system of price caps for water and sewerage provided by Aguas Argentinas works as follows:

a) *For unmetered customers, the two-month flat rate is determined by:*

$$\max \left\{ BBT_{ij} = GT_{ij} \cdot K \cdot Z \cdot (SC \cdot E + \frac{ST}{10}), BBT_{ij}^{\min} \right\} ;$$

where i is the type of service (*e.g.*, water only, sewerage only or both), j is the customer's category (residential, non-residential or vacant land), GT is a number which represents a basic rate, K is a number determined in the privatisation bidding process (which ended up being equal to 0.731), Z is a zone factor (which depends on the location of the customer, and goes from 0.8 to 3.5), SC is the total area built (in square meters), ST is the total property area, E is a coefficient which adjusts for quality and age of construction (and goes from 0.6 to 2.6) and $BBT^{\min}$ is equal to \$2.924 per service for residential users and \$5.848 for non-residential users. In case that BBT is lower than $BBT^{\min}$, the latter is charged.

b) *For metered customers (only around 8% of the total), the two-month three-part rate is determined by³:*

$$MT_{ij} = 0.5 \cdot BBT_{ij} + P_i \cdot K \cdot (C - \bar{A})$$

where P_i is a regulated price (\$0.33/m³ if the customer only receives water and \$0.66/m³ if he receives both water and sewerage), C is the consumption of water, and A are the first 30 m³ consumed (which are covered by the fixed part of the rate).

In addition, the concession contract includes other regulatory instruments. There are goals for coverage and quality (environmental quality and minimum pressure goals) and a specified level of investment (divided in different percentages for water treatment, water network expansion, etc). Related to that, there are also "periodic revisions" (every 5 years) to consider the attainment of quality and coverage goals, the fulfilment of investment plans and the financial viability of those plans according to the rates. At those points in time, relatively large changes can be introduced and an exhaustive revision of the firm's situation can occur, with the implicit idea of following a rate-of-return regulation.

In summary, in the case of water and sewerage, rates are set in a way that the firm does not have incentives to improve the quality of service, because its

revenue depends mainly on the value of the land and the housing. The problem with this approach arises from the fact that rates were frozen in their structure and level of 1992, instead of changing the system towards one with a higher degree of efficiency and incentive compatibility considerations⁴.

ii. *The regulatory agency*

The ETOSS (three-part Agency for Water and Sewerage Works and Services) is the agency created by the concession decree to regulate Aguas Argentinas, as an autonomous institution that would monitor the contract's fulfilment. Other similar agencies were created for other privatised companies (table 4). In this case, however, the Department of Natural Resources and the Environment was assigned a parallel regulatory task, related to the control of environmental goals.

Table 4 Regulatory Agencies Created After Privatisations in Argentina

Sector	Agency
Natural gas	ENARGAS (National Regulatory Agency for Gas)
Water and sewerage	ETOSS (Three-part Agency for Water and Sewerage Works and Services)
Electricity	ENRE (National Regulatory Agency for Electricity)
Telecommunications and postal services	CNC (National Communications Commission)

Source: Artana, Navajas and Urbiztondo (1997).

The main institutional characteristics of the ETOSS are:

- A board of directors constituted by 6 members chosen by political authorities, without parliamentary approval (2 from the Province of Buenos Aires, 2 from the City of Buenos Aires and 2 from the national government).
- Financing that comes from a 2.7% tax on Aguas Argentinas' revenues, made explicit in the water bill. ETOSS's funding does not include the fines that it imposes on the firm, since those have to be returned to the consumers through lower prices.

Some authors believe that the ETOSS has been captured in some way by Aguas Argentinas (see, for example, Artana, Navajas and Urbiztondo, 1997). Their main argument is that it authorised a price for meters that goes from \$31 to \$112, while at Corrientes (a comparable concession) prices range from \$15 to \$30. They also point out that the ETOSS decided that, if a customer requests a

revision of its meter, he has to pay for the inspection costs if the firm concludes that it works well. The ETOSS also authorised in 1994 an increase in rates of 13.5%, supposedly due to increasing costs for the firm. However, those costs did not correspond to the required changes of the cost index of more than 7% (in order to trigger “extraordinary revisions”), but were due to the anticipated fulfilment of investment goals.

iii. Renegotiation of the concession contract

Although there was an extraordinary revision in 1994, the main renegotiation of concession’s conditions for Aguas Argentinas took place in 1997. At the beginning of that year, decree 149/97 was issued for a reformulation of the firm’s activity in the next 180 days. There were several reasons for the renegotiation, but the ones cited by the firm and the regulators were lower than expected⁵ revenues, non-fulfilment of the investment plan, and the growing misunderstandings between the firm and the ETOSS.

In fact, one can say that the main problems of the regulatory system prior to the 1997 contract renegotiations were deeper than those noted above. First of all, the system of rate setting was complex and based on zone and housing values that in most cases had no relationship with the quantity of water consumed. Besides, the control of the investment plans focused on the level of expenditure instead of paying attention to the fulfilment of quality and coverage goals. There was also a lack of a flexible mechanism to incorporate adjustments to the rates when this was required by the macroeconomic context, together with a lack of transparency in the other adjustment mechanisms (which required that the regulator collect a large amount of information).

The renegotiations followed different steps, but the institution created to regulate Aguas Argentinas (ETOSS) was never invited to participate in this process. Talks were held between Aguas Argentinas, the Ministry of the Economy and the Department of Natural Resources. The changes agreed to by the three parties (as described in decree 1167/97) were the following:

1. The adoption of a new “Plan of Integral Sanitation”, which replaced the one committed to in the original contract.
2. The creation of a new component for the rates called “SUMA” or “Servicio Universal y Mejora Ambiental” (Universal Service and Environmental Improvement). SUMA was established at a maximum of \$3 per service, but at the time of the decree only SU was determined at \$2.01 and MA was left undefined. SU was put in place to finance new connections (but was uniformly charged to

all the users) and MA's goal was to cover the difference between the original investment plan and the new plan agreed by this decree.

3. The inclusion of a new connection charge called "CIS" (Cargo por Incorporación al Servicio). It was fixed by Resolution 27/98 at a bi-monthly level of \$4 for a five year period, beginning at the moment when the service was made available.
4. A waiver for the fines that corresponded to the third year of operations, allegedly offset by additional investments of Aguas Argentinas in the Buenos Aires downtown area of Puerto Madero.

A few days after the decree was signed, appeals were made by some consumers' associations and also by the National Ombudsman Jorge Luis Maiorano (File No. 1.889/98), who called for a suspension of the new regulatory framework. He basically argued that there could not be any new regulation without the ETOSS's participation⁶, that the connection service was made payable twice (though CIS and SU), and that the creation of MA had not been seriously evaluated. The ombudsman's presentation also pointed out that, since SUMA was constant for all customers, it implied a relatively much higher increase in the bills of the poorest users, and therefore did not fulfil the redistributive objectives of the decree.

This appeal was considered legitimate by the judicial power on two grounds. Although MA was accepted as a counterpart for a presumably new service to be provided by the firm, SU was considered to be a tax. The judge's ruling also argued that taxes could only be set by the Congress, and so the new rates were suspended on March 12, 1998. (Page 75/78, No.44, "Sentencias Interlocutorias" of Judge Rossi).

After those events, Aguas Argentinas filed for a new "extraordinary revision", claiming that its costs had increased by 11.7%. However, the ETOSS only authorised an increase of 1.67%. Its decision was appealed by the firm to the Secretary of Natural Resources, who had been designated as the main authority on water regulation issues. This secretary is said to be about to authorise a rate increase of 3% over the figure already approved by the ETOSS.

V. Conclusions

The outcomes of the concession of the water and sewerage services in Argentina have clearly shown that public utility concessions may be subject to considerable uncertainty when renegotiations and contract revisions occur. The privatisation of OSN was probably unique in the sense that it was based on the

idea of competition for monopoly rights, and its philosophy was that such competition was able to drive prices down to competitive levels. That idea proved to be right in the very beginning (since water rates immediately dropped by 27%), but it also created an environment where productive efficiency was not encouraged and almost everything became subject to renegotiations whenever Aguas Argentinas was interested in it.

Taking that environment as given, it is nevertheless possible to introduce some changes that would help to develop more stable and predictable outcomes, so that the firm abandons the use of renegotiation and bargaining as its main source of profits and focuses on efficiency and quality of service instead. Those changes could consist of⁷:

a. *A simpler rate system*

The idea is to establish a new rate framework that pursues three goals: rational use of water, balance between demand and supply of water, and financial viability of the concession. The new rate framework should be more transparent, and should seek to reduce the number of items that are included in the fixed part of the rate. The idea of financing new connections through a general charge is not to be discarded, but this should be defined as an “ad-valorem” concept rather than a lump-sum tax.

b. *Quality and coverage goals instead of investment level goals.*

Quality and coverage have to be monitored with objective and easily measurable indicators, leaving no doubt for the regulator who monitors them. It is also very important to regulate the “goals” and not the “means to reach those goals” (as is the case when the amounts that the firm must invest are established).

c. *An automatic rate adjustment mechanism based on the evolution of some simple index.*

Ordinary revisions are a good way to reconsider important regulation parameters and it is reasonable to have a broad discussion about them every 5 years. The case for extraordinary revisions is different, since they imply an exhaustive review of costs and revenues that create informational problems for the regulator. An automatic price index, built to capture cost increases, should instead be automatically applied to protect the firm from uncertainty about its input prices.

REFERENCES

- ECLAC. (1998), "Progresos Realizados en la privatización de los servicios públicos relacionados con el agua: reseña por países de Sudamérica", mimeo.
- ARTANA D., Navajas F. and Urbiztondo S. (1997), "La regulación económica en las concesiones de agua potable y desagües cloacales en Buenos Aires y Corrientes, Argentina", Serie de Documentos de Trabajo Red de Centros R-312, Inter-American Development Bank.
- WORLD BANK. (1997), "The State In A Changing World ", World Development Report 1997, Oxford University Press.
- ABDALA M.A. (1996), "Welfare Effects Of Buenos Aires's Water And Sewerage Services Privatisation", draft, World Bank.
- COLOMA G. and Conte Grand M. (1997), "La renegociación del contrato de concesión de Aguas Argentinas", Expe-Outlook, Volume 5, No. 48, July.
- GERCHUNOFF P., editor. (1992), "Las privatizaciones en la Argentina ", Instituto Torcuato Di Tella.

NOTES

1. Around 40% of the population has sewerage connections. The rest makes their own perforations.
2. In the original contract, the firm was supposed to build a major plant for primary treatment and several complementary plants, so that by the end of the concession (year 2023) all discharges receive treatment before returning to the river.
3. Consumers can choose to be metered, and in that case they pay for the meter. If the firm is the one that decides to meter, then it pays for it. The customer can change his mind if his bill increases by more than 20%. In that case, if Aguas Argentinas wants to go on with the metering, it has to refund the meter to the customer. In practice, few customers requested this service, and most metering was imposed by Aguas Argentinas.
4. It is not obvious, however, that a greater development of metering will be the most efficient solution for a city like Buenos Aires. This is because water is plentiful in the River Plate and water meters are costly. Besides, the concession decree (Decree 999/92, article 43, section 3) explicitly allows for cross-subsidisation among customers as a way to deal with equity issues, although it is by no means clear that the present rate structure is helpful in that respect.
5. Until the renegotiation, Aguas Argentinas had the right to charge \$600 for each new water connection and \$1 000 for each new sewerage connection. According to the firm, these charges generated a credit of around \$60 million that became uncollectable, because the majority of the new customers were low income people who could not afford to pay those figures.
6. The ombudsman went even further, by explaining that the ETOSS was excluded from the renegotiation process because it was not favourable to the firm. During 1996 the ETOSS had been applying fines to Aguas Argentinas for not fulfilling its contractual commitments (see, for example, Resolution 141/96). This attitude seems to be in sharp contrast to the theory of regulatory capture supported by Artana, Navajas and Urbiztondo (1997).
7. The modifications suggested are strongly based on the proposals contained in Coloma and Conte Grand (1997).

Annex II

POLICY ISSUES IN TELECOMMUNICATIONS REFORM: THE NETHERLANDS

by
Robert C.G. Haffner*

The telecommunications industry in the Netherlands has undergone significant reforms since the end of the 1980s. During this period, the Dutch telecommunications sector moved from a state owned enterprise with a monopoly in infrastructure, services and terminal equipment to a liberal environment with the possibility for competition in all of these segments.

This contribution first summarises the major changes in the regulatory framework and discusses the current performance of the telecom sector. Second, some of the key policy issues on regulation and competition which policy makers in the Netherlands are confronted with are addressed.

I. Regulatory framework

Until the 1990s, the industry structure in the Netherlands was a state monopoly with the Dutch Public Telecommunications Operator (PTO) holding a monopoly on virtually all segments of the telecommunications market. KPN, the Dutch Post and telecommunications operator, was part of the government budget which meant that it was not allowed to raise capital or reserve profits for future investments.

Over time, technological development made the natural monopoly argument for preserving this situation less valid. A much more competitive future business

* Robert Haffner is Principal Administrator, Competition Policy Unit, at the Ministry of Economic Affairs, The Netherlands. The views expressed here do not necessarily reflect the opinion of the government of the Netherlands. This paper has benefited from Paul van Dijk's helpful comments.

environment was expected. The state owned enterprise was not seen as the most effective and desirable organisational form to deal with this competition. In addition, policies of the European Union played an essential role in promoting liberalisation 'of telecoms throughout Europe. The EU directives provided a broad framework and general objectives, leaving the individual member states considerable freedom as to how these policies should be implemented.

Nevertheless, it took until 1989 until first formal steps were taken in this area.. KPN was corporatised and became a public limited liability company with the state as its only shareholder. In response to EU-directives, the markets for terminal equipment and value added services were liberalised. In 1993, competition was allowed for data communication services and resale of leased lines. In 1994, voice telephony service in closed user groups was permitted. 1994 also marked the sale of 30 per cent of the shares of KPN, raising revenues amounting to 6.6 billion guilders. In 1995, a start was made with the new digital GSM network by issuing two licenses, one to KPN and one to a new entrant, Libertel. Moreover, another 25% of the shares were sold. The receipts of this sale amounted to 6.1 billion guilders.

In 1996, the so-called "interim legislation" was introduced, which represented an amendment of existing telecommunications laws while anticipating the drafting of a new law. With the interim legislation, competition was allowed for satellite networks and communications services, and it allowed the use of cable TV infrastructure and other alternative fixed infrastructures (*e.g.* networks of the railways and electricity companies) for telecommunications purposes. Also, the installation and exploitation of new fixed telecommunications infrastructures was made possible. Only for voice telephony, restrictions remained. On the basis of the interim legislation, two new nationally operating companies entered the market (Enertel and Telfort). In addition, some 1 400 regional infrastructure licenses were awarded to about 160 companies.

Summer of 1997 marked the liberalisation of voice telephony and the establishment of an independent post and telecommunications supervisory authority (called OPTA), both following the EU Open Network Provision (ONP) directives. This also meant that there were no more restrictions on market entry (entry is based on registration) and no line-of-business restrictions. Finally, in 1998, an auction of new mobile licenses took place, resulting in the entry of three additional nationally operating companies and many more regional ones. This brings us up to now. The new Telecommunications Act came into force in December 1998, containing (among other things) the following important elements:

- the division of responsibilities between the minister responsible for telecommunications, the regulator OPTA and the general competition authority NMa;
- special obligations for providers with significant market power such as non-discrimination, transparency and cost orientation;
- provisions ensuring special access and site-sharing where feasible; and
- provisions regarding universal service, where KPN is obliged to provide universal service, but is allowed to withdraw. In this case, the universal service obligation will be tendered.

So all in all, the story of the telecoms' market in the Netherlands is one of liberalisation, not so much of privatisation. Currently, the state still holds 44% of the shares of KPN. That liberalisation should precede privatisation is in my opinion a sound policy principle as it reduces the scope for abuses of dominant positions. However, the sale of parts of the shares of KPN was an essential part of the process as KPN could only present itself credibly to (foreign) clients and partners without having the state as a majority shareholder.

II. Performance

The Netherlands telecommunication sector is currently performing relatively well:

- tariffs of residential and business telephony services are well below OECD averages;
- the same holds for the tariff baskets of leased lines and mobile services;
- interconnection rates fall well within the ranges of OECD best practices;
- labour productivity, measured by lines per employee or revenue per employee, is among the highest of the OECD area;
- capital productivity, measured by revenue per mainline, is lagging behind a bit but is close to the OECD average; and

- various indicators of service quality show that quality is also relatively high.

Perhaps even more important, is the fact that the outlook for competition is also relatively good. First, the presence of an extensive cable TV network (the penetration rate is at 94%) means that an alternative local loop is available. It is expected that 70% of the cable network will be suitable for two way communication by 1999 and 85% by 2000. A second positive factor is that new entrants are generally high-profile operators related to big domestic companies (ING, ABNAMRO) and large foreign telecommunications operators (BT, France Telecom). It is expected that these operators have sufficient financial resources and know-how to be effective competitors for KPN.

III. Policy issues

The key policy issues discussed below reflect the discussions we had and still have in the Netherlands when reforming the telecommunications sector. These issues also have relevance for other sectors with (former) natural monopoly characteristics. The first four issues concern the relationship between sector-specific economic regulation and general competition policy. Recently, the Dutch government announced some policy principles in this area. A related debate concerns the extent to which economic regulation should be used as a substitute for market forces.

The first policy issue concerns the extent to which general competition policy can and should be relied upon to ensure the development of competition in a liberalised market. The answer of the Dutch government to this question is: as much as possible. Why? The cabinet felt that instruments of supervision should be as light as possible, so that problems which can be adequately addressed by general competition policy, should be addressed by it. Relying as much as possible on general competition policy also promotes consistency in the application of competition principles.

In the Netherlands, we are having a lot of debate about the kinds of problems general competition policy can adequately deal with. For example, in our opinion, general competition policy is adequate for many problems of access (*e.g.* access to gas pipes) and excessive rates. Currently, we are also exploring the possibilities of basing a price-cap mechanism (RPI-X) on general competition rules.

One of the arguments typically used against general competition policy for dealing with these types of problems is that it is largely *ex post*. However, by issuing policy guidelines, which tell us in advance how general competition

rules will be applied in a specific sector, these rules can form ex ante prescriptions similar to economic regulation. In addition, decisions in specific cases may have applicability to similar cases, in effect leading to (ex ante) changes in behaviour of firms. Given the significant advantages of relying on general competition policy, we feel that there is still a lot of potential to be explored in this area.

Now let's say that there is a need for economic regulation. The question then is whether there should be a separate body (a regulator or supervisor) to enforce these regulations. The answer of the Dutch cabinet is: try to avoid establishing new sectoral regulators. Besides promoting consistency in the competition policy regime and preventing fragmented oversight, the idea is that a general competition policy authority will attach greater weight to forbearance. In addition, for a small country like the Netherlands, it may well be that efficiency gains can be achieved by concentrating both economic regulation and competition policy within the same agency. Finally, the perceived risk of regulatory capture seems to be lower for the competition policy authority as it deals with all sectors of the economy.

Of course, there may also be reasons to establish an independent regulator, such as advantages in terms of the formation of sector-specific expertise, and the possible (although less persuasive) scale economies of concentrating economic and technical regulation within the same agency.

In the telecommunications sector, the EU ONP rules made it more or less logical to establish an independent regulatory authority for telecommunications. However, in the Netherlands we are currently working on two other modes of supervision. In the electricity sector, the sector-specific supervisor will be a "chamber" within the NMa. The director of the electricity chamber applies the Electricity Act, but in doing so he may receive instructions from the director-general of the NMa who is his superior. In public transport and airlines, we are currently discussing the possibility of directly empowering the NMa to apply sector-specific economic regulation. In both of these ways, consistency with the general regime is "automatically" achieved.

A third policy issue is the relationship between sectoral supervisory bodies and the general competition authority. The Dutch cabinet says that the sectoral bodies should agree on general guidelines with the NMa to ensure that sector-specific policies are consistent with general competition policy. In cases where these general guidelines do not suffice, sectoral supervisors need the consent of the NMa on specific decisions. In this way, forum shopping between various agencies is prevented and consistency is ensured. This is even more important given the convergence between various sectors, which means that the "boundaries " of the various sectors become blurred. For example, the

broadcasting and telecommunications still face separate regulatory regimes. The same holds for sectors such as electricity, gas and waste disposal. Having separate agencies for all of these sectors needlessly complicates decision-making.

It is intended that the new Telecommunications Act will also be based on the principle of consent in individual cases. Shortly, a proposal to modify the Telecommunications Act in this sense will be submitted to parliament.

Fourthly, another important issue is how to ensure that economic regulation remains only temporary. How do we ensure that the sectoral regulator has the incentive to make itself superfluous as soon as possible? This question is difficult to answer. We approach this problem by incorporating explicit evaluation moments into new sectoral Acts. For example, OPTA will be evaluated in 2001; at that time the need for continued economic regulation of different areas in telecommunications will also be assessed.

A final policy issue which is currently highly debated in the Netherlands is the extent to which economic regulation such as RPI-X mechanisms should be used as a substitute for market forces. OPTA recently determined that the rate of return of KPN on several retail voice telephony services was much too high. Their assessment of a "cost-oriented" rate of return would have forced KPN to reduce local and national rates by about 30%. The question was what the consequences of such a measure would be on investments in alternative networks and the overall innovativeness of the telecommunications sector.

Admittedly, keeping tariffs high would act as a strong incentive for entering the industry; however, at the expense of consumers which have few alternatives in the short run. Meanwhile, KPN started reorganising the company and increasing investments, convincing OPTA that at least until July 1999, a lower decrease in rates (*e.g.* only 10% for national calls) is sufficient.

To conclude, the Dutch telecommunications market is still very much in flux, due to technological developments, international competition and changes in regulations. The same holds for our knowledge and thoughts about the most appropriate way of guiding the process of liberalisation. What we do know, however, is that the benefits to be reaped are substantial.

REFERENCES

- DUTCH GOVERNMENT, Kabinetsstandpunt over Zicht op toezicht [Cabinet's view on the supervision of utilities sectors], Report of the MDW Working Group "Vision of supervision", Second Chamber, meeting year 1997-1998, 24 036, nr. 73H.
- HAFFNER, R.C.G. and Berden, K. (1998) "Privatisation In The Netherlands", in OECD, *"Reforming Public Enterprises "*, Paris.
- HAFFNER, R.C.G. and Van Bergeijk, P.A.G. (eds.), (1997) "Regulatory Reform In The Netherlands: Macroeconomic Consequences And Industry Effects", Ministry of Economic Affairs.
- OECD. (1998) "Regulatory Reform In The Telecommunications Industry: The Netherlands", DSTI/ICCP/TISP(98)9, Paris.

OECD PUBLICATIONS, 2, rue André-Pascal, 75775 PARIS CEDEX 16
PRINTED IN FRANCE
(14 2000 02 1 P) ISBN 92-64-17115-0 – No. 50911 2000