1. Introduction

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INTRODUCTION

This book addresses the question of infrastructure reform in a new way, focusing on the impact which such reform has on consumers, and in particular on different households and income groups. It examines the case of four Latin American and two European countries – Argentina, Bolivia, Chile, Peru, Spain and the UK. In particular, it captures both the effect of reform on prices paid by different groups and on their access to the networks, which is especially relevant for immature systems which have not yet extended to cover most of the population, as in most of Latin America. However it neglects neither the general impact on the economy (via macro-economic influences) nor the more general issues of subsidies, regulation and institutional governance which are central to these industries. The book focuses on the reform of four sectors: telecommunications, electricity, gas, and water and sanitation. In this chapter we first discuss the countries used in the case studies, and then the various facets of infrastructure reform (divestiture, regulation and introducing competition) and how they are illustrated by the case studies. Section 3 discusses the common methodology used, and Section 4 the layout of the rest of the book. Section 5 presents the main results and concludes.

1. COUNTRIES

The choice of the countries is deliberate. The UK was an influential example of privatization worldwide; following her example, many governments tried to reduce state involvement by removing themselves from activities that the private sector could undertake efficiently. The UK example has also been very influential in the creation of regulatory institutions for the utilities sectors. The case of Spain is less well documented; this is partly because the liberalization of the utilities market in Spain has been slow and subject to strong political influences. It is not entirely coincidental that the

majority of companies now operating Latin America's reformed utilities are Spanish. According to the Spanish government, companies have to be large to be able to compete in a global market, so regulatory intervention to curtail the market power of companies at home has been limited. Since the early 1990s, with the support of the government, a growing number of formerly state-owned Spanish companies developed a strategy of internationalization focused on Latin America. Besides the obvious cultural affinities, the region was chosen by Spanish companies because of pre-existing business relations, less competitive challenge from local companies, and the presence of Spanish banks which provided a supporting network. These factors have made Spanish firms active players in the liberalization and privatization of many Latin American utilities companies. In 1996, Latin America was the largest recipient of Spanish FDI (more than 50 percent of Spanish investment overseas went to the region). Spain provides the largest source of FDI in Latin America, after the USA.

Chile is Latin America's pioneer in infrastructure reform and its experience has been hugely influential in the region. The privatization process in the utilities sector started in the early 1980s (at about the same time as reform in the UK), following a massive state divestiture during the mid and late 1970s. The Chilean experience is therefore very important for the other Latin American countries. In the absence of other experiences to learn from, the Chilean process suffered some early reversals. Since then, the expertise of infrastructure reformers has increased. As a consequence, many of the lessons from the Chilean experience do not relate strictly to economics or finance, but rather to the political economy of the privatization process (Edwards, 1995). Argentina, Bolivia and Peru undertook reforms in the early 1990s. The cases are different as the three countries faced different initial conditions and responded to various political and economic motivations. Argentina possessed the most mature infrastructure system (in terms of coverage). The issue was to upgrade the networks to bring in new technology, and to improve the quality (reliability) of services. In the cases of Bolivia and Peru, a sizeable proportion of the population was excluded from the services. The networks had to be extended to reach an increasing number of users, many of them living in poor and marginalized areas. In the case of Peru, for instance, telecommunications access prior to reforms was much lower than that of most countries with corresponding levels of GDP. But Argentina and Peru had two other features in common. First, privatization was a way to signal commitment to reforms from newly elected democratic governments in each country. Second, there was an urgent need to decrease the budget deficit and stabilize the economy. The latter is in stark contrast to the motivations in Bolivia where the economy enjoyed more stability at the time of privatization, so that revenue

maximization was not a primary objective in the privatization process. For all three countries, attracting foreign direct investment was a priority. Safeguards for private investors, to minimize the risk of opportunistic behaviour on the government side, was therefore a crucial factor in regulatory design.

Most infrastructure systems in the UK and Spain¹ are fairly mature in terms of coverage, and extending access, either physically or financially, is not a major issue. However, we have seen that this is a very important part of infrastructure reform in Latin America, where policies are often focused specifically on such extension. The Latin American chapters in this book therefore include access as an important element. This may dominate the effect of changes in tariff on affordability for existing consumers, which are the main influences on the welfare of different household groups in Europe. Recognizing the importance of each of both factors is an important contribution of this study.

2. INFRASTRUCTURE REFORM

The reform process is typified by the transfer of infrastructure industries to private ownership, opening markets to competition where this is feasible (deregulation) and introducing new regulatory frameworks where it is not (reregulation). This process is based on the theoretical premise that public ownership is subject to as many potential failures as private markets, and that competitive markets are more efficient than those with monopoly power even when the monopoly is regulated. This philosophy was extended to industries where economies of scope or scale meant that some market failure was inevitable and continued regulation would be necessary (see for example, Vickers and Yarrow, 1988). In such industries, regulated private markets were thought likely to be more efficient than public ownership. Much was written in the 1990s about the incentive structures of privatized industries, and the appropriate regulatory mechanisms, mainly in the context of principal – agent models (see for example, Laffont and Tirole, 1993; Armstrong, Cowan and Vickers, 1994). However, comparatively little attention was paid to the distributive effects of these reforms and, in particular, how they might affect vulnerable groups.

2.1. Sale of Industries

The reforms themselves were not uniform across the continent. Latin American countries used a combination of different methods of privatization (for example sale of the majority of shares to a private company;

public share offering on a stock exchange; employee buyout). Each of these methods was designed to achieve particular goals. For example, selling a controlling percentage of shares is a quick way of raising revenues for the government. Offering shares in a stock exchange broadens the ownership base, building up political support for the privatization process (Edwards, 1995). Bolivia's privatization is an example of the way governments could use the privatization process to achieve different objectives. Bolivia used a system of capitalization rather than of direct sale. Companies bid for 50 percent of the shares in the company (45 percent remained with the government and 5 percent with employees). But instead of giving their money to the government, the winning company was required to invest their bid in the company itself, generally within 8 to 10 years, according to an agreed plan of investment. The government gained from relief from any subsidies it had previously provided, but did not receive capital funds from the sale itself (in contrast with the UK and other Latin American countries, where the input to government funds was a crucial part of the policy).

In addition, reforms vary across industries. In most countries, telecoms reform has occurred earlier and been more complete than in energy, with water showing very little reform in practice. Indeed in the study of Peru presented in this book, water is used as the reference industry where no change has taken place, to provide the counterfactual to reform. Competition has also been most prevalent in telecoms, partly because of the technological possibilities. This raises another aspect of infrastructure industries, namely the importance of allowing alternative technologies to develop where these may be more appropriate than traditional infrastructure solutions. The industries themselves may have little incentive to pursue such possibilities, particularly if they are regulated according to some kind of rate of return rule which encourages the development of a capital asset base. But where access to basic services is limited, particularly in rural areas, alternative technologies such as cell phones or independent generators may be much more appropriate than extension of pipes or wires. The increase in access to telephones in the cases of Bolivia and Peru highlights the huge impact of new technology to extend services to households across income cohorts.

Little attention was paid to distributional concerns in Europe or in Latin America when privatization of infrastructure industries took place. Arguably this can be justified if such effects are small and there is an effective social security system to protect those who might be adversely affected. However, there was evidence that some vulnerable groups in the UK (in particular the elderly and those on low incomes) might be adversely affected by some of the changes (Waddams Price and Hancock, 1998). This resulted not from privatization and reregulation, which overall had surpris-

ingly little effect on the relative prices of the companies concerned, but from the threat of competition which eroded cross-subsidies.

Although cross-subsidies inherited from the publicly owned predecessors were not necessarily those which would maximize profits, companies seemed reluctant to rebalance prices towards a more profitable pattern (Giulietti and Waddams Price, 2000). Perhaps this was because the companies were ignorant of their true costs and demand elasticities, so did not have the necessary information to move towards a more profitable pricing structure. Or a more Machiavellian motive might be at work. Companies could (and did) use the adverse distributive effects of rebalancing, which would take place if competition were introduced, as an argument to maintain their monopoly position (see for example the British gas incumbent's arguments to the Monopolies and Mergers Commission (MMC) 1993). These industries were politically sensitive, and scare stories about the effect of opening markets might well slow down the process.

In Spain many subsidies still exist in the pricing structure, and there would be substantial rebalancing of prices if they were to be removed. However, the UK experience suggests that this would happen only when competition threatens or materializes. If prices were to become truly cost effective in Spain, rebalancing would largely be at the expense of consumers of small amounts of these services, and would harm the poor more than those with higher incomes, as Pablo Arocena's chapter (6) shows.

2.2. Introducing Competition

Competition in retail markets is probably best developed in the UK where it has stimulated some price rebalancing. This is particularly obvious in the gas industry, because the incumbent continued to use rebalancing as a political tool, but there is strong evidence of a similar process in telecoms and electricity (Giulietti and Waddams Price, 2000). However, there is almost no voluntary rebalancing within the water industry regulated sector where competition is absent and regulators have persuaded companies not to rebalance prices (though it has occurred *between* the regulated and unregulated sectors). Evidence shows that UK regulators have affected prices as much through informal persuasion as by formal regulatory mechanisms. Foreign owners might be less responsive to such persuasion than domestic companies, so such influences could be less effective in Latin America where there is greater involvement of foreign investment in the utility sector.

Indeed, we see considerable rebalancing in the Latin American countries surveyed in this book. Privatization enabled governments to distance themselves from the unpopularity which such rebalancing engendered. Tariff

changes were due in part to the distorted nature of the tariff structure inherited from the previous regime of state-owned enterprises and management. With the arrival of private management in Argentina and Peru, tariffs were set according to new rules, including substantive increases in real terms. This pattern contrasts with experience in Bolivia, where a tradition of private ownership had influenced tariffs in both public and private sectors, and resulted in fewer cross-subsidies before the reforms. In Bolivia, reforms themselves stimulated smaller increases in real tariffs than in neighbouring countries where extensive cross-subsidies had existed prior to private ownership and competitive influences. In most countries, increases have been greatest in fixed charges, with a decrease or lower increase in unit charges. In general this has a regressive effect since it penalizes low usage, characteristic of poorer consumers and pensioners.

Other factors have affected public reaction to infrastructure reform in the UK, where the industries and the politics associated with them might be said to be moving into a 'post-reform' era. For example, there has been concern about changing policies towards bad debtors. Disconnection for non payment of bills rose sharply in the years immediately after gas privatization and private suppliers in both gas and electricity industries have sharply increased installation of prepayment meters to control bad debt. Prepayment is more expensive for the companies, who pass some of these extra costs on to the consumers concerned. However, the greatest stimulation of public outrage was not so much from these factors alone, as from their contrast with the profits which the companies were making, and the large bonuses awarded to managers. The distributional element is clearly important in public perception. Such concern was part of a general reaction to the market-oriented approach of the Thatcher and Major governments, and led to the election of a Labour government in 1997, re-elected in 2001 for a further term of office. Ironically, the backlash was partly against the very success of privatization and the incentives which it gave for greater efficiency. Such incentives can only work if those responsible for making efficiencies keep a significant part of the rewards. If the results of the effort are all immediately redistributed (for example to other workers or consumers) then they are unlikely to be realized in the first place. There is a clear trade-off between providing incentives for efficiency and increased investment and how quickly those benefits are shared with other parties involved in the process. This reflects directly on the issue raised in Chapter 7 in this book, where the benefits from reform are examined in the case of 'good' and 'bad' regulation. Good regulation is defined as sharing the benefits of the reform with consumers, rather than allowing their retention by companies. Managing this trade-off is not easy and may place governments in a difficult situation since they need to provide adequate incentives for

private investment to be forthcoming. There is an obvious time inconsistency problem for any government who wishes to sell shares. While they own shares themselves, and want to maximize proceeds, governments seek to convince potential buyers that future profits (and so current value of shares) is high (Jones, Tandon and Vogelsang, 1990). As soon as shares are sold, general welfare considerations may indicate a tighter regulatory régime or more open competitive markets which lower the potential monopoly profits of the newly privatized companies (Green and Waddams Price, 1995).

The UK history and response to the reforms is particular to that country and its experience. But since it implemented reforms before many other countries, others may follow a similar path. In Chapter 5 we report the result of previous analyses of the effect of price changes on different UK consumers. As we have noted above, these were primarily related to the introduction of competition rather than to the other elements of reform within the package. The distributional implications were comparatively minor, and there is an effective social security system in the UK, though the coincidence of several reforms simultaneously, often adversely affecting the same vulnerable consumers, and the simultaneous reduction of general income support for these groups, did cause concern. In general the problems have applied to a comparatively small group of people, even though for individual households the problem may be serious. Nevertheless, the response of the UK government has been quite substantive. It introduced new legislation giving regulators a specifically distributive remit to take account of the needs of low-income households. If this is implemented seriously it transforms the role of the regulator from one focused on controlling monopoly power to increase efficiency, to a significant policy instrument for redistribution. In the UK, the government has indicated that it wishes to maintain involvement in distributional issues in the utilities industries, presumably to curb any effects of market development which it considers undesirable. More cynically, this could be seen as a hidden way of redistributing income by a government committed to not raising direct taxation.

Latin America is in two senses more 'vulnerable' to such redistributive concerns than the UK. Before reform, cross-subsidies were generally much more extensive, both in size and in coverage, generally benefiting those with political power, the urban elite, rather than necessarily those in greatest need. Secondly, there are large areas of the countries where there is no effective access to many infrastructure services, and so the extension of immature systems, and the ability of new consumers to connect (both physically and financially) is of major importance. Both subsidies and reforms have tended to bypass the rural poor altogether. This raises general questions of

subsidy. A purist economic efficiency approach might be that charges should be set only with regard to marginal costs, but many network industries would not cover their average costs if such a pricing policy were implemented, both because of economies of scale and scope, and because of inherited inefficiencies in the system. While in theory a publicly owned company can sustain such losses, it was these very deficits which were often the motivation for reform itself, because of the macroeconomic burden which they represented in fragile economies which could not afford them. The effect of infrastructure industries on the macroeconomic situation is a central issue in the reform programme in many Latin American countries. Its importance is referred to particularly in the four cases presented in this book and in Chapter 8, where the authors explain the importance of these effects in the context of a general equilibrium model applied to Argentina. Moreover, even if nationalized industry deficits could be justified in terms of pure economic efficiency, they had a detrimental effect on the credibility of the governments to control general public spending, and so carried very high political and economic costs. These were accentuated by the emphasis on fiscal prudence by international donors, particularly the World Bank, for countries which were seeking assistance in rebuilding their economies after the difficulties of the 1980s and 1990s. Continuing to subsidize the general level of prices in infrastructure industries became an increasingly difficult option.

The difficulties of continued subsidies implied that costs should broadly be covered by the consumers of the industries, leaving some unresolved questions about capital costs, depreciation and replacement costs. Where possible, subsidies to particular groups should be direct if they can be well targeted. Any other plans risked errors of omission or inclusion, and the danger of highjack by interested political parties. We explore these issues and potential solutions in Chapter 2, as well as some of the experiences of subsidies in Argentina, setting the scene for some of the specific country discussions. In addition, the experience of Chile (reported in this book and elsewhere, for example Serra, 1999) suggests that approaching universal access is possible with government support. For instance, in the case of water, the Chilean government finances a scheme of subsidies to poor consumers from the central budget. These subsidies are administered through the municipalities to minimize errors of targeting.

Other examples of government support are currently being tried in Chile. In the case of electricity, the government has created the rural electrification programme (REP), a vehicle through which the central government allocates subsidies to regional governments to finance self-generation projects, network extensions, and so on. Costs are shared between the government, the beneficiaries of the programme and the distribution companies.

The programme is demand driven, so that inhabitants of a locality request support from the municipality, which acts as an intermediary between them and the regional government. Municipalities play a very active role in organizing bids to determine provision of electricity by private companies. In the case of telecoms, the government created a telecommunication development fund, where, again, subsidies to consumers are demand driven. Potential beneficiaries, individuals or community organizations, submit their own requests to the local authorities.

The assessment of demand subsidization programmes in Chile is positive so far. Subsidizing the demand side of the market has three advantages. First, it does not hinder or distort competition. Second, it allows utility prices to reflect the scarcity of resources. Third, it can be used to enhance access to services of vulnerable segments of the population (children, for instance) by making government support dependent on their presence in a household. The programme is not too financially onerous and minimizes efficiency losses. However, the feasibility of replicating this experience in other countries of Latin America depends on a well functioning system of regional and local government.

The World Bank itself has increasingly focused its attention on the effects on the poor of reform packages which it supports.² An assessment of the distributional aspects of reform programmes is a standard part of its specification for assistance bids. This suggests a much more general reassessment of how reform impacts different members of a society, rather than the more traditional separation of efficiency and equity which seems to have previously informed aid policy. Despite recognition of some trade-off between efficiency, incentives and redistribution, some shift in emphasis is evident.

2.3. Regulation

Because utilities are politically sensitive and affect a great number of people, governments and politicians care about tariff levels. One of the main risks facing private utility operators is that governments can behave opportunistically and try to manipulate the level of tariffs, expropriating investment – the classic regulatory commitment problem (see Williamson, 1975). Efforts to isolate utility pricing from political interference is at the core of the design of independent regulatory institutions. Regulation in Latin America was designed to signal government commitment to reforms and to minimize the risk of opportunistic behaviour. The strategy seems to have been successful.³ One of the highlights of the process is that countries have managed to attract significant inflows of capital to the utilities sectors.

None of Argentina, Bolivia or Peru have a long tradition of independent regulatory bodies. Many agencies were set up after companies had been sold to strategic investors, especially in telecoms, the first effected in all these countries, and efforts continue to improve the process of regulation. For example, in Argentina the privatization of telephones was accompanied by very weak regulation, characterized by overlapping functions between the responsible ministry and the new regulatory authority. This was rectified in the later privatizations in the energy sector, but a persistent complaint is echoed across the region: the weakness of regulation hinders tariff negotiations, prevents erosion of monopoly rents and hinders the sharing of productivity gains with consumers. In other words, privatization throughout the region and industries has been successful in increasing investment, and this has been translated into service and quality expansion. But the substantial efficiency gains so far realized have not been passed on in lower charges. This particular balance between operational efficiency and redistribution (referred to above) increasingly challenges the current regulatory process.

Regulatory weakness is revealed in some countries when competition is postponed in segments of the market where it is feasible, or where mergers among the dominant enterprises threaten future competition. The latter seems particularly difficult to counter with the existing level of domestic regulatory capabilities. The chapter on the Spanish experience underlines the integrated and politically powerful nature of Spanish business, exacerbated by cross-ownership of major conglomerates which are operating different utilities in Latin America and the Spanish banks. This raises issues of control (or even capture) of independent regulators which also arise in Spain.

In Spain debate continues about what might be seen as an unholy alliance between government and industry, with a regulator, attempting to implement reforms, caught in the middle. In this sense the companies may be more able to extract some gains ('play the game') in a situation in which power distribution between government, regulators and companies is unclear and subject to litigation and appeal. Counterintuitively, these ambiguities seem to be more present in Spain and Latin American countries whose systems are based on codified law, than in the UK where common law prevails. But this may be an effect of the maturity and stability of the political system as much as the particular code of law.

Independence of regulation is not a sufficient condition for effectiveness. Accountability of the regulator, which validates the process, is also necessary. According to Stern (1997), both formal and informal accountability are important. Formal accountability refers to the legal basis of the regulatory process – powers of the regulator, appeals for companies and consu-

mers, and so on. Informal accountability refers to the degree to which the regulatory process encourages debate and open discussion, involves all the relevant parties, leads to justified regulatory decisions and methodologies, and to understanding the 'rules of the game' (Stern, 1997:71).

Formal accountability and the legal basis of the regulatory process are well recognized (Levy and Spiller, 1994). Chile, with the longest tradition of judicial independence of the Latin American countries studied in this book, protects property rights from legislative and administrative abuse by the government. In contrast Argentina and Peru have very strong executive power; judicial institutions are weak and politically driven. In other words, the institutional endowments providing the foundations for successful regulatory policies need to be improved. But even in the case of Chile, the regulatory process presents some shortcomings: litigation is slow to resolve regulatory problems, and limited judicial power limits the capacity to solve conflicts involving complex technical and economic issues (Bitran and Serra, 1998:16). In Chapter 4 the issue of strengthening informal accountability and the governance of the regulatory process is raised. In particular the chapter explores giving consumers a more active role in the process of regulation as a way to counterbalance the power asymmetry which currently favours the companies. Even if this is desirable, consumers may currently be neither sufficiently organized as a group nor capable of articulating alternative policies on complex regulatory issues. A related problem, affecting both the capacity of active participation of consumers in the process and the supply of competent regulatory services, is the lack of a sufficiently large pool of trained regulators. Those available quickly become engaged working for the companies, either directly (with much higher financial rewards than the government offers) or representing them on regulatory boards. This leaves few independent professionals whose opinions can influence the debate, help consumers to articulate demands, and make regulation more transparent and participatory.

3. METHODOLOGY

Traditional assessment of privatization and regulation of utilities has focused on the effects on the supply elements of the market (investment behaviour, incentives, competition and efficiency gains), rather than on the direct effect on consumers (for example Galal, 1991). We attempt to fill this gap by providing some rough calculations of changes in access (measured as the number of connections) and changes in the consumer surplus⁴ using data from the household surveys for years pre- and post-privatization where feasible. Consumer surplus for those connected to the system both

before and after the reforms can be approximated according to the following expression:

$$\Delta W = \Delta p \times \bar{Q}$$

where ΔW represents changes in consumer surplus; Δp is the difference in price recorded pre- and post-reform; $\bar{Q}$ is the quantity consumed in the reference period (or an average between two periods).⁵ This approximation assumes that demand is not very responsive to price changes, which seems reasonable in utility industries, and provides a lower bound to benefits. Sensitivity to assumptions about elasticities are included in Chapter 7, and in Estache *et al.* (2002). This type of analysis has the limitation of being a partial equilibrium approach. In particular, it is likely to underestimate welfare gains related to quality and access improvements which are not captured by this static approach. This consumer surplus expression has been used as a baseline, and refined according to the additional data available for each particular country.

One general difficulty with interpreting data is the time trend, so that effects often seem greater for industries privatized earlier. Industries which are easier to open to competition, such as telecoms, are more likely to be reformed first and also to generate more effects from their privatization. But some of these effects may emerge later in other industries, albeit more slowly. Another difficulty is to establish causality. Changes in connections and in consumer surplus may not be exclusively attributable to privatization and associated reforms, and the methodology does not control for other changes in the economy. Some limitations also arise from the nature of the data reported in the living standards measurement surveys used. Information is generally available for total expenditure rather than quantities and prices separately. Data on prices had to be collected from the annual reports of the regulatory agencies or independent surveys on particular services. This is problematic given the complex nature of the prices paid by utility users which usually encompass fixed and variable charges, and has resulted in some approximations. Secondly, household surveys provide expenditure aggregates by service. This is particularly important in the case of telephones where the total expenditure is a combination of fixed charges and charges for local and long-distance calls. Without specific knowledge of the quantity consumed by category, the tariff applied is a very rough approximation. Only for Peru was such a decomposition possible because of the availability of a special survey for the telecoms sector. We have already noted that the formula does not take account of quality changes. Taking all these limitations into consideration, the resulting surplus changes should be interpreted with caution. For most of the Latin

American countries, improved access is both an objective and an important contributor to consumer benefits, and we have included estimates of the effects of increased connections wherever possible.

In the UK, prices went down for all consumers after privatization, but rebalancing when competition was introduced made these gains lower for pensioners in telecoms and for low-income gas consumers. In Spain, there were gains for consumers in telecoms and electricity, but these were fewer for low-income households than for others. In gas, where reform raised average prices somewhat, the losses were also lower among low-income groups. In the telecoms sector in Peru there were substantive surplus losses associated with the increase in the rental charges for telephones. The increase in rental charges clearly offsets the positive effect of the reduction in tariffs for local and long-distance calls. The effects are negative for all income quintiles, although surplus losses are larger for the poorest consumers. However, in the case of Peru it was possible to apply a two-stage Heckman procedure to correct for the effect of having access to the services. The results obtained using the Heckman procedure show positive changes in consumer surplus for telecoms, though water and electricity effects remained negative for all income quintiles. This calculation confirms our conclusion that gains in access in some cases may dominate the negative effect of higher tariffs on consumer surplus.

In Argentina most residential consumers have gained from telecoms and electricity price changes, but the poorest have the lowest absolute gains, and have gained a lower than average proportion of their income. In gas, water and sewerage there are losses across the board, with these losses lower in absolute terms, but higher relative to their income, for low-income groups. Pensioners have an average income between the first and second quintile. Their gains for telecoms and electricity are a very low proportion of their incomes, while their proportional losses for gas and water are slightly above average. In sum, in the case of Argentina the effects of rebalancing in all the utilities seem to be regressive, with the main negative effects on the poorest segment of the population.

In Bolivia, the same pattern as in Peru is observed: surplus losses from electricity consumption are greater in the richer quintiles except for the city of Cochabamba where surplus gains are observed. The results for the area of the water concession of the city of La Paz again show consumer surplus losses but these were smaller than in other departmental capitals where the provision of water and sanitation had not been subject to reform. Calculations on the basis of household surveys for Bolivia and Peru show that access, measured by the number of connections, has increased for the three utility sectors under study. The most noticeable increase has been in telephones. Statistics also show that the increase in access has not bypassed

the poor. In Bolivia there is evidence that connection rates for the poor increased faster than for other groups across all utilities. In particular, it seems that earlier trends to increase connection faster for higher income groups were reversed by the reforms, leaving most of the unsatisfied demand (which was met in the post-reform period) in the lower quintiles. As in other cases, the counterfactual here is difficult to establish. In Peru, the pattern of access is similar to the one shown in Bolivia. Access, measured as the number of connections to the services, increased. In Chile service coverage increased between 1988 and 1998 for most income groups and services; the only exceptions were for sewerage amongst the lowest four income deciles. Electricity coverage increased most dramatically amongst the lower income deciles, and telephone coverage amongst middle-income groups.

Measuring changes in access for Argentina was more complicated because the only available household survey corresponds to 1997,⁶ but statistics from the annual reports of the companies operating in the sectors indicate an increased total number of service users. According to the 1997 survey, electricity access in greater Buenos Aires was almost universal (94 percent). The amount of households which had access to telephones was 67 percent, 76 percent and 58 percent of households had access to water and sewerage, respectively.

4. CONCLUSIONS

The detailed calculations presented in the country cases show a mixed picture. Prices have often risen as a result of reforms, and this has frequently adversely affected low-income groups more than others, either in absolute or relative (to income) terms. But most networks (including cell telephony) are extending their coverage, and the poor, who have had least coverage to date, are benefiting from this in most cases.

We have tried to summarize the net effect of changes in access to the different utilities in Tables 1.1 to 1.3. These tables present rough estimations of welfare gains for existing consumers (those connected to the networks at the time of privatization) and new consumers (those who gain access afterwards) and in terms of fiscal proceeds as we are able to calculate them.⁷ Care should be taken in interpreting the figures, which are estimates summed over different periods of time for different industries, even within one country, and of course not all changes over the period of reform are necessarily due to the reform itself. Nevertheless these figures provide some idea of the impact of reform for the countries discussed in the book.

Table 1.1 Measuring changes in welfare for existing consumers¹

Country/Industry	Years	Avg. change in consumer surplus (US\$, 2000)	Number of customers (thousands)	Total consumer surplus (thousands US\$)	Distributive effects
UK/telecoms	1984–97	122	22,000	2,684,000	regressive for pensioners
UK/electricity	1990–97	72	25,000	1,800,000	neutral
UK/gas	1986–97	207	19,000	3,933,000	regressive
Spain/telecoms	1996–2000	62	10,562	654,844	regressive
Spain/electricity	1996–2000	71	11,933	847,243	regressive
Spain/gas	1996–2000	–13	2,347	–30,511	progressive
Argentina/telecoms	1996–7	52.56	1,274	66,961	regressive
Argentina/electricity	1996–7	25.82	2,916	75,291	regressive
Argentina/water	1996–7	–48.60	5,758	–279,839	neutral
Bolivia/electricity	1994–9	–6.48	601	–3,894	neutral
Peru/telecoms	1994–7	–4.69	638	–2,990	regressive
Peru/electricity	1994–7	–3.72	2,074	–7,723	neutral

Notes:

1. Summed across different industries over different periods of time.

Neutral means that the value of changes (losses) in consumer surplus is smaller in the poorest quintile.

Regressive means that the value of changes in consumer surplus is larger in the poorest quintile.

Source: Authors' calculations from the following: for UK, Waddams Price and Hancock (1998); for Spain, Arocena this volume; for Argentina, Delfino and Cassarin this volume; for Bolivia, Barja and Urquiola this volume and SIRESE (www.sirese.gov.bo); for Peru, Torero and Pascó-Font this volume, Telefonica Memoria Annual 2000 (www.telefonica.com.pe) and OSINERG Anuario Estadístico (www.osinerg.org.pe).

These tables confirm that in all the Latin American cases changes in access were crucial, and often dominated the effect of changing prices for those already connected. Although the effect on existing consumers was in many cases negative due to tariff rebalancing (Table 1.1), the net effect on consumer surplus is positive due to the increase in welfare for those who gain access to services as a consequence of network expansion (Table 1.2). The fiscal proceeds resulting from the whole privatization exercise should also reinforce the positive effects at the macro level (Tables 1.2 and 1.3). The results in terms of access are hardly surprising in an area where

Table 1.2 Measuring changes in welfare for new consumers¹

Country/Industry	Years	Avg. consumer surplus in a given year	Number of new customers (thousands, end of period)	Total consumer surplus gains (thousands)
Argentina/telecoms	1996–7	241	1,646	396,686
Argentina/electricity	1996–7	179	481	86,099
Argentina/water	1996–7	175	1,911	334,425
Bolivia/electricity	1994–9	153	89	13,617
Peru/telecoms	1994–7	51	1,232	62,889
Peru/electricity	1994–7	43	627	27,021

Note: 1. Summed across different industries over different periods of time.

Source: Authors' calculations from following: for UK, Waddams Price and Hancock (1998); for Spain, Arocena this volume; for Argentina, Delfino and Cassarin this volume; for Bolivia, Barja and Urquiola this volume and SIRESE (www.sirese.gov.bo); for Peru, Torero and Pascó-Font this volume, Telefonica Memoria Annual 2000 (www.telefonica.com.pe) and OSINERG Anuario Estadístico (www.osinerg.org.pe).

Table 1.3 Summary of consumer surplus and fiscal proceeds in each country

Country	Net consumer surplus (thousands US\$2000)	Fiscal proceeds (millions US\$)
UK	8,417,000	74,083
Spain	1,471,576	1,148
Argentina	679,564	44,488
Bolivia	9,723	1,045
Peru	52,418	8,134

Source: World Bank (2001).

investment and extending the network were often an explicit condition of the private provision of utilities. However, the deficit of connection, particularly for water and sewerage, remains high in many Latin American countries, as reforms have affected mainly urban areas. Increasing access is a substantial challenge to the continuing reform programme. Concerning the evolution of tariffs, one way of circumventing monopoly power is strengthening regulation, making it more participatory. Finally, the experiences of the UK and Chile also show that introducing competition wherever possible is the ultimate tool to curb increases in tariff

levels, though it may result in price rebalancing which adversely affects the poor.

5. ORGANIZATION OF THE BOOK

The book is organized in ten chapters following this introduction, and is divided into two parts. The first four chapters (including this one) deal with general questions of infrastructure access, affordability, reform and institutions, while the second part consists of seven country-specific case studies (two in Europe and four in Latin America, with two chapters dealing with different aspects of the Argentinean experience).

The main focus of Chapter 2 by Omar Chisari, Antonio Estache and Catherine Waddams Price is to use both theory and practice to see how subsidies and service obligations can be designed, imposed and financed to increase coverage for a specific service (for example access to safe water, to electricity or to at least a public phone) as much and as fast as possible. The Latin American experience so far shows that the poor have often been the last to benefit from increased access due to reform. At the same time, the poor are particularly vulnerable to deterioration in macroeconomic conditions. Design of access charges and penalties for arrears and delinquency need to take account of potential shocks. Argentina's experience shows that it is important not only to design the infrastructure appropriately, but also to maximize on-going voluntary connection to services, particularly when the product is considered to be a 'merit good'.

Chapter 3, by Kristin Komives, Dale Whittington and Xun Wu, presents a general overview of infrastructure coverage and the poor. In this chapter, the authors analyse the World Bank's Living Standards Measurement Study (LSMS) in a new way across countries and income groups. Observations are taken from a variety of countries worldwide to examine the nature of connection to services, the link between physical and financial access, and the extent to which different income groups are connected to different services. The results of the analyses show, for example, that across income groups throughout the world coverage for electricity is much higher than for other formal infrastructure services (in-house piped water service, sewer service, and private telephone service). Not surprisingly, coverage is much higher in urban than in rural areas, and the very poor rarely have these infrastructure services. There are, however, exceptions. The lowest income groups are often connected to electricity if they live in urban areas; and if the poor have access to services in their communities, many decide to connect. This extensive survey provides important new information about priorities for policy and a general picture of how coverage of infrastructure networks develops in different countries.

In Chapter 4, Cecilia Ugaz broadens the discussion on regulation beyond the technical complexity involved in designing and implementing regulatory interventions to the institutional aspects and governance of the regulatory process. Governance refers to the way transparent and predictable regulatory systems can be put in place and sustained over time. The chapter focuses on one aspect of regulatory governance: participation. Participation means that all relevant actors in the process – governments, firms and consumers, poor consumers in particular – contribute effectively to improve the quality of regulatory decisions. The chapter reviews the experience of regulation of utilities in Argentina, Bolivia and Peru and suggests channels through which poor consumers can influence regulation policies in an attempt to infuse transparency and accountability in the ensuing systems of service delivery. It concludes with a consideration of the limits to the formulation of regulatory policies in the context of the Latin American countries under study.

In the first case study in Chapter 5, Catherine Waddams Price and Alison Young describe the response to the privatization experience in the UK. The UK was one of the earliest countries to undertake utility reform, which included sale to the private sector, reregulation and deregulation. While most agree that the programme has improved efficiency, there has been increasing concern about the distribution of these benefits between and within stakeholder groups, resulting in a second phase of reform under the Labour government elected in 1997. This chapter reports on the effect of the initial programme of reforms, and on the response of the British public, the government and the regulators. While the UK is very different from many developing countries, this second phase of reform may hold lessons for other countries at an earlier stage of utility reorganization.

Chapter 6, by Pablo Arocena, analyses reforms that have taken place in the utility sectors in Spain, focusing on the role of politics in shaping the process. The deregulation process was marked by the historically close collaboration between government and industry, which led to the formation of powerful interest groups and hindered development of strong independent regulatory institutions. Further, the government gave priority to political objectives in the privatization programme which are incompatible with the introduction of competition. Political constraints also limited the scope of tariff rebalancing and delayed removal of the cross-subsidies embedded in the inherited tariff structures. This chapter assesses the distributional impact of the actual and expected changes in fixed and variable charges on the welfare of households, particularly with regard to lower income and vulnerable consumers. The results show that all categories of households gained on aggregate through lower prices over the period 1996–2000, though the most vulnerable consumer groups benefited less than the

average. The poorest households lose chiefly from tariff rebalancing in telecommunications. Further expected rebalancing of prices would result in larger losses, because of the substantial increase in fixed charge across all utilities. However, such a negative impact might be compensated if competition develops in the domestic market.

The next five chapters present case studies in Latin American countries. In Chapter 7, José Delfino and Ariel Casarin analyse the experience of Argentina in privatizing utilities. The aim of the chapter is to assess the impact of the reforms in the telecommunications, electricity, natural gas and sanitation services on consumers' welfare. The authors distinguish two types of consumers: continuing consumers and newcomers, that is those who obtained access to the services only after privatization. Consumer welfare changes are estimated using household data from the Gran Buenos Aires area. The authors propose several scenarios corresponding to different values of demand elasticities for different services. The results suggest that the direction as well as the intensity of welfare changes differ across income groups and services in magnitudes that vary according to value of the elasticity of demand. Welfare benefits for the newcomers also differ across services. Here the authors use the cost of alternative supplies to provide a 'reservation value' for those connecting to new supplies. They argue that the gains from connection must be at least as great as these alternative costs. However, they acknowledged that the situation is a little more complicated for water, where connection is compulsory, and so the reservation value approach is inappropriate.

Chapter 8, by Daniel Benitez, Omar Chisari and Antonio Estache, employs a general equilibrium model of Argentina's economy, calibrated for 1993. In contrast to the evidence presented in the other countries coming from partial equilibrium exercises, this methodology allows isolation of the distributional effects of utilities reform from those of all the other reforms taking place in the country during the 1990s. This chapter shows that both private and public agents gain from the increases in productivity and in service access made possible by the utilities reform. The distributional effects of utilities reform are generally positive at this macro-economic level of analysis, but this finding depends on an effective regulatory regime to prevent capture of the contributions of reform by the capital owners of the utility sectors. We have already noted that such strong regulation may weaken the incentives to produce the benefits themselves. In the short term, the public sector benefits from the proceeds of the sale of firms and the associated debt reductions, but greater advantages in the long term accrue from the expanded tax base and reduction in expenditure flows. Private agents gain from greater employment opportunities from lower costs, lower average tariffs, and improvements in service quality enforced

by effective regulation. These welfare gains, however, were substantially offset by the 'tequila' and 'vodka' shocks that hit the country during the 1990s, and increased rationing in the credit markets. This more broadly based chapter shows greater impact of the reform than the more detailed consumer welfare analysis of Chapter 7, reflecting the positive macroeconomic externalities which the reform generated.

In Chapter 9, Gover Barja and Miguel Urquiola analyse the privatization of utilities in Bolivia, detailing the particularities of the capitalization mechanism which was used. The analysis suggests that capitalization and regulation, and the liberalization of the utilities sector more generally, succeeded in attracting foreign investment, thus fulfilling one of the central goals of the reforms of this sector. Foreign investment enabled increased access to basic services in urban areas, where it did not bypass the poor, and in some cases access improvements appear to have been particularly beneficial to low-income households. However, in rural areas access remains very low. Some reform-related price increases did have adverse welfare effects. The findings in this area are affected by data limitations, but did not seem to outweigh the benefits brought about by greater access.

In Chapter 10, Ricardo Paredes acknowledges that privatization has been one of the primary factors generating changes in the Chilean economy over the last decade, and takes a long-term view of the reforms. However, privatization has faced some opposition due in part to its uncertain effect on employment and prices. The purpose of this chapter is twofold. First, to provide an idea of the effect of privatization on efficiency. Second, to understand whether those who oppose further privatization can justify their position on the grounds that privatization does indeed negatively affect the poorest. Despite the importance of the topic, few attempts have been made to analyse empirically the gains and losses between consumer groups associated with the privatization process and its concomitant regulatory framework in Chile. The evidence presented in this chapter shows that in spite of regulatory problems, privatization brought about important gains achieved through cost reductions and efficiency. Likewise, the effect of privatization on coverage is impressive, particularly with regard to the poorest segments of the population.

The final chapter, by Máximo Torero and Alberto Pascó-Font, assesses the consumption and welfare impacts of privatization on Peruvian urban households. The objective is to determine which types of household bear a greater burden or enjoy more benefits from price changes brought about by privatization. Three complementary methodologies are followed. The first consists of calculating concentration curves to show how services are distributed among the population. The second methodology, based on the framework outlined in the previous section, measures changes in house-

hold expenditures associated with changes in prices. Finally, demand equations are estimated for the different utilities under study, by applying a two-stage Heckman methodology to correct for the probability of having access to the service. The depth of the reforms, particularly the extent of privatization, is uneven across sectors. Despite this variation in reform, the results in terms of improvement on the supply side are positive and very significant. However, there are still major problems which could explain why welfare impacts are not significant and may even be negative in the case of electricity and water. In contrast, telephony is the sector with substantial advancement since the transfer to private ownership. Both in terms of supply and demand, the outcome shows positive results, including technological development, but with a significant reduction in household consumer surplus since 1997. In sum, the utility services in Peru still need significant improvements, particularly in electricity and water, where reforms are incomplete, or even non-existent. The authors conclude that the providers need to improve planning to allow both consumers and producers to reap greater benefits in terms of welfare and revenue.

NOTES

1. Except for the Spanish gas industry which is at a very early stage of development.
2. In May 2000, the World Bank supported a major international conference in London on 'Infrastructure Reform and the Poor'.
3. At the time of writing in 2002 there are some issues over renegotiation of contracts in Argentina, following the suspension of the peso:US\$ parity.
4. Although the notion of consumer surplus is a narrow one, we will use it here as a proxy for consumer welfare.
5. For more discussion of the methodology see the appendix to Waddams Price and Hancock (1998).
6. The previous survey was performed in 1987, but the information contained is not comparable.
7. Chile is omitted because the analysis contained in that chapter does not lend itself to this kind of statistical summary.

REFERENCES

- Armstrong, M., S. Cowan and J. Vickers (1994), *Regulatory Reform: Economic Analysis and British Experience*, Cambridge MA: MIT Press.
- Bitran, E. and P. Serra (1998), 'Regulation of privatized utilities: the Chilean experience', *World Development* 26(6), 16.
- Edwards, S. (1995), *Crisis and Reform in Latin America: From Despair to Hope*, Washington DC: The World Bank.
- Estache, A., V. Foster and Q. Wodin (2002), *Accounting for Poverty in Infrastructure*

- Reform: Learning from Latin American Experience*, Washington DC: World Bank Institute, World Bank.
- Galal, A. (1991), 'Public enterprise reform: lessons from the past and issues for the future', *World Bank Discussion Paper* No.119, Washington DC: World Bank.
- Giulietti, M. and C. Waddams Price (2000), 'Incentive regulation and efficient pricing structures', *Centre for Management under Regulation Discussion Paper* No.00/4, Warwick: University of Warwick.
- Green, R. and C. Waddams Price (1995), 'Liberalization and divestiture in the UK energy sector', *Fiscal Studies* 16(1), 75–89.
- Jones, L., P. Tandon and I. Vogelsang (1990), *Selling Public Enterprises: A Cost-Benefit Methodology*, Cambridge MA: MIT Press.
- Laffont, J-J and J. Tirole (1993), *A Theory of Incentives in Procurement and Regulation*, Cambridge MA: MIT Press.
- Levy, B. and P. Spiller (1994), 'The institutional foundations of regulatory commitment: a comparative analysis of telecommunications regulation', *Journal of Law, Economics and Organization* 10, 201–46.
- Monopolies and Mergers Commission (1993), *Gas*, Cm2315.
- Serra, P. (1999), 'Subsidies in Chilean public utilities' (mimeo), Santiago: Universidad de Chile.
- Stern, J. (1997), 'What makes an independent regulator independent?', *Business Strategy Review* 8(2), 67–74.
- Vickers, J. and G. Yarrow (1988), *Privatization: An Economic Analysis*, Cambridge MA: MIT Press.
- Waddams Price, C. and R. Hancock (1998), 'Distributional effects of liberalizing UK residential utility markets', *Fiscal Studies* 19(3), 295–320.
- Williamson, O. (1975), *Markets and hierarchies: analysis and anti-trust implications*, New York: Free Press.
- World Bank (2001), *World Development Indicators 2001*, Washington DC: World Bank.