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On Restructuring, Regulation and Competition in Utility Industries :
the Experience in the United Kingdom and
the Implications for Latin America

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Summary

Introduction

Latin America has embarked on ambitious utility privatisation programs in particular in Argentina, Chile, Colombia, Mexico and Peru. Brazil is also planning a major privatization exercise including some of the utility services.

In important respects these programs follow that of the United Kingdom following the 1984 privatization of British Telecom. The UK's decade of experience of utility industry restructuring and regulation provides a wealth of well-documented experiences and a set of illuminating case-studies for any country about to embark on a privatization program.

Two similarities between the UK and Latin American privatizations are (i) that privatization has largely consisted of the transfer of industry-dominant, state companies into the private sector often with statutory monopoly powers and (ii) the extensive use of 'price-cap' (rather than 'rate of return') regulation.

One difference is that, arguably, the UK attempted to commit to a 'fair but flexible' regulatory policy by establishing a set of individual industry regulators somewhat independent from Government but with considerable discretionary powers. Such powers stem from the general and competing stated objectives of the regulators and the highly costly nature of a Government arbitration procedure. This has implied that formal arbitration has been rare and that significant and controversial changes have occurred to companies' operating conditions without formal changes in legislation or documents establishing the operating conditions (the 'licenses'). In contrast, Latin American regulation has largely tended to be more specific, has attempted to restrict regulatory discretion and regulators are typically highly dependent on the responsible ministry.

On the UK Experience

The UK regulatory experience has been somewhat mixed and many problems have stemmed from inappropriate initial industry restructures. A strong lesson is that where the ultimate goal is a competitive market segment it is better to restructure prior to privatization than attempt to privatize dominant firms and then liberalize in the hope that entry will occur. The experience in the UK is that in such conditions liberalization on its own is not enough and active pro-competition regulatory policies are required.

In particular, the process of attempting to introduce competition where there are dominant incumbents with vertical market power has been extremely difficult in the UK. For example, the regulation and close monitoring of the terms of access to a network service has proved particularly important and has added to the regulatory burden of UK regulators. Indeed, it is argued below that regulation and competition have been complements as much as substitutes in the UK, in large part due to the initial lack of industry restructuring.

The system of price-cap regulation in the UK (generally referred to as RPI-X) has been successful in providing cost-reduction incentives in UK utility industries. Indeed, in many instances regulators have felt the need to tighten price-caps indicating that cost-reductions have been even greater than anticipated and indicating, perhaps, the information advantage of the regulated companies even in the context of reasonably mature industries.

Price cap regulation has also been successful in allowing competition to develop in certain market segments and, where competition has not been impeded by inappropriate structures, margins have fallen considerably. Given this experience, the UK is now embarking on a very ambitious program of bringing competition in electricity and gas supply right down to household level completely by 1998¹.

However, price-cap regulation has not been as simple to implement as was originally supposed. It has required more information than anticipated, review processes have been fraught with methodological issues associated with a typical 'rate of return' scheme and companies have embarked on 'regulatory games' attempting to second guess and avoid regulatory action. In summary, price cap regulation UK style with frequent reviews, has not been so very different in terms of the regulatory burden from a rate of return type regulation, with intermittent reviews sparked say by underlying changes in economic data.

Moreover, the drawbacks of price-cap regulation, for example the negative incentives with respect to quality and investment, have also been apparent in the UK. Regulators have had to pay increasing attention to quality,

¹ As in many countries this already exists in the provision of telecommunication services.

and in water, investment regulation has been a controversial issue. Again, as a consequence the regulatory burden has been raised.

Furthermore, it was anticipated in the UK that formal yardstick regulation would be an important tool for regulators where there was no head to head competition but where there was a reasonable number of comparable companies eg: in the water industry and in electricity distribution. However, whilst comparative information has undoubtedly been an advantage to UK regulators, formal yardstick regulation has proven difficult to implement in practice.

On Latin America

In Latin America, a principal concern in privatization efforts has been to ensure success in attracting private finance. In turn this has implied that governments have attempted to find ways of calming private sector fears concerning the likelihood of appropriation (either directly or through future changes in regulation) of any investments made. Two main policies can be discerned in this regard.

First, many privatizations in Latin America have included the granting of monopoly concessions limiting head to head competition. Such policies have been justified as the only ones which would have been successful in attracting private finance. The granting of a monopoly can be seen as a type of commitment device, giving the incumbent information and first move advantages making future appropriation by regulators more difficult, and making future industry restructuring more costly.

Second, inflexible regulation has tended to be adopted that attempts to limit the future discretion of regulators. This has taken the form of specific laws or specific procedural rules or has been effected through the direct use of detailed contracts. In particular, in the few cases where competition has been genuinely sought, through significant industry restructuring, regulation tends to be of the specific legal form.

The above implies that Latin America faces difficult choices with respect to its utility industries. For those countries who have not yet embarked on a major privatization exercise in this area, it is recommended that a cost-benefit analysis concerning the introduction of competition be conducted at an early stage. Where competition is considered desirable and feasible, industries should be restructured prior to privatization to reduce the future regulatory burden. Countries of the region may then be able to follow the UK's ambitious strategy of bringing competition as far downstream as possible. Countries following this strategy include Argentina in electricity and gas and to some extent Chile in electricity although arguably restructuring did not go far enough in this particular case.

If restructuring is not considered feasible at an early stage then the feasibility of a successful future liberalization policy to increase competition is questionable. The UK experience is that this will only be achieved with a high regulatory burden. Countries who opt for the privatization of a vertically integrated monopoly, for whatever reason, should seek competition in fringe areas of the business but must accept that significant regulatory resources will be required to bring competition more generally.

Nevertheless, Latin American regulators do clearly express the desire of increasing competition in sectors that were privatized without prior industry restructuring. Sectors in this position include the telecom sector in many Latin American countries (including Argentina, Chile, Mexico, Peru and Venezuela) and electricity and gas in other countries of the region. This will be one of the major topics for the next decade in Latin America and beyond, the UK experience shows that regulation should be pro-active.

Pro-competitive regulation remains a very open area. Some general rules can be learned from the UK experience but in large part there has been almost no systematic research on the topic. How to introduce competition successfully in industries with dominant incumbents with horizontal and vertical market power will be perhaps the most difficult and important challenge facing Latin American regulators towards the end of this decade and beyond. Hence, this area is recommended as one of a high priority for future research.

As alluded to above, industry restructure and regulation interact in various ways. Most obviously, an inappropriate structure will require a heavier regulatory burden. Also, a country that restructures utility industries to enhance competition, must seek other means than the granting of monopoly rights to vertically

integrated companies, to enhance regulatory credibility and attract private finance. Typically, in the region, inflexible and specific regulation that limits the discretion of regulators has been the response. Examples include the regulation in the Argentine electricity and gas sectors. However, inflexibility raises its own costs, in particular where contracts are inevitably incomplete and future developments (eg: technology changes etc) cannot be foreseen perfectly. If such inflexibility is required, these costs should be weighed against the benefits of increased competition. However, the UK experience shows that where competition flourishes, and is not inhibited by inappropriate structures, regulation may be peeled away. Competition then becomes the regulator. Hence the industry becomes one competitive segments with, hopefully, little regulation and inflexible regulation over the natural monopoly activities.

Arguably, the UK attempted to commit to a 'fair but flexible' regulatory policy which gives independent regulators a large degree of discretion. A system of arbitration by the government (through the medium of an inquiry) in the event of a serious dispute between the regulator and regulatee gives some measure of balance however the arbitration procedure has large associated deadweight costs and hence is rarely employed. Negotiated settlements are more common and the arbitration procedure can be viewed as defining very uncertain fall back positions in a bargaining game. Latin America should also learn from this experience. Flexibility may be increased even where regulatory credibility is weak through the use of a suitable arbitration procedure. The Chilean regulatory system in different sectors provides interesting examples. However, other countries of the region may not have a set of institutions considered as independent or impartial as in Chile in order to provide a credible arbitration service.

This implies a potential role for an international organization such as the IDB or the World Bank or other (perhaps yet to be created institution). It might be argued that the recently approved guarantee policies of these institutions are an appropriate policy response. These policies essentially provide insurance to private companies that governments do not renege on contractual commitments. However, these policies effectively give regulatory commitment to a rather specific and inflexible form of regulation (a contract) lowering the cost of private capital in carrying out the contractual obligations. They do not act on the flexibility-commitment trade-off but chose a point on it. Indeed they may even increase the degree of inflexibility in regulatory policy by making such inflexible contracts more popular.

An international arbitration procedure would be a more ambitious policy. It would attempt to shift the flexibility-commitment trade-off by providing a measure of independent, impartial and credible commitment to a more flexible but fair policy. The UK experience is that if such an arbitration procedure is made too costly, then it will be rarely used. An effective arbitration procedure should be reasonable accessible and efficient but should certainly not be costless, as this may imply referral would be very frequent. The idea is that it should be available at 'reasonable cost' and should then form the fall back positions for a bargained solution to emerge within reasonable bounds. How such a process would work in practice is also left as important, future research.

With regards to the specific nature of regulation, despite the drawbacks of price cap regulation mentioned above it will probably remain the dominant form of regulation for Latin American countries, whether this be enshrined in contracts or otherwise. However, the need for inflexibility may imply longer review periods and less options for intermediate reviews than in the UK (unless constructed as part of an independent arbitration procedure as suggested). To some extent this will also reduce the regulatory burden, although Latin American regulators should note that the regulatory burden will not be reduced in terms of the depth of the analysis required, only that the analysis will be required less frequently. At review periods, exactly the same debates will emerge as in a rate of return system whatever the length of the review period (and the longer the period, the more costly it would be to get it wrong).

Finally, in some countries in the region, where it is considered that vertical restructuring is not a viable option and that the subsequent introduction of competition is not feasible due to a very sharp constraint of regulatory capabilities it is suggested that a simple form of rate of return regulation with infrequent reviews may be superior to a UK style price-cap. In a vertically integrated industry, price-cap regulation introduces a higher regulatory burden and unless its additional benefits in terms of incentives for cost reduction and the introduction of competition are exploited fully, there may be a case of regulating the whole industry on a rate of return basis.

Introduction

Latin America has embarked on ambitious utility privatisation programs in particular in Argentina, Chile, Colombia, Mexico and Peru. Brazil is also planning a major privatization exercise including some utility services. Arguably, the over-riding objective of such privatizations has been macroeconomic in nature - the reduction of government budget deficits - and (hence) the privatizations have tended to leave in place large private companies with monopoly power sometimes protected by statute. This implies that regulation will be required to protect consumers and others from monopoly behaviour and other anti-competitive practice.

In many respects these programs have followed the policies pursued in the utility sector in the UK². Apart from the macroeconomic consequences, arguably the two most important aspects of such programs have been, (i) restructuring of the utility industries and (ii) the design and implementation of regulatory systems. The UK now has a 10 year history of the effect of these policies and in particular of the experience of regulation. This history has been mixed to say the least, but the different utility industries provide a set of illuminating case-studies to any party with an interest in utility regulation. Furthermore, for countries in the process of setting up regulatory mechanisms the wealth of well-documented experience from the UK provides an excellent basis for understanding how regulatory processes perform over time.

An important common component of many regulatory regimes in Latin America and that in the UK is price-cap regulation. In contrast to the US-style, rate of return system, price cap systems aim to set tariffs subject to a formula or fixed rule for a number of years. The two most important arguments presented in favour of this system at the time of its inception were (i) that incentives on the part of regulated firms to reduce costs are increased and (ii) that the system is simpler to operate than rate of return.

We can think of the regulatory mechanism as a formal contract between the regulator and the regulated firm. The explicit contract in the UK, as in much of Latin America, is that of fixed price cap. However, in reality such contracts are incomplete and often renegotiated over time. Hence, the full regulatory contract is in reality composed of both the formal contract and the implicit contract between the firm and the regulator. The actual behaviour of the regulated firm is then dependent on the firm's objectives and the incentives and constraints imposed by the full (explicit and implicit) regulatory contract. Again, the UK provides excellent examples of the process of renegotiation and the 'management' of the regulatory contract.

The implicit contract between the regulator and the regulated firm is also influenced by the regulator's contract. The formal regulator's contract, written by government, is the legal contract under which the regulator acts. Typically, this contract, in pursuance with the aims of regulation, gives responsibilities to and confers powers on the regulator. However, as with the contract of the regulated firm, there is also an implicit regulator's contract. This is shaped by the institutional and political structure of the country. Regulatory behaviour is shaped by the objective function of the regulator and the incentives and constraints imposed by the full regulator's contract. There is no doubt that the UK has a rather particular political and institutional structure especially where regulation and competition policy is concerned. However, it is argued below that the system in the UK is one of considerable discretion. In this respect there may be many parallels between the UK and Latin American.

The purpose of this paper is to provide a general review of the experience in the UK and draw out from that experience the important implications for Latin America. Section 1 provides the background to privatization and formal regulatory rules as developed in the UK. We then review (Section 2) the experience of regulation in practice. In Section 3 we describe briefly what has happened to date in Latin America, with respect to privatisation and regulation, and in Section 4 we attempt to draw out some of the implications of the UK experience. Conclusions and suggestions for future work are included in Section 5.

Section 1 : The Background to Privatization and

² In actual fact electricity privatization in Chile commenced in 1983 before the 1984 sale of British Telecom. However, this was a very limited sale of a part of one company.

Regulation in the United Kingdom.

In this section, we discuss the background to the privatization and regulation of the utilities sector in the United Kingdom. Two aspects are considered. First the restructuring of the industries at the time of privatization (Section 1.1) and secondly the formal regulatory arrangements made (Section 1.2).

1.1 Privatization and Industry Structure

The privatization process in the UK utilities sector started in 1984 with the privatization of British Telecom. The UK privatizations have typically taken the form (with the important exception of electricity) of the transfer of large, vertically-integrated, state-companies with a statutory monopoly into a newly created free market. Hence, the privatized firm typically held a dominant position in the newly created market. In two cases the dominant firm (e.g.: British Telecom and British Gas) maintained control over a fixed network as well as being the largest final supplier of the service over the network.

Under these conditions it was clear that regulation was to play a vital role to control monopoly behaviour and other anti-competitive activities. In water and electricity regional monopolies were created with monopoly rights on distribution, in electricity supply regional monopoly rights were granted in the market to small users (less than 1Mw initially now reduced to less than 100Kw maximum demand) and, in gas distribution and supply to small users, a national monopoly was granted to British Gas. Finally, although an attempt was made in electricity to separate out potentially competitive generation from transmission and distribution, regulation has been necessary in all areas of the electricity market. Below, we briefly review the policies in each of these sectors before discussing the development of regulation. A summary of the industry restructuring at the time of privatization is given in Table 1.

Table 1: Industry Restructuring at the Time of Privatization

	Vertical Restructuring	Horizontal Restructuring	Competition
Telecoms.	None	None	Duopoly in Fixed Network and in Mobile Comms.
Gas	None	None	None except supply to Large Users
Water	None	Regional Break-Up	No Head to Head, Yardstick Competition
Electricity	Generation, Transmission & Distribution all Separated	Generation Assets Split, Distribution Split Regionally	Three Main Generators, 12 Regional Electricity Companies

In **telecommunications**, British Telecom (BT) enjoyed a monopoly on fixed network telecom services until 1980. From 1980 to 1990 the policy can be described as one of a protected duopoly with a statutory duopoly of these services, this period encompassing the 1984 privatization of BT. At the same time, technology improvements have led to increased competition in international calls and in mobile communication systems (there are now a number of competing suppliers of semi-national cellular phone suppliers). Also, competition was established from the outset on the supply of telephone apparatus which rapidly became a highly competitive sector.

In **gas**, the nationalised state company, British Gas (BG), was privatized in 1986 with virtually no restructuring. This led to the creation of a large, vertically-integrated, private company with monopoly power both upstream and downstream. BG's major activities include gas exploration and development, gas trading, gas transportation and storage within the British Gas owned network. British Gas enjoys a statutory monopoly on gas supply to small users (less than 25m.therms). Since that date and in part as a result of various inquiries and undertakings with the gas regulator, British Gas has lost some of its market share in certain sectors of the gas industry³. However, the development of competition has been slow and painful and this has been an important factor in the turbulent relationship between the regulator and British Gas (see the discussion below). This has ended recently in a wide-sweeping inquiry into the industry and the Government now plans to abolish the monopoly franchise in gas supply completely by 1998.

In **electricity**, the vertically-integrated, state monopoly generator and transmission company of England and Wales (The Central Electricity Generating Board) was split into three main generators (two privatized - National Power and PowerGen - and one state nuclear company - Nuclear Electric) and a new transmission company (The National Grid Company). The distribution of electricity was divided into twelve regional companies each with a regional monopoly on distribution and a monopoly on supply to small customers within their region (these companies are known as Regional Electricity Companies or RECs). The idea was to separate out the potentially competitive elements (electricity generation and electricity supply to large users) from the natural monopolies of electricity transmission and electricity distribution. Competition has grown in electricity supply although this is hampered by the availability of contracts from a highly concentrated

³ Notably, it is now reported that British gas has perhaps only 50% of the firm contract market in gas supply to large (industrial) gas consumers who can use the British Gas transportation and storage system subject to a set of access rules and payments.

generation market. The definition of a large user has now been reduced allowing a very significant potential increase in competition, from a maximum demand of less than 1 MW to 100kW and there is a planned abolishment of all statutory monopoly franchises in 1998 in common with gas supply.

The development of competition in electricity generation has been extremely controversial. The centre-piece of the market is the so-called electricity pool through which currently virtually all electricity must be bought and sold. The generators bid to supply electricity to the pool on a daily basis, the bids being used to generate a spot price for electricity every half hour and also determining which generating sets are called on to supply. Although the two main privatized generators have lost considerable market share (notably to nuclear and new gas powered entrants), they retain virtually 100% of control of plant that sets day-time electricity prices (the traditional fossil-fuel generating plant).

In **water**, the situation is more straightforward. The industry was privatised with 10 main private water and sewage companies in place with regional monopolies. There are also some 22 smaller water-only companies again with regional monopolies. There is then virtually no head to head competition in water and no plans to introduce it. However, in water (and also in electricity distribution where there are 12 Regional Electricity Companies) emphasis was placed on the use of yardstick competition as a surrogate for head to head competition (yardstick competition is discussed further below under regulation). Again, it was clear that direct regulation was to be required to ensure against monopoly behaviour on the part of the regional water companies..

The UK privatizations then created a number of large private companies, many with local or national monopoly power, and rather limited head to head competition. However, it could be argued that there is indirect competition through at least two routes. First, through yardstick comparisons and secondly through the financial markets and ultimately through the threat of take-over. We discuss below how important these forms of surrogate competition have been in the case of the UK privatizations.

1.2 Privatization and the Form of Regulation

The privatization process in UK utilities was accompanied by the development of a fairly comprehensive system of regulation. A fundamental aspect of the regulatory system is price cap regulation. In the UK this is widely referred to RPI-X regulation, RPI-X being the formula by which prices are allowed to rise over time (the retail price index minus an element, X, supposed to capture efficiency gains) between price cap reviews. The history of RPI-X regulation can be traced back to the Littlechild (1983) report on British Telecom profitability. This report evaluated five types of regulatory regimes against five criteria.

The alternative regimes were:

- (i) no explicit regulation
- (ii) maximum rate of return
- (iii) output related profits scheme
- (iv) profit ceiling
- (v) RPI-X system

and the five criteria were,

- (i) protection against monopoly
- (ii) encouragement of efficiency and innovation
- (iii) minimization of the regulatory burden
- (iv) promotion of competition
- (v) proceeds from privatization and prospects for the firm.

Littlechild (1983) argued that RPI-X regulation was superior to the others on practically all grounds listed. In particular he argued that RPI-X regulation could

- (i) protect against monopoly by placing price-caps specifically on those services that had monopoly characteristics whilst other services could be free from regulation,
- (ii) encourage efficiency and innovation by giving the right incentives for cost reduction - in strong contrast to rate of return regulation,
- (iii) reduce the burden of regulation as it is simple to operate and requires less information than the other alternatives,
- (iv) promote competition especially in those areas left free from regulation (as opposed to a cap on rates of return on the whole business which would not promote competition in potentially competitive areas),
- (v) give the firm good prospects (and hence realise a high price at privatization) due to the transparency and potential for profits due to the fixed price cap (as opposed to rate of return regulation where any cost reductions would be captured by the regulator)⁴.

In fact the Littlechild (1983) report focused quite specifically on telecommunications, but due to its perceived success in the privatization of British Telecom, it became a standard part of the regulatory structure for all of the privatizations in the UK. A summary of the formal regulation in place in the UK is provided in Table 2.

Table 2: Form of (Formal) Regulation Imposed

Industry (Main Regulatory Agency)	Regulated Areas	UnRegulated Areas	Regulatory Formula	Review Period
Telecommunications (OfTel)	Inland Calls International Line Rentals Leased Lines	Apparatus Mobile	RPI-X X=3('84-'89) X=4.5('89-'91) X=6.25('91-93) X=7.5('93-)	Initially 5 Years Now 4 years
Gas (OfGas)	Supply to Small Users (<25K Th)	Supply to Large Users Schedules Must be Published	RPI-X+Y-Z X=2('87-'92) X=5('92-) Y=all('87-'92) Y=GPI('92-) Z=1('92-)	5 Years
Water (Ofwat)	Water and Sewerage Charges & Trade Effluent	'Other' Activities Subject to Ofwat review	RPI+K Varies by firm and over time Avg RPI+5.4	10 Years or 5 Years at Ofwat or Firm's Requests
Electricity (Offer)	Transmission Distribution Supply < 100Kw	Supply > 100Kw Generation	RPI-X(+Y) Transmission X=0('90-'93) X=3('93-) Distribution	Transmission 4 Years Distribution 5 years Supply

⁴In addition, Beesely and Littlechild (1989) argue that RPI-X regulation is essentially forward looking in nature as opposed to rate of return which is largely backward looking.

Range
Supply
X=0

4 years

Formally, the RPI-X price cap system does appear extremely simple. In theory, a price-cap, X-factor and length of review period are set at some point in time and the regulators job is then simply to ensure compliance. In practice, things are a little more complex and a number of issues need to be addressed. Some of the more important aspects are detailed below:

which prices should be under the cap ?

In practice most firms in the utility sectors are multi-product companies. An advantage of price-cap regulation is that it is possible to attempt to separate out those parts of the businesses which have monopoly characteristics and hence should be subject to price capping from other parts of the business which may be opened to competition and hence may be free from regulation. This categorisation is dependent on industry structure and technology. In the UK, as discussed above, industry restructuring prior to privatization was rare and privatization largely consisted of transferring large state monopolies into the private sector (with the significant exception of the electricity industry). However, certain parts of the utility businesses were deemed to be competitive and no price caps were imposed. Examples include telephone appliances, mobile telephone services, gas supply and electricity supply to large users and (at least initially) electricity generation.

what type of price cap should be applied ?

Having established which set of prices should be regulated the next step is to determine what type of price cap to apply. Essentially this involves deciding on an index to apply to the set of regulated prices and a decision concerning whether any further non-discrimination clauses should be applied. Two types of index are used in the UK, the tariff basket and the average revenue cap.

The tariff basket, which applies to BT and the water companies, defines a price index using the weights for each price as the share in total revenues in the previous period accounted for by that product or service. Hence the weights are fixed for each period although the weights in the future might be affected by prices and hence revenues today. The price index so defined is then restricted to grow by at most by RPI-X percentage points each year. The average revenue cap, which applies to the gas and electricity industry, uses total revenue derived from the regulated activities and divides by current total output. Hence this measure is only used where there are natural units of output and total output is the unweighted sum of the outputs in each market. Average revenue, so defined, can grow by at most RPI-X each year.

In practice, there are also a set of particular price caps that apply to individual prices. For example, at the time of writing, British Gas has a general RPI-5 price cap and a subsidiary cap of RPI-0 on standing charges to those consumers off less than 5000 therms per annum. Each regional electricity distribution company has a general RPI-X⁵ price cap on electricity supply and a subsidiary price cap on their monopoly market (now less than 100 kW maximum demand) of RPI-0. In this way the regulator can prevent what may be considered as unacceptable price discrimination within a general cap. An alternative interpretation would be that the regulator can prevent an unacceptable unravelling of any cross-subsidies. For example, British Gas may well argue that low volume consumers are particularly expensive to serve and so should face a higher tariff. However, these groups tend to also represent poorer households and so such a tariff structure may be considered as unacceptable on distributional grounds. We return to the problem of cross-subsidies below.

cost pass through

In the regulated markets for gas supply, water supply and electricity supply there are provisions in the regulatory formula for cost-pass through. Hence the formula ought really to be described as RPI-X+Y where Y is allowable cost increases that may be passed through to consumers. The argument here is that with a fixed

⁵ X is set for each company individually.

price cap and fluctuating input costs (e.g.: fuel prices) utility companies face high levels of risk and cost pass through reduces risk by allowing output prices to fluctuate with input costs.

For example, in the period 1987-92, British Gas was able to pass through all gas purchase costs to final consumers. In part this provision was included because at the time of privatization BG had many gas purchase contracts outstanding and the prices in these contracts were linked to oil prices (in other words the contracts had oil price escalators). It was argued that it be unfair to BG to have a fixed price-cap for output prices that did not take into account the volatility of its input costs. In electricity, there is also a cost-pass-through provision. The regional electricity companies (RECs) are allowed to pass through all electricity purchase costs as well as rises in transmission and distribution charges and certain other costs. This provision is subject to the condition that the RECs purchase electricity 'economically' and the regulator has a duty to determine whether this indeed has taken place. These cost pass through provisions have been controversial to say the least and we review the debate surrounding them below.

quality regulation

The first two privatizations in the UK (telecommunications and gas) contained no direct provision for the regulation of quality. One interpretation of this omission is that the direct inclusion of quality regulation measures did not fit the model of light handed, simple, regulation that the British Government was wedded to at that time. However, it was quickly realised by those directly involved in the regulatory process that, whilst price-cap regulation may yield good incentives for cost reduction, it does not yield incentives for quality improvements and indeed it may provide incentives for a reduction in quality⁶. The later privatizations (of water and electricity) included quality in the regulatory framework and the Competition and Services (Utilities) Act 1992, if somewhat belatedly, gave similar powers to gas and telecoms. regulators.

Regulation on quality in the UK is quite separate from the price regulation. Quality levels are determined outside of the price cap and increases in quality may or may not be rewarded with a price rise and a drop in quality may or may not be punished with a price fall at the discretion of the regulator.

The indicators of quality that are monitored by the regulator are somewhat industry specific. To give an idea of the range and complexity of different dimensions of quality, we list some of the main categories of quality measures in the four utility industries considered in this paper. In telecoms, speed of installation, call failures, speed of repairs, number and reliability of pay phones, reliability of private circuits, clarity of phone calls, operator services, billing, payments and disconnections, handling of complaints, appointments are among the aspects of quality that are considered. In gas, connections, interruptions, meters and meter reading, payments and disconnections, response times, appointments, air pollution, and gas escapes are among the dimensions monitored. In electricity, connections, interruptions, voltage reliability, meters and meter reading, payments and disconnections, response times, appointments, air pollution, and other environmental features are among the items considered. And in water, availability, interruptions, flooding, drinking quality, water pressure, meters and meter reading, payment methods and disconnections, response times, appointments and a list of environmental factors are monitored by the regulators.

In addition, compensation schemes are now in place for all four of the utility industries considered and information concerning performance standards are published for each utility. These reports now gain some attention in the press and it could be argued that there may be indirect competition between utilities in sector's, with no head to head competition, on quality.

investment regulation

⁶ The Director General of Telecommunications, the telecoms regulator is on record as saying that a reduction in quality is equivalent to a hidden to a price rise.

A further problem with price-cap regulation is that it may not provide adequate incentives for new investment. In this respect, rate of return investment may be superior as firms know that whatever new investment takes place, this will earn the designated rate of return⁷. In a pure price-cap system, it might be argued that investment will only take place that will reduce costs within the period of the existing price cap. Cost reductions beyond the duration of the cap may be expected to be captured by the regulator in the review of the cap.

The regulation of investment in these utility industries in the UK is best described as informal with the notable exception of water. In telecoms, gas and electricity the regulator may monitor investment decisions but there are no specific investment targets. In water however, there are specific investment targets. The price cap formula for water is normally referred to as RPI+K (rather than RPI-X) which reflects the fact that the UK water companies are the only utilities whose tariffs may rise by an amount greater than the rate of inflation in retail prices. This regime was intended to aid the companies in (i) increasing quality which was perceived to be relatively low in the UK versus other European countries and (ii) promote investment in part to improve quality. Water is the only sector considered here where firms must submit an investment plan and a statement of the desired objectives for the investment e.g.: compliance with a quality standard etc and where such submissions are an integral part of the determination of the price cap (the setting of K in this instance). Ofwat then has a duty to monitor actual investment expenditure.

the period between the price-cap reviews

The period between price reviews is a crucial component of a price-cap, regulatory framework. A price cap of a short duration looks very similar to rate of return as at each review period a new price cap must be decided and the methodology commonly used in the UK is generally through the consideration of the rate of return of the company. At the other extreme, a price cap of infinite length may be thought of as a pure price cap where all cost reductions are captured by the firm.

In the UK, in gas the length of the price cap is set at 5 years, in telecoms it is now 4 years, in electricity transmission it is 4 years with distribution set at 5 years and electricity supply is 4 years. For water, the price cap is set for 10 years but with the option for a review at the end of 5 years at Ofwat's or at the firm's request.

As we discuss below, in the UK regime there are provisions for changing X even within the period of a price-cap. In telecoms X has changed from 4.5 (1989-1991), to 6.25 (1991-93) and from 1993 to 7.5. In water, as mentioned there is a provision for a so-called periodic review at five years within the ten year period of the cap and there is in addition possibility of further interim determinations at the discretion of the regulator. Furthermore, Ofwat has sought voluntary price reductions linked to investment performance. In gas too, the regulatory formula has been changed although this has occurred in the context of a general inquiry into the gas sector by the Monopolies and Mergers Commission. Note that in this case British Gas was seeking (and won) a relaxation of the price formula, the cap was changed from RPI-5 to RPI-4. We discuss below in more detail how exactly licence conditions may be changed.

1.3 Privatization and the Institutions of Regulation

In this section we discuss briefly the institutions of regulation in the UK. It is clear from the discussion that the UK does have a very particular form of institutional structure where regulation and more general competition policy is concerned. However, it is argued below that although certain institutional details differ, many of the problems encountered in the UK regulation to date are due to factors that are common across many countries including those of Latin America. Here, we note some of the more important institutional arrangements.

First, note that in each industry there is a single main regulatory organization e.g.: Offer (electricity), Oftel (telecoms), Ofwat (water) and Ofgas (gas). Furthermore, there is a single person named as the Director

⁷ Subject to these investments being allowed to enter the 'rate base'. However, as is well known there may be a problem of over-investment with rate of return regulation; the so-called Averch-Johnson or 'gold-plating' effect.

General of regulation for each particular industry. The Director General is personally charged with the responsibilities discussed above and individually has the powers mentioned. This is in contrast to many countries that (i) have a commission comprising of many individuals and (ii) have bodies that cover more than one sector.

Second, there are many regulatory bodies in the UK with over-lapping responsibilities. This is particularly evident in the context of environmental regulation and especially with respect to water. However it is also the case in electricity and gas where environmental regulation is becoming increasingly important. In telecoms, regulation at a European level, in addition to the national regulations, implies that there are also overlapping regulatory bodies. Furthermore, all utility industries are subject to general laws on monopoly and competition policy and hence the Office of Fair Trading (OFT), which is charged with protecting the consumer against monopoly practices generally in the UK, also has powers in the utility industries.

Third, in the UK, the formal regulatory contract is enshrined in law in particular fashion. Laws for each of the utility sectors establish the structure of the industry and also establish the powers of the regulator⁸. The law allows a senior minister of the government (normally the secretary of state for trade and industry otherwise known as the President of the Board of Trade) the power to appoint companies (e.g.: in water to appoint water and sewerage undertakers) in accordance with the structure of the industry contained within the relevant Act of law. This is more commonly referred to as the power to grant a licence⁹.

Fourth, the licence sets out in much more detail what is required of the company and of the regulator. The regulator normally has (i) primary duties, (e.g.: to ensure all reasonable demands for the service are met, that licence holders (licensees) can finance their activities and where relevant to promote competition), (ii) secondary duties (e.g.: to promote the interests of consumers, to promote efficiency, to promote research and innovation, to protect the public from any dangers and to promote health and safety of employees) and a major duty of the regulator is also to monitor and if necessary enforce the conditions of the licence. The licence also contains the details of the pricing formula and so includes the level at which the cap is initially set and the value of X in the RPI-X formula. Changes to the licence can normally be made if both the regulator and licensee agree to the change. Although, the secretary of state has the power of veto even if both parties agree. To change a licence condition without the consent of the licensee (for example to increase X), the regulator must follow a particular procedure. The regulator may make a referral to the Monopolies and Mergers Commission (the UK's more general competition authority) in order to make a licence modification under the legislation backing the privatization. The licensee can also seek a reference although this must normally be done through the regulator - who typically has little alternative but to forward the reference to the MMC.

Fifth, the process of referral to the MMC has its own constraints attached to it. The regulator typically has a great deal of discretion over the terms of the reference and may propose licence changes as a remedy to a particular problem or set of problems. The details of the reference must be made public to the licensee and any other party that may be affected by it. The MMC is charged with writing a report which must contain definite conclusions on the issues specified in the reference. The report is delivered back to the regulator who must publish the report within 14 days of receipt in an "appropriate" manner. The secretary of state retains wide powers in this process. First the secretary of state may veto a reference at the outset or if a reference is allowed can exclude from publication any areas of the MMC report which is viewed to be against the public interest. Following receipt and publication, the regulator may then propose changes to the licence taking into account the recommendations specified within the report. The secretary of state may veto the modification at this time whether or not it has been agreed to by all other parties¹⁰.

⁸ For example, in the case of water the fundamental legislation pertaining to privatization is contained in the Water Act 1989, Water Industry Act 1991, Statutory Water Companies Act 1991, Land Drainage Act 1991, Water Consolidation Act 1991 although other more general legislation is also relevant in particular on quality and competition policy.

⁹ In practice the regulator, as opposed to the minister may grant new licences but only under the authority from the minister.

¹⁰ In addition, the secretary of state can order a licence modification, in the context of an MMC inquiry, but only on grounds related to monopoly or merger or take-over (Fair Trades Act 1973) or anti-

To sum up, the UK has rather independent regulators for individual industries who monitor the licenses granted under the authority of government. Formally, the regulator does not have the power to make licence modifications unilaterally (e.g.: change X). If the licensee does not agree then the regulator must obtain the backing of the secretary of state (minister) through the medium of a reference to the competition authority - the Monopolies and Mergers Commission. Although it should be noted that the MMC only plays an advisory role here and the agreement of the MMC is not required, only that of the secretary of state. The secretary of state may also seek changes to the licence but only on certain grounds, not for example to change X. However, this is the formal legal position. As discussed below, in practice rather more informal procedures have been adopted by regulators. In other words the informal contract, has been extremely important in the UK.

Section 2 : An Appraisal of the UK Experience

2.1 On Industry Restructuring

Although, the rhetoric of the government at the time of the privatizations was very pro-competitive, as discussed above the UK privatizations largely consisted of the transfer of sector-dominant companies into private hands. Arguably, the failure to restructure prior to privatization has been a continuing and significant cost to the economic efficiency of the industries considered and has also been the cause of many of the most important regulatory problems to date. A brief discussion of the major points in each industry is presented below.

The Gas Industry¹¹

Perhaps the best example of the problems resulting from inappropriate industry structure is in gas. At the time of privatization, 1986, British Gas was the controller of the gas transportation network, a major supplier of gas and the largest gas trader. The company clearly had little incentive to provide assistance in the government's plans for a more competitive industry. Indeed, as a private company with a duty to its shareholders it had every incentive to act in an anti-competitive fashion. In what follows we detail a brief history of the relationship between British Gas and the UK regulators.

British Gas and OfGas : A Turbulent Relationship

After the privatization, there was much concern about the competitiveness of the contract market for industrial consumers. The contract market (for customers above 25k. therms) had been left unregulated at privatization. There was a common view at that time that competition from other fuels would help to keep gas prices competitive and over time new gas suppliers would enter to yield head to head competition. However, although provisions for access to the BG transportation network were put in place as early as 1982 no new entrants had made use of them by 1988¹². After several complaints from customers following the large fall in oil prices (not followed by a similar fall in gas prices), the OFT referred the gas contract market to the MMC in 1987. The 1988 MMC report found that BG was practising extensive price discrimination in the contract market. This involved the criticisms that BG was (i) selectively undercutting potential entrants by pricing contracts in relation to alternative gas or gas substitutes (ii) charging higher prices to those customers who could not readily

competitive practices (Competition Act 1980, but only after a report from the MMC on a competition reference). The regulator is obliged to make such modifications as ordered.

¹¹ See Armstrong, Cowan and Vickers (forthcoming), OXERA (1994) and Price (1994) and OfGas (1992), (1993).

¹² There was one arrangement but that existed before 1982 and there were 10 approaches to BG during the period but none resulted in an access agreement.

switch suppliers and (iii) maintaining a lack of transparency over general contract terms to its range of customers.

The MMC report concluded that the best way to remedy the situation was to encourage entry into the gas contract market (rather than to regulate) and suggested various measures to attempt to encourage entry. The three most important measures suggested were for BG to (i) publish price lists for gas contracts to aid transparency (and hence deter discrimination and aid entry), (ii) to publish greater information on terms of access to the transportation system and to establish a 'Chinese Wall' between the transportation and storage business and the gas trading division (to try to limit the conflicts of interest between the two divisions) and (iii) to undertake to purchase at most 90% of the gas from any new gas field (the so-called 90/10 rule, to try to limit the monopsony power of BG).

These recommendations were implemented and did perhaps go some way to develop a limited amount of competition (in the firm contract market to large consumers) - by December 1992 some 32 entrants had made agreements with British Gas for access to the network. However, the terms of access to the network remained a source of friction between Ofgas and British Gas and the competition that did develop was to a particular niche (firm contracts to very large users close to the gas beach heads). The general lack of progress towards competition was a source of argument between BG and the regulator¹³.

In 1991 a review of the competition in the gas industry was conducted by the OFT which once again concluded that BG's dominant position gave it an unfair advantage and was a hindrance to the development of head to head competition. The recommendations included that BG should establish two separate business units (BG Transportation and BG Supply) and that these should operate at arms length and that BG should reduce its market share to 40% of the traditional (non power generation) contract market by 1995. The recommendations were backed by a threat of an MMC reference if BG did not agree and agreement was finally reached in March 1992.

However, relations between BG and Ofgas did not improve and also in 1992 a serious argument ensued concerning the appropriate rate of return (and hence price cap) for the transportation business. BG argued for 10.8% for new investments and 6.8% on existing assets (as existing assets only had a value of 62% of their replacement cost) whereas OfGas argued for between 2.5% and 5.0% on existing assets and between 5.7% and 8.4% on new assets. The two sides did not agree and it could be argued that at this point the regulatory mechanism set up at the time of privatization broke down. BG's view was that the combination of a forced reduction in market share and harsh regulation for transportation, storage and in the tariff market (RPI-5) was unacceptable and asked for an MMC reference of the whole business. Parallel references were also made by Ofgas.

The 1994 MMC report argued in favour of a relaxation of the tariff formula (to RPI-4) but that British Gas should be split into two separate companies. The MMC's recommendation was that the tariff threshold should be lowered to 2500 therms (from 25k.therms), subsequently to 1500 therms in 1997 and possibly abolished altogether in the year 2000 or 2002. However, these recommendations were not accepted by the Government. The binding decisions of the Government were that British Gas need not divest its supply business although this must now be maintained in a separate business unit with suitable ring-fencing but that British Gas would lose its monopoly in the tariff market completely by 1998 (with a phased introduction in 1996 and 1997).

The introduction of competition down to household level will require the development of a gas spot market akin to the 'electricity pool'. There is some controversy at present concerning the structure of such a pool and there are competing proposals on the table. British Gas (Transportation and Storage) has proposed a limited form of spot market but where independent traders are only allowed to trade

¹³ It should be noted that at this time there was a very large increase in demand for gas from new gas fired electricity power generators. Although there was some competition in the supply of gas contracts to these new customers, BG designed special 15 year contracts (initially at very low prices) and hence somewhat controversially captured the vast majority of this new market.

subject to contracted entitlements or offering gas to British Gas for system balancing reasons. A competing proposal from a group of Regional Electricity Companies who have entered the gas business and a London based merchant bank envisages a much more open market. Currently Ofgas has indicated that it will initially accept the British Gas proposals to be implemented by October 1995.

The example of the privatization of the gas industry in the UK has many lessons concerning structure. First, it could be argued that the problems of the operation of the industry and the turbulent relationship between the company and the regulator have been principally due to the failure to restructure the industry at the time of privatization. Second, the example shows that simply allowing competition (liberalization) is not generally sufficient to generate competition when a dominant incumbent controls a transportation network and where competition relies on access to that network. Very close scrutiny of the terms of access and the response of the incumbent to inquiries concerning access are required. It could be argued that in this regard, competition and regulation are complements and not substitutes. The Government has finally stated that British Gas will not need to divest its trading business ending a long period of uncertainty in the company and in the industry in general. Competition has developed now in the market for firm contracts to large industrial consumers but it remains to be seen whether such competition will be a sufficient check on the behaviour of dominant players to smaller customers or to those where switching to alternative gas or substitute fuels is only achieved with difficulty.

The Electricity Industry¹⁴

The electricity sector in the UK also provides an interesting case-study to illustrate problems of structure. The Electricity industry was vertically segmented into generation, transmission and distribution. The generation sector and the distribution sector was then split horizontally. Head to head competition was established in generation. Originally, the idea of the UK government was to privatise the whole of the electricity sector including the nuclear generating plants. The thinking was that to ensure the successful sale of the large nuclear stations would require large generating companies who could raise the necessary finance to continue a nuclear programme. Hence, only two generating companies were created from the assets of the CEBG in England and Wales¹⁵. However, on advice from the industry and elsewhere the government decided that even with this strategy the sale might not be successful and hence created a new state company, Nuclear Electric, in which the nuclear plants were placed. However, a decision was then taken that there was insufficient time before the planned sale to alter the structure that had been created and the government did not accept the argument that the sale should be delayed.

The Problem of the Pool

Hence, a structure was created with only two fossil fuelled generators, National Power and PowerGen, with National Power having roughly 50% of total British generating capacity and PowerGen with about 30% of generating capacity. Surprisingly, spot (pool) prices in the initial period of competition were lower than many expected. However, this can be largely attributed to the nature of contracts that were also put in place at the time of vesting to protect British Coal and which gave strong incentives for the generators to bid low. As these contracts expired, the incentives on the generators was to push prices up increased and this has been the clear trend. After many complaints, in particular by large industrial consumers, the regulator and the two privatized generators have now agreed a price-cap on pool (spot) prices which might be interpreted as an admission of the failure of adequate competition to keep prices down.

The lessons from this sector are that to establish effective competition requires the creation of several competing units. If only two units are created, with an effective duopoly over prices over particular periods and prices are determined through a bidding system repeated on a daily basis, then the probability of (implicit) collusion is high. To date, a reasonable case might be made that the high transaction costs of increasing competition - which stem from the development and operation of the pool - have not resulted in very

¹⁴ On electricity see Armstrong, Cowan and Vickers (forthcoming), OXERA (1994) and Gray, Helm and Powell (1995).

¹⁵ Ignoring the pump-storage stations in Wales and other minor suppliers.

significant benefits to consumers. However, this has been largely because of a failure to create adequate competition, not because of a failure of competition itself.

A further interesting lesson from the electricity industry is that formal contracts may have an interesting role to play in controlling monopoly power. The contracts put in place between the generating companies and the Regional Electricity Companies (RECs), meant that the vertical separation between the two was not complete as the contracts recreated some rather strong vertical ties. The contracts had a further important effect. The contracts resembled forward contracts and it is now well-understood that if a company with monopoly power signs forward contracts for the delivery of a good at a fixed price, it then has less subsequent incentive to manipulate future spot prices. The electricity contracts signed at the time of vesting certainly controlled the incentives of the generators to raise spot electricity prices¹⁶.

Telecoms

In the telecom industry the Government decided in 1983, before the privatization of British Telecom (BT) that BT would lose its monopoly on fixed network services and the Government licensed a second telecoms operator to enter the market - known as Mercury. However, entry was limited to this company only or in other words the telecoms. sector was a statutory duopoly. This policy was extended through the 1984 privatization of British Telecom (which, as discussed above was not restructured) and lasted until 1989. The rationale was that a duopoly would protect the infant Mercury from other entrants and so it would be able to grow to provide effective competition to BT. However, although the policy introduced some competition to BT, competition was actually extremely limited and the restricted duopoly policy probably hindered rather than aided subsequent competition developing (we comment on this further below).

The review of the duopoly policy began in 1989 but was not completed until 1991. The main conclusion was that the duopoly policy should be ended and since that date, Oftel has received over thirty applications for new network services. Some of these entrants will develop competing fixed networks for long distance services (they include the National Grid Company - which operates the national electricity transmission system and British Rail) but will aim to use the British Telecom local networks.

A strong lesson as been that the inter-connection arrangements between new entrants and the British Telecom network are crucial to the development of competition in the area. This remains one the most controversial issues in current telecom. regulation. Again, the problem is accentuated by the fact that the owner of the network is also the single largest provider of telecom. services.

Water¹⁷

In water, there was no attempt to create head to head competition. The water companies have regional monopolies which are set to continue into the foreseeable future. However, there was an attempt to increase indirect competition through the medium of yardstick comparisons. The idea here was that the regulator could learn from a comparison of the different companies' operating statistics. In particular, the regional structure would allow the regulator to compare costs across the different firms. However, for reasons we discuss below, yardstick competition as originally conceived, has been much harder to implement than expected. Nevertheless, the competition authorities in the UK have regarded the number of water companies as important and indeed have disallowed three mergers quoting this as one reason. However, it is also interesting to note that this did not appear as a strong argument in the case of gas for a horizontal restructuring of British Gas and the Government opted for measures to increase head to head competition (abolishing the British Gas monopoly franchise by 1998) rather than relying on yardstick competition of say regional monopolies.

Summary and Assessment of the UK Experience

¹⁶ see Powell (1993) for a discussion of this point with respect to the electricity market and Haskel and Powell (1993) and Allaz and Vila (1993) more generally.

¹⁷ See Armstrong, Cowan and Vickers (forthcoming) and OXERA (1994).

The UK privatizations largely consisted of the transfer of large state companies with monopoly power into the private sector. The exception to this was electricity where the industry was vertically segmented and head to head competition was developed in generation but even here competition was limited in the sense that two large generators maintained control of virtually all plant setting daytime electricity prices. Some liberalization measures were taken allowing entry into telecom services (through a duopoly policy subsequently relaxed to allow greater entry), gas and electricity supply to large users and to promote entry into electricity generation.

The experience of developing competition given an arguably inappropriate initial structure has been fraught with problems and one of the main lessons to draw from the UK experience is that it is better to restructure before privatization than after. This is particularly evident in gas and telecoms in the UK. In both of these industries a critical problem has been access to the incumbants' network services in a vertically integrated industry. In electricity the vertical separation of transmission from generation has alleviated this particular problem. However, in electricity, the pool has not fallen short of its objectives due to a failure to create adequate competition.

The current plans regarding structure and the development of competition in the UK are more ambitious and include the complete abolishment of monopoly franchises in gas and in electricity by 1998. This will imply head to head competition for electricity and gas supply down to household level. This involves developing a 'gas pool' such that independent gas suppliers can purchase and sell gas as required. It also requires appropriate metering technology down to household level such that consumption can be monitored and charged for appropriately¹⁸. Whether competition will flourish at the household level given that British Gas will remain the owner of the gas transportation system and the Regional Electricity Companies will maintain a monopoly on electricity distribution in their region remains to be seen. The recent history suggests that the regulators will have to monitor the development of competition in these areas particularly closely.

2.2 On Regulation

Introduction

In this section we present a review of some of the most important aspects of the experience on the form of regulation in the UK over the last 10 years. In this section we follow a thematic scheme using industry examples to illustrate the points made. The section is then organized along a series of sub-headings.

(i) On Regulation and Competition

It is clear that regulation and competition interact and the lesson of the UK experience is that they do so in somewhat subtle and surprising ways. On the one hand, it might be hoped that regulation and competition are substitutes in that as competition develops regulation can be withdrawn. However, the UK experience is arguably that regulation and competition are complements rather than substitutes. In this section the argument is presented that given a failure to restructure, and given an objective of increasing competition, increasing regulation has been required to foster competition in the UK.

In **telecoms**, the initial regulatory intervention to foster the development of competition was to legislate for a statutory duopoly. The idea was that a legal duopoly would protect the new entrant, Mercury, from future entry. The logic ran that Mercury might then sink more investment costs to develop a competing fixed network for telecom services. However, this experiment with aided entry was not particularly successful and British Telecom (BT) maintained its dominance of fixed telecom services. A problem with this type of strategy is that it helps the incumbent as much as it helps the new entrant and this may have been one reason for the continued lack of substantial penetration into the BT customer base. However, the central problem may have been that Mercury was dependent on BT for access to its local network (Mercury's plans were to only develop a competing long distance service and use BT local lines) and the terms of such access were a dispute for a significant period of the statutory duopoly policy.

¹⁸ There remains some controversy concerning who should pay for the investment required if the industry is indeed to be competitive

In **gas**, there was also concern about the slow growth of competition in the liberalised gas supply market. Here a different strategy was attempted and British Gas 'undertook' (under pressure from the regulator) to lose a specific market share to competitors in the supply of gas to large users. This was successful in that British Gas did indeed lose the specified market share but the regulator subsequently found that such competition was 'artificial' and this continued to be one of the disputes between British Gas and the regulator prior to the referral to the UK's general competition authority (the MMC). A further attempt to aid competition (and end any policy of first degree price discrimination on the part of BG) was to order BG to publish price lists for gas contracts. Both of these strategies placed the incumbent at a disadvantage with respect to entrants and so had asymmetric effects on the incumbent relative to the entrant. It Indeed, the latter strategy placed BG at a fairly serious disadvantage with respect to competitors who could observe BG price schedules and adapt their own prices to undercut where it was profitable to do so. Also, by increasing transparency, it effectively halted any possibility of price discrimination on the part of BG.

In contrast, in **electricity** the regulator took the view that contracts between all parties should remain confidential. Here the regulator fostered entry into power generation through essentially an asymmetric pricing policy using the mechanism of the cost pass through regulation for the Regional Electricity Companies (electricity distribution companies). The RECs are allowed to pass through the costs of electricity purchase to small customers in their franchise areas subject to the regulator deeming that the RECs have purchased 'economically'. The RECs wished to invest in new gas fired power plant (referred to as Independent Power Producers or IPPs) and many RECs took equity stakes in such projects. At the same time they signed long-term electricity supply contracts with the IPPs (in some cases 10-15 years) and these contracts were well above the spot electricity price levels at the time. The regulator then had to decide whether the RECs, by signing such contracts, were purchasing 'economically'. The regulator found in favour of the contracts and hence the RECs can pass through the costs of the electricity purchased to their franchise customers (at least until their franchise ends in 1998). In this way the regulator fostered entry to electricity generation.

The regulator in electricity was also faced with difficult choices given the high concentration in the generation sector. Here, the regulatory strategy was one of implicit regulation through threats of corrective action. Hence, although the sector was supposed to be free from regulation, it was clear that some form of implicit regulation was operating more or less throughout the whole period since the inception of the pool bidding mechanism. Recently, this regulation has become formalised within a set of undertakings agreed between the regulator and the companies which limits prices within the pool. Hence regulation has increased in this area which was originally deemed to be competitive¹⁹.

In these three industries, UK regulators have felt the need to aid entry to limit the market power of a dominant incumbent. In the case of electricity, the power of the incumbent was purely horizontal (market share of marginal plant) and the regulators response was to assist entry whilst (finally) limiting the power of the dominant players through a set of undertakings. In telecoms and gas there was a strong vertical dimension as the dominant incumbent also maintained control of a network service. Hence, largely due to the failure of restructuring and leaving dominant incumbents, it could be argued that competition and regulation have been complements and not substitutes in the UK. Regulation in general therefore has increased in its scope as regulators have attempted to increase competition.

The somewhat surprising conclusion is that in many instances consumers have actually had to pay for increased competition - at least in the short term. This somewhat counterintuitive result has been as a consequence of the entry enhancing policies referred to above. To provide attractive prices for entrants has entailed raising prices for at least some consumers. This has been true in the specific case of electricity where the regulator has allowed a set of contracts at higher prices than the then current spot prices and has allowed those prices to be passed through. However, it could be argued that this has been true more generally in electricity where the establishment of the pool mechanism itself has entailed increased transaction costs. It is

¹⁹ See Gray, Helm and Powell (1995) for a discussion of the theoretical literature and the British case.

not clear as yet that the benefits of competition have outweighed these costs. A similar controversy exists now in gas where current proposals are to set up a spot pricing mechanism in the UK - a gas pool. Again, this will certainly entail an increase in transaction costs which will have to be paid by consumers. British Gas has argued in the past that the transaction costs involved are substantial although the company is now working with the regulator to establish the parameters of the competitive mechanism.

In conclusion to this sub-section, it should be stressed that where competition has succeeded in flourishing, prices or margins have been reduced and regulation has been allowed to fade away. Specific examples include electricity supply to large users where margins have become very low indeed and gas supply via firm contracts to large users (especially close to the gas fields in the North and Irish Sea) where again margins are reported to have been substantially reduced. Regulation has been reduced in the sense that the regulated market for electricity supply is now only below 100kW rather than 1MW maximum demand (as at the time of privatization) and in gas supply the regulated market is less than only 2,500 therms rather than 25,000 therms as at the time of privatization.

(ii) On the Form of Regulation

In this subsection, we briefly review important aspects of the experience with the form of Price Cap regulation known as RPI-X as introduced in the UK for the utility industries since the privatization of British Telecom in 1984. First we review the general experience with price caps in terms of the benefits (cost reductions) and costs (cost of regulation) and then we turn to specific aspects of the regulatory formulae.

a. Price Caps and Cost Reductions

In all of the industries covered in this report it is a widely held view that Price Cap regulation has brought significant cost reductions. An important, and often stated, advantage of Price Cap (over Rate of Return) regulation, is that it brings incentives for regulated firms to reduce costs. This statement is certainly true if the price cap is fixed for many years and it is known that the X factor cannot be altered within the review period. However, if the review period is very short or if it is known that the X factor can be adjusted easily by the regulator, the firm faces the possibility of frequent tightenings of the regulatory formula and hence price cap regulation resembles rate of return regulation more closely. In the UK the period of price cap is commonly of 4 to 5 years duration and as discussed above in actual fact the X factor have been adjusted more frequently. So, although the duration of the cap is rather limited and the X factor may be changed (subject to legal and other restrictions), the cost reductions have been marked indeed.

Indeed, many of the problems with the form of regulation can be thought of as problems of success. For example, it has been commented on that the gains from the cost reductions have been unfairly distributed between firms and consumers and that regulatory formulae have tended to be tightened because of an ex-post realization that they were too slack. However, one view is that the tightening of the regulatory formulae was required because the price cap system created even stronger incentives than anticipated for cost-reduction. In other words, the tightening of the regulatory formulae could be seen as a sign of success of RPI-X regulation as an incentive mechanisms.

b. The Costs of Applying Price Cap Regulation

However, there clearly have been some problems with applying the price-cap formula which deserve comment. The argument from the 1984 Littlechild Report was that RPI-X regulation would be simple to operate and would require little information and hence the cost of regulation would be low. In actual fact, RPI-X regulation has been more problematic than anticipated and problems have arisen in at least three areas which have led to increases in the costs of regulation, (i) information requirements, (ii) methodology and practice of reviews and (iii) 'regulatory games'.

(i) Information Requirements

Regulators have found the need to increase the information submitted to them from the regulated companies in almost all areas. This raises costs both for the regulator and for the regulated companies. Most regulated companies have a department headed by a 'regulation manager', normally reporting directly to director level whose responsibilities include complying with information requests from the regulator and ensuring regulatory compliance. Regulated companies have also relied extensively on outside consultants to provide information. Information requirements are particularly acute around the period of regulatory reviews.

(ii) Regulatory Reviews

regulatory reviews, these have turned out to be costly exercises for both regulated firms and regulators. It has been common for the regulated firm and the regulator to effect lengthy studies on the rates of return on assets employed and attempt to compare this with a theoretical rate of return given the particular company's characteristics. This has involved substantial debates on methodology and on measurement of the relevant variables. It has been common for regulated firms (and sometimes regulators) to employ expensive outside consultants to make particular cases. On methodology, companies have tended to argue in favour of using the Capital Asset Pricing Model to arrive at the theoretical rate of return and in many instances the use of this model has tended to suggest rather high rates of return and hence favourable price caps. However, there are many practical problems with this approach and regulators have been sceptical over certain measurement issues²⁰. Indeed, the problems encountered are really exactly the same as those if the regulation had been on rate of return. Again, price-cap regulation is then not fundamentally different to rate of return in terms of what regulators need to know about firms or in terms of how reviews are conducted. The only saving is that reviews may be somewhat less frequent.

(iii) Regulatory Games

Price-Cap regulation has been the catalyst for a number of 'regulatory games' between regulated firms and regulators. Although one of the roles of the regulatory manager has been to ensure a compliance a second role has been to develop strategy in a regulated environment. This implies second guessing what regulatory action might be taken in the event of different strategies by the company and attempting to take actions that might minimise regulatory intervention. These additional aspects of corporate strategy have also taken up much senior management time in the privatised companies and have added to the costs of regulation and the regulatory burden.

c. Yardstick Regulation

In the water industry and in electricity distribution the industry restructuring resulted in the creation of regional monopolies. A benefit of such structures is that regional companies can be compared which may provide comparative information to the regulator in the review processes. In brief, in assessing the relevant price cap for a particular company the regulator can look at average costs across the whole sector rather than only looking at an individual firms' costs. This then provides further incentives for firms to reduce costs as they know they will be compared to the average rather than their own costs at review. This has been referred to as Yardstick regulation in the literature and in particular in the water industry in the UK was seen as an important source of useful information for the regulator to assess price caps.

Yardstick regulation can be thought of in both informal and in formal terms. Informally, it can be thought of simply as a means by which the regulator can obtain more comparative information to make the regulator more confident about benchmark cost assumptions for companies. More formally, the regulator can pursue an econometric (cross-section) analysis, regressing the costs of the individual companies against a set of explanatory factors which vary by company. The idea is then that the residual in the regression may then be interpreted as cost differences due to efficiency differences between companies. However, in practice although the informal information advantages of having a set of companies rather than a single monopoly has been of significant value in the UK, the more formal yardstick regulatory methods have faced serious difficulties. First, methodologically the residual can only be interpreted as an efficiency effect if all other relevant explanatory variables are included in the regression. Even then the residual may also contain genuine random

²⁰ See the discussion in Oxera (1994)

effects rather than being a pure efficiency measure. Secondly, in practice it has been found that the number of relevant explanatory variables is large (and their specification somewhat controversial) such that the regressions have very limited degrees of freedom, little statistical power and the coefficients subject to large statistical errors. The specification of the regressions themselves is also somewhat controversial and different assumptions can result in quite different results. In conclusion then the regionalization of both water and electricity distribution in the UK has yielded useful comparative cost information to regulators but more formal yardstick regulation have proven difficult to implement in practice.

d. Cost Pass Through Measures

In both gas and electricity supply to small users, cost pass through measures are also included in the regulatory formulae such that the formula should really read, $RPI-X+Y$. The UK experience with cost pass through measures also deserves some comment. In gas the original pass through provision for the privatized British Gas was for all gas supply costs. The original justification for this was that British Gas had entered into long term gas supply contracts in which gas prices were linked to the general producer prices and to the prices of alternative fuels (mostly oil prices). It was therefore felt that to have a fixed price cap with no cost pass through provision would make the gas supply business unduly risky for British Gas as margins would then be extremely volatile depending largely on out-turn oil prices (ignoring the possibility that these could be hedged using futures and options markets). However, full cost pass through provisions clearly have poor incentive effects when new gas supply contracts are considered especially when noting that British Gas is also a major supplier of gas to the UK market. In 1992 this situation was reviewed and the regulator decided that given these poor incentive effects British Gas should only be able to pass through a Gas Cost Index (GCI) which was itself made up of the same indices (producer prices and fuel prices) as the British Gas long term supply contracts. The idea was that as this index is non-manipulable, then the cost pass through would reduce risks in the gas supply industry but would not have the poor incentive effects associated with full cost pass through. In fact, the full costs of the GCI were not allowed to be passed through and a type of X-efficiency factor was added so that in actual fact the regulatory regime faced by British Gas for gas supply was $RPI-X+GCI-Z$ where Z is the second efficiency factor. The perceived strictness of this formula was a contributory factor to the MMC referral made by British Gas.

In electricity supply to small users the Regional Electricity Companies (RECs) are also allowed to pass through the vast majority of electricity purchase costs subject to the 'economic purchasing' clause (the RECs can also pass through certain other costs). As discussed above in the section on assisting entry, this may have distorted investment decisions. RECs have taken equity stakes in new gas fired power stations and signed long term contracts for electricity supply from these generators (at prices higher than current spot prices). They did this in part due to the assumption (subsequently proved correct) that the regulator would allow the costs in these contracts to be passed through to their franchise customers.

Cost pass through in the UK has then been somewhat controversial. Cost pass through clearly has poor incentive mechanisms when cost measures can be manipulated by the regulated firm and indeed converts price regulation to something more similar to rate of return. Cost pass through measures subject to agreement by the regulator also allows the regulator a greater degree of discretion which may be advantageous or not depending on the context.

e. Quality Regulation

It is probably fair to say that quality regulation is one of the most arbitrary areas of the UK's regulatory regime. Individual regulators have considerable discretion over the interpretation of their responsibilities in this area and indeed in most sectors there is more than one relevant regulator. For example in water the water regulatory body (Ofwat), the National Rivers Authority, the Drinking Water Inspectorate and European regulators on water quality and pollution are all relevant bodies covering overlapping areas of activity. It is perfectly possible for Ofwat to set a price-cap, based on a set of cost information conditional on quality, and then subsequently each of the other authorities to demand a higher quality in their particular sphere of influence. Quality regulation remains relatively flexible in the UK which implies that regulators have considerable discretion to vary quality indicators. This has been a source of some complaints from the regulated companies.

f. Investment Regulation

As discussed above, water is the only industry covered in this report that has formal investment regulation. In the other industries investment is monitored by the regulator and although the regulator may at times make specific reference to individual investments there are no specific investment targets. The lack of formal investment regulation probably stems from the thinking that the industries considered are largely mature industries with reasonable infra-structure in particular in fixed network services. Water is the exception to this and is the case where most investment in basic infrastructure was deemed to be required.

As reviewed above, the water companies are allowed to increase prices in real terms in that their regulatory formulae are $RPI+K$ (rather than $RPI-X$). The K factor is different for each water company and this relatively lax regime was supposed to allow the water companies greater room to finance the investments required. The K factor does not depend in any strict way on the investment performance of the companies. However, many of the water companies have not actually reached their investment targets. In response Ofwat 'asked' these companies not to impose price rises to the full extent allowed by the formula and to a large extent the companies have complied with this 'voluntary' regulation. This compliance was probably as a result of the threat of a potential MMC reference if they did not agree.

Summary and Assessment

The regulatory experience with price cap regulation in the UK has been somewhat mixed. It is clear that large cost savings have been made by regulated companies and that hence many of the problems could be interpreted as problems of success. However, price cap regulation has been more complicated than envisaged, required more information than anticipated and the scope of regulation has tended to increase rather than decrease over time.

The experience to date suggests that if privatization leaves a dominant incumbent in an industry and one of the regulatory objectives is to increase competition then regulation that assists entry may be required. There are different regulatory strategies here but successful strategies appear to have been those that have acted asymmetrically helping entrants more than incumbents. The problems are accentuated when the incumbent provider of a utility service is also the owner of the network over which the service is provided. In these circumstances, regulation and competition may be complements and not substitutes.

In addition, there have been problems in the UK with the precise definition of the price caps (whether to allow price discrimination), with cost pass through (due to its poor incentive effects), with yardstick regulation (due in particular to statistical and measurement problems) and with quality and investment regulation which is informal in most industries. However, there is little discussion in the UK of returning to a more rate of return based regulatory system. Regulated companies understand the protection from regulatory risk offered by a price cap and regulators typically maintain agreement that the regulatory burden of price caps remains lower than that of rate of return regulation.

2.3 On the Institutions of Regulation

It is clear from the institutional discussion above that the UK has a very particular set of regulatory institutions. One interpretation is that the UK attempted to commit to a 'flexible but fair' regulatory framework that gave large discretionary powers to regulators. This has led to criticisms of too much discretion in the UK system and a lack of commitment to formal rules. The problem of commitment is potentially the critical problem for Latin American regulatory practice. Here we assess the UK experience to understand the problems of achieving commitment in a regulatory regime.

The formal 'regulatory contract' in the UK, sets up independent regulators (one per industry) but with the possibility of referral of particular problems to the general competition authority (the Monopoly and Mergers Commission - MMC) and the subsequent decision by Government minister aided by an MMC report. The formal position is then that the Government is a type of arbitrator of last resort with the MMC playing an advisory role.

However, this is only the formal position. The process of an MMC reference has large potential costs for both the regulator and the regulated firm and so has tended to be avoided by both parties unless absolutely no agreement was possible²¹.

The severe costs of a reference has allowed quite major changes to the operating conditions of regulated firms with no formal changes to license conditions. A good example is the set of undertakings agreed between the electricity regulator and the two privatised generators which effectively caps the spot electricity price and calls for the generators to make reasonable efforts to sell a significant amount of plant.

In general, the institutional arrangements discussed above plus the contractual incompleteness has allowed a considerable degree of discretion in the UK. Furthermore, given competing regulatory objectives different regulators have emphasised different objectives and in certain circumstances have used their discretionary powers to further those objectives. This has raised the debate that individual regulators in the UK have too much discretion and too much power and that their behaviour should be more tightly controlled.

It is clear that the UK institutional set-up has provoked a great deal of uncertainty in the industries concerned with long-running, costly disputes between regulator and regulated company. The costs of these disputes include manager, consultant, lawyer and regulator expenses as well as the more general effects of uncertainty on economic performance. These disputes have ranged from those concerning prices or other aspects of the regulatory formula to competition issues. To some extent they have also been to do with structure as for example, in gas the dominant incumbent argued that the regulator had placed British Gas at a competitive disadvantage with respect to competitors (e.g.: in gas supply). A more formal, rule based system with less regulatory discretion and more complete contracts would have reduced uncertainty in the UK and may have led to a system with fewer or less costly disputes. However, it should be noted that there has not been complaints of capture of the regulators by regulated firms.

A further aspect of the institutional structure of the UK that has been problematic is the issue of the multiplicity of regulators. In theory it might be supposed that a number of competing regulators might provide an efficient system where regulators compete in terms of efficiency and attaining regulatory objectives. Although, there may have been arguably some effects of this nature, the multitude of regulators has probably provoked more confusion than effective competition as regulators' duties are overlapping²².

²¹ Although, there are different types of references to the MMC, in practice it is difficult for either party to ensure a narrow reference remains narrow. This may be because one of the other parties (regulator or other regulated firms) may seek a widening of the reference or because of the interpretation of the reference by the MMC. Hence, even a narrow reference may bring an MMC inquiry into many aspects of the business. At the very least this will cause a massive disruption to normal operations taking up much senior management time, it will cause a very significant amount of information to be revealed to competitors, potential competitors and suppliers and customers and introduces tremendous uncertainty to the future of the company affecting company moral and investor confidence and hence affecting stock prices and bond yields and hence raising the cost of capital. The potential costs to the regulator of an MMC reference should also not be underestimated. These involve a potential loss of credibility of the regulatory agency if the MMC report does not appear to back the regulator and potential embarrassment and subsequent loss of personal political capital for the regulator him or her self. The recommendations of an MMC inquiry may also indicate areas where the regulator has over-stepped his or her mark. Furthermore, even if the regulator is supported by the MMC, there is a possibility that the Government will still take the opposing view and hence decide against the policies of the regulator also causing embarrassment. In short, although there is always the possibility of an MMC reference in the case of regulatory disputes, this is a very blunt instrument indeed in the UK with large potential costs to both parties. Hence, although regulators and regulated firms have frequently threatened references, actually references have been rather infrequent. Normally, the two opposing parties have come to a negotiated agreement.

²² Indeed, the role of the UK's Office of Fair Trading (which is vested with powers concerning consumer protection and unfair competition issues) versus the role of Ofgas (the gas regulatory agency) was one reason why British Gas sought a rather wide reference to the MMC on the structure of the industry and the power of the regulators. This has also been an important issue with respect to water and electricity where the

There are increasingly strong links between the regulated industries and yet the specific industry regulators have tended to act somewhat independently. For example, issues concerned with the nature of gas purchase contracts affect the way in which the electricity spot market operates and issues regarding electricity contracts and other electricity regulatory issues affect the development of the gas sector. Some commentators have argued in favour of a super-regulatory agency across all the regulated industries. A further possibility is to merge regulators according to sectors such as, Energy, Transport and Telecom Services (defined widely to include television and home entertainment systems). This reorganization might exploit economies of scale and scope in regulation and reduce the regulatory burden. The trade-off is that it might reduce 'regulatory independence' in the sense that an Energy regulator may become much more the focus of political pressure to pursue certain policy aims than maintain a specialised regulatory function. This may serve to increase rather than decrease regulatory uncertainty.

Summary and Assessment

Although the UK has a particular institutional structure with respect to regulation there may be aspects of the process of regulation of relevance to Latin America. First, regulatory discretion clearly comes at a price, namely increased regulatory uncertainty. This is probably accentuated by regulatory independence with a structure of many regulators. Secondly, although formal procedures may exist (for example with respect to arbitration), these should only be seen as a fall-back position and regulators and firms may arrive at substantial modifications by negotiation. The costs of the arbitration procedures for the parties concerned determine the extent that it will be used and the potential outcomes determine the bargaining power of the groups in a negotiated settlement. One interpretation is that the UK attempted to commit to a 'fair but flexible' regulatory strategy with high regulatory discretion but a high degree of flexibility. Regulatory independence was an attempt to gain fairness. The assessment here is that in hindsight there may be too much discretion in the UK system even for the UK and that arbitration procedures are too costly and burdensome. Certainly, for Latin America a more rule-based system will be required especially where regulatory independence will be difficult to achieve.

Section 3 : Latin America

Introduction

As mentioned in the introduction, the countries of Latin America have embarked on ambitious privatization programmes. These policies have been pursued for a number of reasons including fiscal pressures, the promotion of (foreign) investment, external debt reduction (through debt to equity arrangements) and the improvement of relations with international agencies and aid donors as well as microeconomic efficiency objectives. Furthermore, the timescale of the privatization programmes has typically been very fast indeed. The competing objectives coupled with the practicalities of effecting a very rapid privatization program have implied strong pressures on policies with respect to industry restructuring and regulation. However, there is also considerable variety in experience with privatization and regulation across the region.

3.1 Industry Structure²³

A broad summary of the scale of privatization and industry restructuring measures taken in selected utilities' industries is presented in Table 3 below for a selection of countries in the region.

industry regulator and more than one environmental regulator have overlapping powers (plus regulations from an EC level).

²³ Source OXERA (1993), World Bank and Inter American Development Bank internal sources and authors inquiries.

Table 3: Industry Restructuring in Utility Privatizations in Latin America

	Argentina	Brazil	Chile	Colombia	Mexico	Peru	Venezuela
Electricity	Wholesale privatization Vertical separation, competition in generation and supply	Limited Privatization No restructuring.	Wholesale privatization Limited restructuring competition in generation	Limited Privatization No restructuring	Limited privatization No restructuring	Wholesale privatization No restructuring. Competition.	Limited privatization imited restructuring. No Competition
Gas	Wholesale privatization. Vertical separation, limited competition	No privatization	No privatization	Limited ? privatization. Some restructuring planned.	No privatization	No privatization	No privatization.
Telecoms.	Wholesale privatization. Some vertical separation, competition only in cellular & via call-back	No privatization	Wholesale privatization No restructuring limited competition.	Limited privatization No restructuring, some competition.	Wholesale privatization. No restructuring, some competition	Wholesale privatization Some vertical separation, some competition	Limited privatization No restructuring No competition
Water	Limited privatization No restructuring, no competition	Limited privatization No restructuring	Limited privatization No restructuring	Limited privatization No restructuring	Limited privatization Horizontal restructuring, yardstick competition	Limited privatization No restructuring, .	Failed privatization tempt.

As can be seen from Table 3, many of the countries of the region have taken privatization measures in these sectors and many more are planned. Privatization measures vary from limited privatization in a particular area of a sector (for example virtually all countries have taken measures to attract private finance in electricity generation) to the granting of concession contracts to operate a utility service for a specific time period (e.g.: water services in Mexico city and in Buenos Aires) to the wholesale privatization of a sector (e.g.: Chilean and Mexican telecoms and electricity in Chile and Argentina). Naturally, restructuring measures are more common when wholesale privatization measures have been taken. However, in common with the UK, industry restructuring has in general been relatively rare in Latin America. Furthermore, where industry restructuring has taken place, this has largely taken the form of the creation of regional monopolies with less attention paid to the creation of competition.

A good example is that of the 1990 privatization of the **telecom** sector in Argentina where the existing state company (Empresa Nacional de Telecomunicaciones - ENtel) was split into two regional companies with regional monopolies (Telecom de Argentina and Telefónica de Argentina)²⁴. Furthermore, these two companies jointly own two additional companies which have a monopoly in international telephone and data transmission services (Telintar and Startel). Hence, although there was a substantial reorganization of the industry virtually no competition was created. The only areas where there is direct competition is with cellular phones (where there is currently a statutory duopoly) and in the supply of telephone equipment and appliances. The monopoly licenses for the two main companies run for 10 years. However, in the first instance they run to

²⁴ Entel enjoyed a national monopoly except in the provinces of San Juan and Mendoza where a separate state company, CAT, enjoyed monopoly rights.

1997 when a review is scheduled of the obligatory investment requirements placed on the companies. If the companies are deemed to have satisfied these requirements, then the statutory monopolies will run for the further three years to the end of the decade. Further examples in telecoms. are the privatizations in Chile, Mexico and Venezuela where there was virtually no restructuring and little attempt to increase competition save in the area of cellular services. In Peru, there was also no restructuring although there is currently a plan to introduce 'full competition' within a five year timescale.

As in the UK, the **electricity** sector has seen the most industrial restructuring prior to privatization, in particular in Argentina and in Chile. In Chile, for example, the law allows for competition in electricity generation which has been separated legally from transmission and distribution which are both regulated as monopoly activities. However, in practice, also in common with the UK, there are only two main generation companies. The state company, ENDESA, was privatized with much of its generation assets in place and ENDESA has some 65% of total installed capacity. A second company, Chilgener owns an additional 14% of installed capacity. There is also a significant amount of vertical integration as ENDESA owns

the main transmission system which is operated by its subsidiary, TRANSELEC. Finally, an investment group, ENERSIS, which now owns the main distribution company, Chilectra Metropolitana, also owns 17% of ENDESA. It is reported that even with this minority shareholding ENERSIS has considerable influence on ENDESA (a significant portion of the rest of the company is owned by small investors and by the Chilean pension funds) and hence essentially controls assets in generation, transmission and distribution. Therefore, although there was some restructuring in the Chilean electricity sector and the law certainly allows for the development of competition, the actual structure of the industry may stifle real competition developing²⁵.

Arguably, the privatisation process of the Argentine electricity system paid more attention to these structural issues with the development of competition seen as a relatively high priority. In Argentina there was a distinct vertical separation of generation from transmission from distribution and controls on cross-share holdings. The regionally-orientated, vertically-integrated large state companies involved in the sector (Servicios Electricos de Gran Buenos Aires - SEGBA, Agua y Energia Electrica - AyEE, and Hidroelectrica Norpatagonica- HIDRONOR) plus the state company operating the electricity grid (Servicio Interconectado Nacional - SIN) plus five further state generation companies were reorganized prior to privatization in a major restructuring. There are now over 20 generation companies, a main national monopoly transmission company under different control, (TRANSENER), and monopoly, regional distribution companies (the main ones are EDENOR, EDESUR and EDELAP). The vertical separation has allowed a form of competition to develop in generation. However, currently there is no direct price competition as plant scheduling is effected through historical cost-based pricing rather than through a bidding system as in the UK. There is also competition in the supply of electricity to large users given third party access agreements to users of the separately owned transmission system.

Elsewhere in Latin America, electricity privatization has been accompanied by virtually no restructuring to date. Examples include Brazil, Colombia, Peru and Venezuela although to date privatization in these countries has largely consisted of the sale of specific generation assets (or the use of private finance in building new plant). It is then feasible that the sale of the remainder of the electricity systems will include more vertical separation and the possibility of third party access to transmission and hence enhance the likelihood of competition developing²⁶.

In **gas**, there has been less privatization activity with Argentina standing out as one of the most interesting cases to date. The state company, Gas del Estado, was split between its transportation assets and its distribution businesses. The 1992 privatization created two, regional gas transportation companies, Transportadora del Gas del Norte (TGN), and Transportadora del Gas del Sud (TGS) and eight distribution companies with regional monopolies. As in the case of electricity there are strict rules on horizontal and vertical links between companies. All the transportation capacity of the system was allocated initially to the

²⁵ See Blanelot (19xx), (19xx).

²⁶ See Visitini (1994)

distribution companies under a 10 year contract. However, the terms of the contract allows for the release of an increasing quantity of transportation capacity during the life of the contract with the intention of the creation of a market for transportation capacity. The idea is then that independent gas supply companies could enter the market purchasing gas, transportation capacity and serving large users (at least those who do not need to use the distribution networks of the distribution businesses). In this way it is hoped that a competitive market, in at least one segment of the industry, will be developed. However, one structural problem in the Argentine gas sector is the high concentration of gas production. YPF, the largest Argentine oil company, currently produces about 55% of total gas production. Hence if a competitive market for gas transportation and supply to large users is developed, this market may have monopsonistic characteristics which will probably require careful attention by regulators.

In **water** there has also been less privatization activity to date. Where privatization has taken place it has consisted largely of private finance measures (Build Operate Transfer, BOT, or Build Operate Own, BOO) to build new or upgrade existing, specific water service plants. Exceptions are the granting of long concessions to operate and improve existing water service networks (interesting examples include the water concessions of Mexico City and Buenos Aires). Therefore, this privatization activity has been accompanied by virtually no restructuring and no head to head competition developing. However, in many cases concessions have been awarded on the basis of a competitive bidding arrangement (eg: Buenos Aires and Mexico City).

3.2 On the Form of Regulation

Given the general lack of industrial restructuring at the time of privatization in Latin American utility industries and the initial low level of competition, regulation will have to play a vital role. In similar fashion to the UK, regulation will be critical in (i) counteracting monopoly type behaviour and (ii) allowing competition to develop over time. This will require a careful balancing of static issues (and in particular static consumer welfare) and more dynamic issues such as investment and entry. In this section we describe the general style of regulation adopted in selected Latin American utility sectors. A selection of different regulatory rules in particular cases is presented in Table 4 below.

Table 4: Selective Regulatory Regimes in Latin America

Example of Price Cap Regimes

Electricity Distribution: Argentina, Chile, Peru, Venezuela

Gas Distribution: Argentina

Telecoms: Argentina, Chile, Mexico, Peru

Examples of Rate of Return Regulation

Telecoms: Venezuela (will be price-cap)

Water: Argentina (cost-plus)

In some instances regulation was poorly defined at the time of privatization. An example of this was the Argentine telephone sector where at the time of privatization, there was no overall regulatory framework in place. Given the previous discussion on the nature of formal and informal regulatory contracts, this does not imply that there was no regulation but rather that regulation, at this time, was largely informal and did not rely on a specific, stated regulatory contract. In turn this implies that the regulation was highly discretionary and it has been argued that this affected both the numbers of bidders in the privatization and the eventual sales price. Since the privatization, more formal regulatory rules have been agreed in this sector.

As Table 4 makes clear, where regulation has been defined formally, regulation has typically been of the form of price-capping or tariff-based regulation (RPI-X) rather than US-style rate of return. One exception to this is in Venezuelan telecoms where rate of return regulation has also been used for the first 4/5 years to be followed by price-cap regulation. An interesting mixed system is that in the Chilean electricity sector where a regulated price-cap is backed by a law which states that distribution companies should earn a global return between 6%

and 14% on assets employed. This then provides a higher degree of certainty over returns compared to a company in a pure price-cap regime.

Review periods

Formal review periods in Latin America are typically rather longer than those of the UK. Furthermore, there tends to be less opportunity for the price caps to be reviewed within review periods. Examples include Argentina electricity and gas and regulations being discussed in Peru. The Chilean electricity regulation does provide for more flexibility. However, in general price cap regulatory systems in Latin America tend to be more specific and inflexible than their UK counterparts. Furthermore, in some cases legislation has been adopted that governs how price caps will be reviewed. For example in Chile the telecom. law states exactly how a regression will be run to determine the equity cost of capital that will feed into the price review.

Cost Pass Through

Cost pass through type measures are also found in Latin America. First of all, price caps may be adjusted according to a domestic inflation rate or in some cases to an international inflation rate (eg: the use of US consumer price indices in the Argentine regulatory systems). Exchange rate factors are also a common component as are cost indicators such as wholesale price indices or fuel price indices. It is reported that the Buenos Aires water concession has some 14 cost indices representing a particularly complicated case.

Yardstick Regulation

Where industrial restructuring has occurred in Latin America, this has frequently taken the form of the creation of regional monopolies. Where there are a sufficient number of firms, this could potentially open the way to comparative regulatory rules or Yardstick regulation. An interesting example is the Mexico City water concession which was divided into four areas and awarded to four different companies. Further examples are the use of a theoretical 'benchmark company' in Chilean electricity and telecoms and the regional electricity and gas distribution companies in Argentina. However, formal regulatory rules concerning yardstick comparisons are likely to be very rare in Latin America. Rather, more informal comparisons will be useful to regulators at the time of adjusting price caps.

Quality Regulation

As in the UK, the early privatizations in Latin America paid little attention to the regulation of quality indices. This was true of telecoms. in Argentina and also of electricity in Chile. However, later privatizations have included quality control measures and have included devices such as fines for non-compliance with the quality targets imposed. In some cases quality regulation is extensive and fines have been substantial. This is the case of Argentine electricity and gas and also Mexican telecoms.

Investment Regulation

There are some interesting examples of the regulation of investment targets in the region. In Argentine telecoms. for example, the investment targets are regulated in part by means of a threat of an early introduction of competition in that if investment targets are not met in 1997, then the monopoly licences of the two privatized telecom. companies may be revoked. There is also formal investment regulation in Argentine electricity and gas.

Type of Tariffs and Cross Subsidies

Different styles of tariff formulae have been adopted in Latin America depending on the sector and country. In general, more tariffs have been defined per industry than the UK. In the UK firms may have some pricing flexibility with respect to an overall price-cap whereas typically in Latin America, there is little price flexibility. For example, in the Argentine electricity sector, distribution companies must set tariffs according to schedules which list prices for residential customers and industrial customers with separate prices for different levels of maximum demand. In Latin American telecoms., tariffs are normally specified separately for local calls, long distance and international and some countries also have a rate for inter-urban calls.

The related question of cross-subsidies has also been a problem in Latin America. For example in Latin American telecom. tariff schedules, long-distance and international rates generally subsidise local rates. In Mexico and Argentina the removal of such cross-subsidies to increase economic efficiency is a regulatory objective. However, increasing the cost of telephone rates in large urban centres is in general a sensitive political issue. In Argentina in late 1994 potential tariff reforms gained a great deal of publicity. A second example is in the Argentine gas sector where prices to industrial consumers subsidise domestic consumers. Regulation here also specifies the objective of seeking to rebalance these tariffs to lower this cross subsidy. This is likely to be an increasing problem for Latin American regulators as they wish to increase economic efficiency and increase competition.

Regulation and Competition.

Increasing competition is also a regulatory objective for many Latin American regulators. For example in Argentine electricity and gas where a vertical restructuring clearly allows for the possibility of third party access to network services on equal terms, the statements of the regulators are highly pro-competitive. Indeed, recently the Minister of Energy in Argentina has asked for views from affected parties concerning the introduction of a UK style bidding system in the Argentine electricity spot market to enhance competition. It is also likely that the gas regulators will seek further measures to enhance competition in the gas sector.

The telecommunications sector is however probably the sector where most action will be seen in terms of competition. Already there are some elements of competition from cellular services in many Latin American countries and some aspects of competition on fixed network services in Mexico. Peruvian telecom. regulators have specifically stated that 'full competition' should emerge within a five year time horizon and it is likely that even in countries where there are currently statutory monopolies (e.g.: Argentina and Chile) there will be pressures to increase competition in this sector. For example, Argentina, although faced with resistance from the local telephone companies, has recently allowed 'call-back' which brings some measure of competition to international services.

3.3 On Regulatory Institutions

On regulatory structures

In contrast to the UK where independent regulatory bodies were set up for each utility industry with some measure of independence from the Government in virtually all the countries of the Latin America, regulation of the utility industries is within the relevant government structures. Perhaps the most notable exception to this is Argentina where regulatory bodies were set up for each of the industries concerned (ENRE for electricity, ENERGAS for gas and, somewhat belatedly, CNT for telecoms). However, even in Argentina the regulatory bodies are accountable to the relevant ministry and questions such as telephone rebalancing and price cap reviews are likely to attract ministerial rather than only regulatory comment.

In other cases there may be some form of regulatory institution but with certain decisions taken by senior government officers. For example, in the Chilean electricity sector there are two relevant, sector regulatory agencies, (i) The Electricity and Fuels Superintendencia - which has responsibility on quality of service, technical aspects and general day to day supervision and compliance and (ii) the National Energy Commission (CNE) - which is charged with designing general energy policy and making proposals to Government including tariff proposals. The CNE is composed of seven secretaries of state and it also has a technical and staff directed by an Executive Secretary. Its role is largely one of ensuring a co-ordinated energy policy across different Government departments. It is the Economy Ministry that actually approves tariffs and concessions and generally oversees the economic regulation of the sector. In the Chilean institutional structure there is also an Antitrust Commission which has economy-wide responsibilities (including in the electricity sector and utility sector generally) on competition issues.

This discussion highlights the problem in Latin America of gaining regulatory commitment. In countries where there is a lack of a history of independent state institutions it is difficult to obtain a 'fair' regulatory policy ex ante without inflexible rules. This has led many commentators to suggest that very specific legal legislation may be required in some countries (although such legislation can always be changed subsequently)

or specific procedural legislation may be adopted where there is a history of the respect of 'fair and due process'. In some countries where there is neither commitment to specific laws (laws are changed rapidly) and a lack of respect for process, then specific contracts may be employed. However, even here a respect for contract law is required which in turn implies that there must be an independent and fair judiciary²⁷.

In practice, there is then a trade-off between the degree of discretion that can be allowed in a regulatory regime versus the degree of commitment to formal rules. In cases where there is little tradition of independent institutions able to commit to a 'fair but flexible' policy, there may appear little alternative than seeking highly inflexible procedures. However, this is a somewhat dangerous conclusion as it relies on obedience to the formal regulatory contract. Depending on a country's institutional and cultural characteristics, then a higher degree of inflexibility in a regulatory contract may simply imply a higher probability of renegotiation. In other words, the nature of the informal as well as the formal contract must be considered.

Section 4 : Discussion :

In this section we present a discussion of the material presented above and attempt to draw out the main lessons from the UK experience for Latin America. We present this discussion under a number of relevant headings.

On Structure

The optimal structure for an industry can be thought of as a trade off between the failures of regulation and competition. If competitive failures are large, for example where there are severe natural monopolies, it will be better to adopt a monopoly structure and regulate, noting that regulation is an imperfect incentive mechanism. Where failures of competition are likely to be slight, then it may be better to introduce competition, again noting that the model of perfect competition as found in microeconomic textbooks will never exist and that competition too can be regarded as a somewhat imperfect incentive mechanism. Arguably, regulatory failures are likely to be worse in Latin America than in the UK and hence the need to introduce competition is heightened.

A clear lesson from the UK experience is that it is better to restructure before privatization to introduce competition (rather than after). However, this advice has not in general been followed in Latin America (with one or two notable exceptions). In general privatizations in the utility industries have occurred with little industrial restructuring. Even where restructuring has occurred this has typically been to create regional monopolies with little introduction of head to head competition. Whilst we may speculate for the reasons for these policies, including the fiscal objective and the sheer practicalities of a large privatization program, it is undoubtedly the case that the lack of competition will place a heavy burden on regulators in Latin America. The structures created imply that the effort to reduce regulatory failures should be very serious indeed.

There are important exceptions. The electricity and gas industries in Argentina and in Chile were both restructured with an objective being the increase in competition that may ensue. However, even in the case of electricity in Chile, the restructuring has left substantial vertical and horizontal integration which may complicate regulatory problems in the future. Hence, Argentine electricity and gas stand out as the two cases where there has been substantial vertical separation and hence the possibility of third party access on equal terms which should aid competition developing.

Perhaps the highest cost of the lack of competition will be felt in the telecoms industry. Here the experience in the UK has been that technology changes have reduced the natural monopoly elements of telecom. service provision significantly and competition is both feasible and desirable in the supply of telecom. services over a fixed network²⁸. In Latin America however telephone companies have tended to be privatized with no restructuring (e.g.: Mexico and Chile) and where restructuring has occurred it has not created head to head

²⁷ See Guasch and Spiller (1995) for an elaboration of how to seek 'regulatory fit' and match regulatory institutions with a country's institutional endowment.

²⁸ Indeed there is now some doubt as to whether the network itself is a natural monopoly and as discussed above, there will be competing networks in the near future in the UK.

competition (e.g.: Argentina). Indeed in many of the countries of the region, telephone companies enjoy statutory monopolies on the provision of telecom. services. In the future regulators and their governments will face increasing pressures to liberalize such services and the industrial structures created may cause many future regulatory problems. What is required here is careful thought as to how to manage the transition to competition in this sector here dominant private firms have been created but where increasingly competitors will seek access to the fixed networks.

On the form of regulation

As there has been relatively little development of competition in utilities in Latin America, there will consequently be a heavy reliance on regulation. This implies that the regulatory rules should be well-defined and that careful attention should be paid to the regulatory process. However, regulatory rules have not always been well-defined in Latin America. This implies that the formal contracts are highly incomplete and regulation will be largely informal.

Where regulatory rules have been defined clearly, they tend to be more inflexible than the UK and tend to have longer regulatory review periods. This implies that there is a higher probability that one party or the other (and possibly both for different reasons) will seek to renegotiate the regulatory contract.

Furthermore, the process of regulation (as in the UK), has not received sufficient attention in Latin America. The lesson from UK is that the process of regulation is extremely important. In the UK, the use of informal rule-making allowed by the discretionary powers of the regulators under the formal contract has increased uncertainty and has increased perceived regulatory risk. In Latin America careful thought is required to design efficient regulatory processes and it is likely that more formal rules may be required to limit regulatory discretion and reduce regulatory risk.

In the UK the formal regulatory rules are somewhat inflexible and only subject to formal change through lengthy and costly inquiries. To some extent this has been copied in Latin America. However, in the UK the experience has been that such a system may create the incentives for more informal renegotiation of regulatory contracts thus avoiding costly and more public procedures. This may also be a development in Latin America which should be monitored carefully. Such a system that relies on informal agreements within a rather formal structure may be open to substantial abuse.

On Regulatory institutions

In the UK, the independence of the industry regulators from the government of the day ensured a reduction in government intervention in utility industries. In Latin America, regulators have not been endowed with strong independent powers but are typically highly dependent on the relevant government senior ministers. Although, experience to date is limited, it is clear that there has been a change in the operation of the ex-state companies, however it is perhaps too early to tell if the system will foster a culture of non-intervention within government in the concerns of the privatized companies.

In the UK, the regulatory independence is one of the corner-stones of the regulatory policy which gives companies some measure of confidence that changes in the regulatory rules will be free from political interference and hence to some extent reduces perceived regulatory risk. The system grants regulators a great deal of discretion, the question is whether such a system can create commitment to a 'fair but flexible' regulatory policy. Whether this has been successful or not has been discussed at length above.

In Latin America such commitment has been sought using other methods. First the creation of statutory monopoly rights for a fixed period of time can be seen as a type of commitment. Second, fairly inflexible regulatory formulae may also be seen as a type of commitment device. The problem is that these aspects could be changed as governments change or even as the view of the same government alters. The third commitment device has then been to attempt to make the regulatory rules difficult to change (locking in). For example, in Argentina the use of regulatory committees and the use of public hearings may limit the spectrum of possible changes in the formal regulations.

However, innovation is by definition unpredictable and affects not only costs but also the underlying economics of the utility industries, including the feasibility of competition. Latin American governments, as in the UK, may come under political pressure to tighten regulatory formulae, to liberalise and to seek positive measures to enhance competition. In other words, it is unlikely that an inflexible regulatory contract designed *ex ante* will be the optimal regulatory contract *ex post* and there may be changes to the regulatory contract sought by one or both parties. This implies that regulatory contracts will be re negotiated formally or informally over time.

Therefore, it could be argued that in Latin America there has been a substantial cost of not establishing (not being able to establish) independent regulators to provide a commitment to a 'fair but flexible' regulatory policy. The costs can be thought of as those related to the other commitment devices used including the granting of monopolies, inflexible regulatory rules and lengthy and costly dispute procedures. The last commitment device may prove particularly costly in combination with inflexible contracts.

This argument provides a role for a third party to act as a type of guarantor to a 'reasonable and flexible' regulatory policy. To some extent this might be considered the role of the IDB's and the World Bank's guarantee policies. However, some care needs to be taken here. Suppose the guarantee policy acts on a contract between the government and the private regulatory firm. This contract may be very completely specified or left less complete. If the guarantee policy forces contracts to be more completely specified then they may also appear more inflexible and hence a point is being chosen further down the flexibility - commitment schedule. This may have costs associated with it. However, if the guarantee is written on a contract that is not highly specified, then this implies that there will be much discussion on whether contractual commitments have been broken or not. In turn this will bring the IDB or the World Bank into the realm of international arbitrator but will shift the schedule out rather than simply choosing a point on it. To the extent that the IDB and the World Bank are attempting to promote good regulation, this may imply contracts should be flexible. In this regard the IDB/World Bank may act a little like the UK's MMC although decisions of the third party would have to have some form of binding commitment. However, this has institutional and political implications for these international organizations and their relationships to client countries.

Finally, a major problem that Latin American regulators will face in the future is how to manage the transition to competition. In the UK, this transition process has been particularly difficult in large part due to the lack of industrial restructuring. In Latin America, this is also likely to be the case as restructuring has also been relatively rare. In the UK, statutory duopoly policies (in telecoms), market share targets and asymmetric obligations on the publication of terms of sale (in gas) and the judicious use of regulatory discretion (e.g.: on cost pass through conditions in electricity) have all been used as devices to attempt to introduce wider competition in the different utility industries. The statutory monopoly in telecoms and the market share targets in gas did little to foster real competition. The asymmetric publication obligations also in gas were probably more successful. However, there has been very little research as to the effect of these regulatory devices on competition and which devices may serve well under different circumstances. It remains a very open question as to what devices if any Latin American regulators will wish to adopt to attempt to increase competition across fixed network services.

5 Conclusions and Future Research

Many countries in Latin America have privatized or are in the process of privatizing their utility sectors. In many respects these privatizations are following the case of the United Kingdom, where a large privatization program in the utility sector followed the privatization of British Telecom in 1984, and many countries in common with the UK have introduced price-cap regulation and are attempting to find ways of increasing competition in the provision of utility services.

We have reviewed several lessons from the UK experience. First and foremost, it is clear that to introduce competition, it is better to restructure prior to privatization rather than subsequently. The UK privatizations typically consisted of transferring a dominant incumbent from the state to the private sector and allowing competition. However, this formula has not been particularly successful in promoting competition which has been more difficult and more troublesome than many predicted. A critical problem has been access to networks where the relevant network is in the control of the dominant firm.

The experience with regulation has also been somewhat mixed. On the one hand the formal contract of price-cap regulation with independent regulators has provided incentives for cost reduction and efficiency even where there are monopoly conditions. However, price-cap regulation has also been more complex than first thought. There have been specific problems with the definition of price caps, with cost-pass-through regulations and with the practicalities of yardstick regulation. The early British privatizations also paid little attention to quality control with in many instances a lack of formal procedures and somewhat arbitrary links between prices and quality.

The problems of structure have also created a significant regulatory burden and regulators have sought different means to attempt to promote competition. This has meant that the regulatory burden has increased rather than decreased as competition has developed and that it could be argued that regulation and competition have been complements and not substitutes to date in the UK.

The informal regulatory contract is shaped by the institutions of regulation. The UK has a particular set of regulatory institutions which may not appear so relevant to Latin America. However, many have stated that the problems with the UK system have been a lack of commitment to formal regulatory rules and a great deal of discretion on the part of regulators and (hence) significant regulatory risk which may appear more familiar.

The argument presented above is that the UK attempted to implement a 'fair but flexible' regulatory system based on independent regulation but where regulators and firms have the chance to seek arbitration, in the case of regulatory disputes, from the Government through the medium of an inquiry by the UK's competition authority (the MMC). However, this has proved a very cumbersome and costly disputes resolution procedure and hence in practice regulators and firms have generally found agreement on changes to operating conditions informally. In turn this has led to the charge of regulators wielding too much power. The process has certainly led to a string of costly disputes which have added to the uncertainty in many industries.

The lesson is that in shaping the informal regulatory contract, the process of regulation is extremely important. Given the impossibility of writing complete contracts in these complex and dynamic industries, a regulatory system should contain built-in flexibility. In particular, there are likely to be negotiations of aspects not covered in the contracts or renegotiation of contracts in the light of unforeseen developments. However, such flexibility should be limited by attempting to lay down formal regulatory rules on how negotiations are conducted and how regulatory changes should be made. In the UK the formal mechanisms have proven too costly to use and hence informal mechanisms have developed. A second lesson therefore is that it is important to seek efficient disputes resolution procedures that are not too costly to be applied in practice.

To date the experience in Latin America has not been to follow these lessons from the UK experience particularly closely. First, although there are notable exceptions, there has been rather little in the way of industrial restructuring and yet Latin American governments and regulators have expressed a strong interest in promoting competition. This implies that there are likely to be severe problems in advancing competition in those industries where there are dominant incumbents to date.

Secondly, in some instances in Latin America, there is a lack of formal regulation. This implies that regulation will be informal and hence will be subject to a great deal of regulatory uncertainty and possibly political risk. Where regulation is defined, there is in general a lack of attention given to formalising regulatory processes. Where possible formal regulatory rules should be defined that define how negotiations should take place on important issues, such as tariff reform etc. Furthermore, there is in general a need to define disputes procedures and here the lesson of the UK should be heeded closely. A highly costly disputes procedure is likely to be circumvented by more informal agreements.

Fourth, given the many privatizations in Latin America which have not been accompanied by industrial restructuring the topic of the late 1990's and the next decade may be how to actively promote competition in these industries. Although the UK has some lessons in this regard (e.g.: policies that treat incumbents and entrants asymmetrically are likely to be more successful than those that are symmetric), further research is required in this specific area. In the UK regulators have used different methods with mixed success but in general this is a topic that has not received adequate attention in the literature.

Finally, unlike in the UK, the regulatory institutions of Latin America tend to have little separation from the government of the day. This has raised fears of regulatory risk. Arguably, Latin American governments have attempted to seek commitment through other routes. Indeed the granting of monopoly concessions (and the information and other advantages that then ensue) could be thought of as one way of attempting to gain commitment. Furthermore, Latin American regulatory regimes tend to be less flexible than the UK. But this may simply increase the probability of costly renegotiation,. This cost can be thought of as a cost of not being able to commit to a 'fair but flexible' regulatory regime which was the attempt in the UK.

The likelihood of renegotiation may imply a role for a third party agency as a type of arbitrator of last resort. This role could be played by the World Bank or by the Inter-American Development Bank. To some extent, the guarantee policies of these institutions may force them to act in this role. If guarantees are specified on highly specific contracts, then guarantees are likely to be called and the renegotiation will take the form of the what penalties if any to impose on the country. If guarantees are written on flexible contracts then not there will be much discussion of whether contract terms have been broken or not.

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