

Economic Regulation in the Telecommunications

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ABSTRACT

The economic dimension of regulation is concerned with the imposition of controls on entry, exit, prices, outputs, service supplied, markets served, consolidations, and profitability in particular industries. Furthermore, economic objectives of regulation may be matched with 'market failure' situations which can be examined under, particularly, natural monopoly.

Findings of this study indicate that: the relationship between competition and regulation shows that privatisation cannot be a solution to everything. Privatisation only leads to a change of ownership, but it is the competition or the effective regulation which really matters as far as increasing performance and channelling investment into the telecommunications sector are concerned. The process is complex and there is no single model or design due to the multitude of factors, conflicting interests, and interrelated events that are involved. It should, however, be underlined that because the situation has been difficult in each country, one cannot generalise these experience.

Key Words: Economic Regulation, Telecommunications, Privatisation,
Price Control Formulation, Competition, Rate-of-return
Regulation

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1. Introduction

Competition, no doubt, provides an incentive system that encourages private firms to behave efficiently; however, in some industries the conditions of competition do not exist or existing conditions are weak. For this reason, there is a need for regulatory policies and governance to influence both private sector firms and privatised enterprises by establishing appropriate incentive systems to guide their economic decisions. Moreover, the need for regulation of economic activities is often justified as a policy instrument to minimise the effects of market failure such as the situations in which the firms operating in the market fail to achieve overall welfare. This study reviews the relationship between ownership and efficiency and presents a number of reasons why we need to regulate privatised utilities. In the end, it also does some suggestions in terms of the interrelation of privatisation, competition and regulation.

2. Ownership vs. Efficiency

The analysis of privatisation in terms of economic or pragmatic perspective is not contemporary. In the 1750s, Adam Smith advocated privatisation to create more revenue and more efficiency as follows:²

Though there is not at present, in Europe, any civilised state of any kind which derives the greater part of its publick revenue from the rent of lands which are the property of the state; yet, in all the great monarchies of Europe, there are still many large tracts of land which belong to the crown. They are generally forest; and sometimes forest where, after travelling several miles, you will scarce find a single tree; a mere waste and loss of country in respect both of produce and population. In every great monarchy of Europe the sale of the crown lands would produce a very large sum of money, which, if applied to the payment of the publick debts, would deliver from mortgage a much greater revenue than any which those lands have ever afforded to the crown. In countries where lands, improved and cultivated very highly, and yielding at

² The author quotes at length because Adam Smith's views are significantly important to the privatisation exercise.

the time of sale as great a rent as can easily be got from them, commonly sell at thirty years purchase; the unimproved, uncultivated, and low-rented crown land might well be expected to sell at forty, fifty, or sixty years purchase. The crown might immediately enjoy the revenue which this great price would redeem from mortgage. In the course of a few years it would probably enjoy another revenue. When the crown lands had become private property, they would, in the course of a few years, become well-improved and well-cultivated. The increase of their produce would increase the population of the country, by augmenting the revenue and consumption of the people. But the revenue which the crown derives from the duties of customs and excise, would necessarily increase with the revenue and consumption of the people (Smith, 1976, p. 823-824).

Adam Smith employed economic analysis to support the private ownership of public-owned land. In other words, government ownership or government action is not necessary to achieve widespread or public benefits.

Since efficiency is the concept around which most of the economic literature written on privatisation is centred, a brief discussion of what it means is in order. There are two aspects of efficiency used in the discussion of privatisation: (a) productive or technical efficiency results when the lowest cost method of producing output is utilised. If technical efficiency can be achieved, there will be no more wasted; (b) allocative efficiency refers to the situations where resources are combined so as to produce the socially optimal level of output. It is a measure of the extent to which relative output prices in the economy as a whole reflect their scarcity (i.e. the equality of marginal social cost and marginal social benefit) (Vickers and Yarrow, 1988).

Having defined efficiency in the context of privatisation, it is significant to understand that in the neoclassical theory of the firm the relationship between ownership and performance is tenuous. There is no separation between ownership and control and efficiency is seen mainly as a function of market and incentive structures. In other words, the claim that private ownership is inherently more efficient than public ownership is not supported in neoclassical microeconomic theory. However, the subsequent development of the behaviour and managerial theories of the firm provided new understanding regarding the objectives of the firm and deviate from the neoclassical assumption of profit maximising. The economic arguments

about the relationship between ownership and performance rest on a number of theoretical hypotheses and paradigms developed by the property rights, X-efficiency, and principal agency theory. Analysing this relationship based on the above theories has focused on how the differences in objectives and constraints between public and private organisations affect their incentive structures, monitoring systems, and access information.

The assertion that private companies are more efficient and thus potentially more profitable than public companies within which these companies operate. Argument in favour of privatisation do not apply equally to firms operating in non-competitive markets. In such cases, the possible gains in productive efficiency have to be weighted against the potential loss in allocative efficiency.³ The allocative inefficiencies that could result from divesting government-owned enterprises (GOEs) could be extensive in cases where capital markets are underdeveloped, market failures are common, and the institutional capacity of governments to regulate private monopolies is limited. Hemmin and Mansour (1988) claim that gains in allocative efficiency can be achieved if privatisation is accompanied by policies that promote competition. The link between ownership change and competition lies in the effect of competition on the cost of information. Competition generates information and lowers its cost for the owners of the companies in the market, regardless of ownership, resulting in enhanced efficiency and improved monitoring of management behaviour. Therefore, one can argue that changes in a firm's performance have more to do with the nature of competition than with the form of ownership itself. Competition also drives prices towards their welfare-maximising levels by eliminating monopoly profits. The effects of competition can vary, however, in the case of a number of the developing countries. Where GOEs still predominate, the competition generated by private ownership will be slight. Where only a few sectors of the economy have been privatised, usually in low income countries, the effects of competition are likewise limited (Ott and Hartley, 1991).

In conclusion, a synthesis of the theoretical literature shows that the degree of efficiency gains by a firm depends on ownership as well as market structure. In general we can say that private enterprises with the objective of profit maximisation operating in competitive markets are superior to large public enterprises facing monopoly markets; that small public enter-

³ 'Allocative efficiency' is defined as the situation where consumers are provided with the quantity and quality of output they most value.

prises facing competitive market conditions can do not better than private enterprises in the same circumstances, but can do considerably worse; and that in large monopoly markets, theoretical predictions are ambiguous depending on the institutional details in place. Finally, it may be too simplistic to view privatisation in DCs as universally effective in solving agency problems with the public sector. In cases where market failures are serious, government intervention frequently continues after privatisation. These examples of government interference include renationalisation, tighter regulations, high profits taxation, and restrictions in sales in the secondary market.

3. The Need for Regulation in the Telecommunication Sector

There are three classes of market failure, namely problems of asymmetric information, problems of externality and problems of market power, which require regulation of economic activities. However, amongst the three markets failures the most outstanding case for economic regulations is based on the argument of market power enjoyed by natural monopolies. The statement is that in enterprises characterised by scale economies, allowing more than one producer will lead to duplication of facilities and lead to productive efficiency (Parker, 2001). Several of the nationalised industries can be regarded as 'natural monopolies' in economics, such as water, sewerage, electricity, gas and telecommunications. They can be considered as essential infrastructures for the economy as a whole.

Natural monopoly is defined as "an industry in which least cost provision of a good or service requires that no more than one firm be in production" (Domberger, 1986, p.270). The existence of natural monopoly where unit costs decrease continuously with increasing scale, as is the case with electricity or gas distribution, telecommunications or railway services. Once a network is established, it becomes continually cheaper to add extra consumers. For example, with wire-based technology, competition in the local telephone network would mean an extra set of cables being laid in each street. Since the initial expense would be too large, a new entrant at this level is most unlikely and there is, therefore, a tendency to monopoly provision. In other words, negative externalities connected with telecommunications sectors can occur either directly, such as destruction of natural landscape or sealing the soil, or indirectly via the operation of services on the

respective telecommunications, such as noise, pollution, accidents, lacking protection of personal data etc. Direct negative externalities occur in the telecommunications sectors surrounding physical networks (Denkhaus and Schneider, 1997). Consequently, competition would incur wasteful duplication of fixed assets, but it is necessary to introduce a variety of regulation to avoid monopoly power being exploited to the detriment of consumers.

“The natural monopoly argument has at least three weaknesses. The first is that it is far from clear that cost conditions are naturally monopolistic with today’s technologies. Secondly, if naturally monopoly conditions do in fact exist, the removal of barriers to entry would probably not be followed by actual entry, but it would have desirable incentive effects on the incumbent firm or firms. This provides an argument for liberalisation when there is uncertainty about whether natural monopoly conditions exist. Thirdly, freedom of entry generally has beneficial effects on the behaviour of incumbent firms. As well as allowing the possibility of competition in the product market, it sharpens incentives for internal efficiency, and it tends to undermine the chances of collusion between incumbent firms” (Vickers and Yarrow, 1988, p.239). As a result, there are two important issues raised with respects to these industries. The first issue is whether it is feasible to introduce competition for at least a number of the products or services provided by these industries. Secondly, where competition is impractical is a mode of regulation required and how can it be most effectively implemented? (Kay, Mayer, and Thompson, 1986). These natural monopolised industries are usually provided as goods and services with connections to households from a network. Therefore, they often have played a very important part in the economic activities.

Another common phenomenon concerning telecommunications sectors is “the fact that the service related to those sectors are often subject to political goals such as obligations to nationwide uniform rates, conveyance obligations or social fares. These are often referred to as merit goods for which an undersupply situation will occur when they are purely governed by market forces and consumer sovereignty” (Denkhaus and Schneider, 1997, p. 103). The problem of large-scale indivisible or high risk projects which cannot readily be financed through commercial channels, for example, unclear power stations. The social cost of these risks can be minimised via the risk-pooling and the risk-spreading effects of public financing. A telecommunications network is similarly significant, especially for business and economy. If the service provided by enterprises is inappropriate in some way, or price

unfairly, it can quickly become a political issue regardless of ownership of the industry.

Because of the tendency of natural monopoly, high risk, negative externalities, and political sensitivity, governments have historically favoured outright ownership of telecommunications sector. However, privatisation has occurred in areas of infrastructure including telecommunications and this is likely to continue. Moreover, no government could entirely sell telecommunications to private owners due to many complex reasons, although it could use instruments rather than ownership. Even if telecommunications sector was sold to the private sector, government would maintain fairly tight control through regulations.

Hayek seriously suspects whether the best way of controlling utilities is under public ownership in which monopoly is inevitable, particularly if more than one enterprise is involved (1994, pp.146-147):

Even if railways, road and air transport, or the supply of gas and electricity, were all inevitably monopolies, the consumer is unquestionably in a much stronger position so long as they remain separate monopolies than when they are ‘co-ordinated’ by a central control. Private monopoly is scarcely ever complete and even more rarely of long duration or able to disregard potential competition. But a state monopoly is always a state-protected monopoly—protected against both potential competition and effective criticism. It means in most instances that a temporary monopoly is given the power to secure its position for all time—a power almost certain to be used. Where the power which ought to check and control monopoly becomes interested in sheltering and defending its appointees, where for the government to remedy an abuse is to admit responsibility for it and where criticism of the actions of monopoly mean criticism of the government, there is little hope of monopoly becoming the servant of community.

Then, he suggests the preferable alternative in terms of the argument:

The probability is that wherever monopoly is really inevitable the plan which used to be preferred by the Americans, of a strong state control over private monopolies, if consistently pursued, offers a better chance of satisfactory results than state management. This would at least seem to be so where the state enforces a stringent price control which leaves no room for extraordinary profits in which others than the monopolists

can participate. Even if this should have the effect (as it sometimes had with American public utilities) that satisfactory than they might be, this would be a small price to pay for an effective check on the powers of monopoly. Personally I should much prefer to have to put up with some such inefficiency than have organised monopoly control my ways of life.

Not only competition but also regulation increasingly should be involved in the process of privatisation of the telecommunications sectors. Even after the privatisation of telecommunications governments cannot entirely withdraw themselves from the sector. Some are due to telecommunications sectors remain the matter of political significance even as they were privatised, especially their price and conditions of supply. Some are because of the absence of establishing a competitive framework at the beginning. Governments made it more difficult for the competitive framework to set up. Moreover, there is the conflict over price between a specific regulation office and the enterprise in the absence of effective competition. That will lead to 'capture regulation'⁴. In other words, the reason why regulation increases is that in a natural monopoly or a legal monopoly environment a large number of technical and economic rules are set within the organisation, for instance concerning standards, interconnection and inter-operating procedures. When more players become involved, many of these internal rules become external. In order to make sure that one firm or one player does not exploit another, particularly if it has a dominant position or advantage, regulation becomes increasingly significant (Muller, 1995). In sum, competition and regulation must be the twin side of the privatisation of the telecommunications sector. Even though competition is placed at the forefront, a great deal of progress has been made towards the long-term goal of turning what had been a natural monopoly into a private, competitive, and unregulated industry.

4. The Concept of Regulation

Anthony Ogus (2001) states that there are two forms of analysis in relation to regulation. The first one is 'public interest analysis' which involves

⁴ The capture model implies that the special interests of both the regulator and the regulated will dominate over the public interest.

three dimensions: identifying and explaining instance of market failure; investigating alternative methods of correcting the failure; and predicting the response of actors to the different methods, with a focus on the minimisation of administrative costs, especially information and enforcement costs. On the other hand, it is 'private interest analysis' stemmed from 'public choice' which seeks to explain how regulatory principles and structures may diverge from what is desirable in terms of the public interest, so that politicians and bureaucrats may be motivated to achieve the demands of private interest groups who seek the advantages which regulation cast in a particular form may confer on them. This completely has some implications for the procedure element of 'good' regulation, because it becomes necessary to investigate what constitutional and procedural arrangements can best constrain behaviour of this kind.

In the OECD report (1997), regulation refers to the diverse set of policy instruments by which governments set up requirements on enterprises and citizens. Regulations include laws, formal and informal orders and subordinate rules issued by all levels of governments and rules issued by non-governmental or self-regulatory bodies to whom governments have delegated regulatory powers. Regulation, in general, explains the idea of the imposition of controls, restraints, and the application of rules. Swann (1988, p.14) makes a distinction between two modes of regulation: self-regulation and, regulation may be imposed externally.

Externally imposed regulation is created by government departments or some institutions which enjoy a degree of independence such as commissions and boards. The external regulation is supported by Schumpeter's views on monopoly. Schumpeter (1950, p.99) claims that, "... pure cases of long-term monopoly must be of the rarest occurrence ... can hardly persist for a period long enough to matter for analysis of total output, unless buttressed by public authority ... Even railroads and power and light concerns had first to create the demand for their services and, when they had done so, to defend their market against competition. Outside the field of public utilities, the position of a single seller can in general be conquered—and retained for decades—only on the condition that he does not behave like a monopolist". This kind of regulation can be divided into three categories; antitrust; economic regulation; and social regulation. Antitrust regulation is a form of regulation which seeks to force businessmen to compete. But there are some industries in which competition may not be feasible (i.e. natural monopolies such as water, electricity, and telecommunications), this

is where economic regulation occurs. Regulation is also has a social dimension in the context of seeking to protect public interests. In this research, the focus will be on the externally imposed regulation in general and economic and social regulation in particular.

4.1 Objectives of Regulation

Objectives of regulation can be divided into two groups: one group is concerned with economic objectives, and the other is related to social objectives. The economic dimension of regulation is concerned with the imposition of controls on entry, exit, prices, outputs, service supplied, markets served, consolidations, and profitability in particular industries. The social dimension of regulation takes into consideration the protection of consumers from potentially adverse effects of competition. According to OECD, 'regulations' can be divided into three categories (1997):

- i. **Economic regulations** intervene directly in market decisions such as pricing, competition market entry, or exit. Reform aims to increase economic efficiency by reducing barriers to competition and innovation, often through deregulation and use of efficiency-promotion regulation, and by improving regulatory frameworks for market functioning and prudential oversight. Economic regulation is "invoked where there is insufficient competition" (Ogus, 2001, p.5).
- ii. **Social regulations**⁵ protect public interests such as health, safety, the environment, are social cohesion. The economic effects of social regulations may be secondary concern or even unexpected, but can be substantial. Reform aims to verify that regulation needs, and to design regulatory and other instruments, such as market incentives are goal-based approaches, that are more flexible, simpler, and more effective at lower cost.
- iii. **Administrative regulations** are paperwork and administrative formalities—so-called 'red tape'—through which governments collect information and intervene in individual economic decisions. They can have substantial impacts on private sector performance. Reform aims at eliminating those no longer needed, streamlining and simplifying those that are needed, and improving the transparency of application.

5 'Social regulation' "deals with such matters as health and safety, environmental protection and consumer protection and tends to be justified by reference to externalities and asymmetric information" (Ogus, 2001, p.5).

Regulation, therefore, can be defined as "the use of public authority to set and apply rules and standards" (Hood, Scott, James, Jones, and Travers, 1999, p.10), then go on to set out the different ways in which such a definition is made operational... A distinction may then be made between the 'regulation of business' (the controls exerted over private, non-state activities) and 'regulation inside government' (the controls exerted within and between government agencies, and between levels of national government). We might also add 'international regulation' (regulation of national governments by supranational mechanisms); 'self-regulation', constituted by less formal alternatives than legislative or administrative rulemaking; and 'metaregulation', which implied an overarching system for reviewing regulatory mechanism with government policymaking processes. Finally, the notion of 'deregulation' falls with the field of analysis because of the essential relationship to regulation, while competition provides a significant framework of objectives for regulatory systems (Cited from, Minogue, 2001, p.5).

Furthermore, economic objectives of regulation may be matched with 'market failure' situations which were discussed about in the last section. This provides a reason for regulation of public utilities. So, one of the main objectives is to prevent monopoly activities by increasing competition. On the other hand, the main social objective of regulation is to protect public interests. It is said that public interest theories are based upon the assumption that in their dealings with industry, government departments seek to maximise economic welfare. The rationale for this approach is that such bodies are themselves agents for, and therefore properly should act in their best interests of, the wider public. Distributional objectives of regulation might be derived from the public interest approach. In the case of a privately-owned firm, if shareholders are typically more wealthy than the average taxpayer a government concerned with redistribution might wish to reduce transfer payments from taxpayers to shareholders. Moreover, irrespective of the type of ownership, low-income households often account for a substantial fraction of the sales of some utility industries (because income elasticities of demand for the goods are low) in which case the government might attach extra weight to consumer interests for distributional reasons (Vickers and Yarrow, 1988, pp.27-28).

4.2 Modes of Regulatory Control

Milton Friedman, declares his views on monopoly in Capitalism and

Freedom that, "... when technical conditions make monopoly the natural outcome of competitive market forces, there are only three alternatives that seem available: private monopoly, public monopoly, or public regulation. ... All three are bad so we must choose among evils. ... I reluctantly conclude that, if tolerable, private monopoly may be the least of the evils". In addition, he states and explains that "if society were static so that the conditions which give rise to a technical monopoly were sure to remain. I would have little confidence in this solution. In a rapidly changing society, however, the conditions making for technical monopoly frequently change and I suspect that both public regulation and public monopoly are likely to be less responsive to such changes in conditions, to be less readily capable of elimination, than private monopoly". Furthermore, Friedman takes the regulation of railway as the instance and points out, "the choice between the evils of private monopoly, public monopoly, and public regulation cannot, however, be made once and for all, independently of the factual circumstances. If the technical monopoly is of a service or commodity that is regarded as essential and if its monopoly power is sizeable, even the short run effects of private unregulated monopoly may not be tolerable, and either public regulation or ownership may be a lesser evil". In the end, he concludes that, "technical monopoly may on occasion justify a de facto public monopoly. It cannot be itself justify a public monopoly achieved by making it illegal for anyone else to compete" (1962, pp.28-9).

Therefore, the processes of regulation control that have developed have differed widely in mode and scope. Some regulatory systems have established price caps that effectively constraint the price that can be charged for a particular service. This mode of regulation control is attempted to offer incentives to reduce costs in order that the savings achieved can be used to increase profitability for the owners of the utilities. Other modes have commonly comprise profit regulation, which sets up ceilings on the permitted rate of return, or cost of service regulation, in which the regulator approves a profit mark-up on an agreed cost of providing a service (Martin and Parker, 1998). As a Result, there are two modes of regulatory control which are known widely; the first one is rate-of-return regulation which has been adopted mainly in North America, the second one is price control formula, which has been substantially employed in the UK.

4.2.1 Rate-of-return Regulation

A common type of regulatory control is a rate-of-return regulation. The

basic idea is that the level of profits which the regulated enterprises is allowed to make is limited to that required to provide a pre-specified fair rate-of-return on the enterprise's rate base—a measure of the firm's capital assets. Kay, Mayer, and Thomas (1986, pp.22-23) point out the limitations of this approach as follows:

The main limitation is the over-capitalisation effect identified by Avenrch and Johnson. The enterprise can increase its total profits by increasing the size of its assets upon which the allowable profits rate is computed (provided, that is, that the allowed rate-of-return exceeds the cost of capital of the firm). There is therefore an incentive to choose techniques of production which are too capital intensive.

The main focus of regulation is pricing policy. Rate-of-return regulation also has an effect on price-setting behaviour; it encourages the use of multi-part tariffs, price discrimination, and in a variety of circumstances, the setting of prices below marginal cost for those activities which are comparatively capital intensive. Rate-of-return regulation provides the solution that prices should be such that an allowed 'fair' rate of return on capital is earned. But what is 'fair' rate of return and what measures of the capital based should be utilised? In addition, there is the possibility of the company making decisions influencing its capital base partly with a view to affect the prices it is allowed to charge.

Another problem with this method is 'regulatory capture'. It is claimed that regulatory institutions established mainly to protect the interests of consumers against the potential market power exercisable by an industry may come to form a symbiotic relationship with the regulated enterprise in which they effectively promote the interests of the industry as well as, or instead of, the interests of the industry's customers. This kind of situation may arise for a number of reasons but there is a particular danger where the regulatory body is heavily reliant on the regulated enterprise for the information and analysis which it requires to discharge its formal functions.

It has been indicated that the U.S. experience of rate-of-return regulation also demonstrates the extremely detailed and time-consuming regulation which evolves in practice to back up a rate-of-return regime.⁶ Due to these limitations of the system, Beesley and Littlechild claim that it should

⁶ Oftel Report, January 1988, p.3.

not be thought of as a relevant accompaniment to privatisation.

4.2.2 The Price Control Formula

“The difference between the monopoly price and the competitive price of the commodity in question provides a margin in which maximum prices could be enforced without defeating the ends sought by the government. . . . The maximum price could re-establish the competitive price and increase demand, production, and the supply offered for sale”. He states it would be paradoxical to introduce such measures where monopoly prices are the outcome of government interference. However, “things are different in those rare instances in which monopoly prices come into existence without assistance from the government. Here governmental maximum prices could re-establish competitive conditions if it were possible to find out by academic computation at which height a non-existing competitive market would have determined the price” (Mises, 1963, p.375).

Disadvantages of the rate-of-return system led to the development of another type of regulatory control system which are designed by Sir Stephen Littlechild for the telecommunications industry in the UK. He explains the system as follows:

The price of a bundle of telecommunications services should not increase by more than X percentage points below the retail price index (the RPI-x formula) for a period of five years. This could be applied to any set of services. The level of x would, in practice, be the outcome of bargaining between British Telecom (BT) and the government, an exhaustive costing exercise is not called for. The purpose of such a constraint is to reassure customers of monopoly services that their situation will not get worse under privatisation. It holds the fort until competition arrives, and is inappropriate if competition is not expected to emerge. It is a temporary safeguard, not a permanent method of control. The one-off nature of the restriction is precisely what preserves the firm's incentive to be efficient, because the firm keeps any gains beyond the specified level (Beesley and Littlechild, 1986, p.42).

Littlechild claimed that the simplicity of the proposed scheme and the absence of significant scope for discretion by the regulatory authorities reduced the danger of regulatory capture. He insists that the RPI-x formula gives enterprises a greater incentive to reduce their costs than US-style

rate-of-return regulation, and ensures that the consumers get the benefits of efficiency improvement (Littlechild, 2000). However, RPI-x of regulation provides good incentives for efficiency immediately after a review point, but as time passes the firm's calculations are increasingly influenced by the benefit to be gained from affecting the outcome of the next regulatory review. As that time approaches, the firm will have little or no incentive to decline costs if its future prices are positively related to its current cost level (McBeth, 1996). Vickers and Yarrow (Kay, Mayer and Thomas, 1986, p.231) take a slightly more cautious view; they have doubts as to whether the level set for the first five years of the regulatory control (RPI-x) places a particularly rigorous constraint upon BT. Separate protection against anti-competitive pricing will also be necessary. Both of these questions indicate that there are disadvantages as well as advantages arising from the simplicity of the price control formula. Vickers and Yarrow (1988, p.240) claim that if the specification of x for the next five-year is, in effect, based upon BT's actual cost performance then the price regulation control will in practice become very similar to the rate-of-return regulation with all of its associated disadvantages.

As can be seen, the British RPI-x system is very similar to the American style rate-of-return regulation. If the only alternatives are the rate-of-regulation and the price control formula for a developing country, the rate-of-return would be preferable, because of the difficulty in setting up a price control system for a period of five years. Even if it was set up, it would be difficult to be realistic since there would be considerable uncertainty in its operation.

It is difficult to judge the RPI-x scheme until the evidence becomes available on its performance. The discussion of Vickers and Yarrow shows that the problems of rate-of-return regulation may be hard to avoid in a regulated private monopoly. They suggest an alternative; basically it is the imposition of an effective incentive scheme on the managers of assets that remain in the public domain (Kay, Mayer, and Thomas, 1986). It has been said that it is not difficult to devise a system of penalties and rewards that encourage managers to implement efficient practices. The problem is one of determining what an efficient cost of production actually is.

Consequently, there is a hybrid between a price cap and rate-of-return regulation, 'sliding scale regulation'. Once profits increase to an agreed level in any year are immediately adjusted downwards. This method of regulation has the advantage of automatically sharing the benefits of efficiency

gains between producers and consumers; but it has the weakness of introducing disincentives for management to pursue efficiencies so that not all of the savings are maintained by the company. Its use has been rejected in the UK (Parker, 2001, p.14).

4.3 Constraints on Regulation

After the above brief survey, it seems to be a general consensus that "monopoly is not as widespread or permanent or problematic as generally believed; that such monopoly as does exist is most likely attributable to government restrictions; that regulation of potentially competitive markets is likely to induce shortages or be counter-productive; and that a little intervention is likely to breed more. It is difficult to disagree with most of this. But utilities are acknowledged as an exceptional case, where . . . monopoly and against regulation do not necessarily apply" (Littlechild, 2000, p.15). Government ownership of utilities is regarded undesirable in that it is likely to be loss-making or too powerful, and likely to prolong the monopoly.

However, there have often been two main criteria applied to assess a good system of regulation; one which enables the utility to raise finance for investment at an acceptable cost; and also offers incentives for efficiency in operation, pricing, investment and innovation (Newbery, 1994; 2001). "Regulation also has to satisfy the demands of both investors and consumers, which can at times be conflicting. Consumers generally demand quality service and low prices, whilst investors demand adequate returns on their stake" (Cook, 1999, p.551). The most important constraint on regulation is information. The situation can be illustrated as a relationship between a firm and a government. The firm has to make decision about prices, outputs, capital investment, product quality, and so on. The government might seek to regulate some of these variables (for example prices or profits) but unless it is unusually well informed about industry conditions and behaviour, it is unlikely to be able to regulate the firm's activities. It is this limited information that poses the central problem for the government. The government can only order the firm to do something that is feasible, but it may not know what is feasible.

If the government and the firm's managers had access to the same information about industry conditions and the firm's behaviour, then the regulatory problem could be solved by simply directing the managers to implement the socially optimal plan given the information available. In reality, however, managers are much better informed about industry conditions

than are the firm's owners and regulators, and their behaviour can be monitored only imperfectly. As Vickers and Yarrow (1988, p.99) pointed out, there is very closed analogy between (a) the problem that a firm's owners (public or private) have in giving managers incentives to act in the owner's interests, and (b) the problem that government regulators have in giving a regulated firm (or its managers) incentives to act in the public interest.

In the light of these explanations it can be said that provision of information to regulatory bodies had vital importance, because of the high social return which will be gained.

5. Policy Suggestions and Conclusion

Telecommunications monopolies will tend to maximise profits in a way which does not maximise social welfare, because of their decline marginal cost and the inelastic demand for their services. Regulatory structures after privatisation of GOTEs have become more involved and complicated. Cases studies of telecommunications, electricity, and water services reveals that creating effective regulation and a competitive environment is a difficult and slow process (Cook, 1999; Wellenius and Stern, 1994). Consequently, there is a continuing need to evaluate which regulatory systems work best and to understand the factors that inhibit the development of effective regulatory processes.

The regulation in the industry should seek to optimise the telecommunications sector performance by (a) creating an environment that is conducive to long term investment and (b) enforcing effective measures to moderate or prevent the abuse of monopoly power (World Bank, 1994, p.65). There is another reason why regulation rises. In a natural monopoly or a legal monopoly environment a great deal of technical and economic rules are set within the organisation, for example, concerning standards, interconnection and interoperating procedures. When more operators become involved, many of these internal rules become external. In order to make sure that one enterprise or one player does not exploit another, particularly if it has a dominant position, regulation becomes increasingly significant (Melody, 2000).

Moreover, evidence for the superiority of private over public enterprise is mixed and inconclusive, the real difference is monopoly and its associated inefficiencies rather than ownership (Cook and Kirkpatrick, 1995; Martin and Parker, 1998; Shirley and Walsh, 2000; Cook, 2001). In other words, it is

evident that regulation rather than privatisation achieved the largest gains (Cook, 1999). As competition increased, new regulatory priorities emerged, and issues of regulatory autonomy, particularly, gained prominence (Kerf, Schiffler, and Torres, 2001). Some issues of regulation must be introduced after reform. These issues are complex, interrelated, and sometimes, in conflict (Wellenius and Stern, 1994, pp.111-112):

- i. Prevent the incumbent operator from abusing its dominant position to prevent competition.
- ii. Ensure that a private monopoly does not make monopoly profits.
- iii. Continue to promote certain economic and social goals, including universal service.
- iv. Ensure adherence to certain technical standards.
- v. Ensure that equality-of-service standards are maintained.
- vi. Monitor licence conditions and ensure that laws and regulations are respected.
- vii. Deal with interconnection problems.
- viii. Regulate tariffs and contribution payments for network development.

With the privatisation of the telecommunications sector newer, sometimes less political influenced, regulatory systems have been established. Most have concentrated on the need to improve economic efficiency and curb abuses of monopoly power. Modes of price-cap regulation have been established in Argentina, Mexico, Venezuela, and Malaysia. Chile has adopted benchmark regulation while Jamaica and the Philippines have rate-of-return regulation (World Bank, 1995).

It has been difficult for a variety of DCs to build sound regulatory systems with respect to competitive behaviour, service obligations and pricing policy (Cook, 1999). In Venezuela, a temporary regulatory agency had to be established by presidential decree because it was not possible to demonstrate a new telecommunications law before the privatisation of CANTV. As the original Argentine regulatory entity, it lacks funding. In Argentina and Mexico the regulatory agencies began very slowly. In Chile where relied on a mix of sector-specific regulation and antitrust law has been rather slow in handling with critical issues. In reality, it has been difficult for many countries to establish sound regulatory structures in relation to service obligations, interconnections and competitive behaviour. Anti-competitive prac-

tices have remained and the full cost of the failure to build effective regulatory regimes, as for example in Argentina, continues to remain largely unknown (Wellenius and Stern, 1994). Competition is often impeded by factors other than a dominant operators or inappropriate access rules. Often tariffs are way out of line with costs. Unregulated competition would result in cream skinning and significant losses that are required to cover, for instance, universal service obligations. As a consequence, tariff reform must accompany regulatory reform to make sure that proper pricing signals are used (Muller, 2000).

The experience of telecommunications privatisation in DCs reveals more questions for wider discussion in the context of globalisation. The experience of Jamaica, for instance, shows that the absence of an understanding of global telecommunications enterprises left the country with a regulatory system that provides strong incentives for expansion of the telecommunications network but weaker incentives for efficient telecommunications operations (Wint, 1996, p.69). Moreover, lack of progresses in developing effective regulatory institutions and processes is realised by some observers as symptomatic of a lack of government will to regulate the sector. On the other hand, the impact and cost resulting from slow start-up of regulation has also been addressed, for instance, in Chile issues of new entry to the basic services market have been under accessed by the telecommunications regulatory agency and litigated in the antitrust and regular courts for several years without coming to closure. This has delayed new services to consumers who would benefit from competition and has immobilised substantial amounts of equipment purchased by one of the operators. In Argentina, lack of regulation by the regulator regarding clarifications of the scope of the concessions of the two regional privatised operating firms reportedly has led to slower investment (Wellenius and Stern, 1994).

The relationship between competition and regulation shows that privatisation cannot be a solution to everything. Privatisation only leads to a change of ownership, but it is the competition or the effective regulation which really matters as far as increasing performance and channelling investment into the telecommunications sector are concerned. The process is complex and there is no single model or design due to the multitude of factors, conflicting interests, and interrelated evens that are involved. It should, however, be underlined that because the situation has been difficult in each country, one cannot generalise these experience. Telecommunications sector reform is essential especially for the countries in the increasing-

ly competitive and information-based world economy. Modern and inexpensive telecommunications have become the major determinant of economic competitiveness. Consequently lives and obligations to invest and perform as well as institutional ives and obligatioives and obligations to invest and perform as well as institutional arrangement that frees the operators from unwarranted controls yet protects users and settles commercial interests with wider development objectives. Similarly, the privatisation of TELEMEX of Mexico reveals that ownership, competition and regulation are not independent policy variables, but a set of loosely connected tools whose important interactions are yet to be understood (Ramamurthi, 1996, p.103). The development of the telecommunications industry largely hinges on building up: (a) diversity of supply and competition; (b) participation of private capital and enterprise; and (c) effective public regulation (World Bank, 1994, p.6).

In short, telecommunications privatisation has preceded the development of effective regulation and competition. The development of regulatory structures is limited by the capacity of governments to enforce regulatory rules and monitor contracts. Fostering conditions that encourage competition and lessen anti-competitive behaviour by incumbent is a beneficial but slow process (Cook, 1999). Regardless of the specific regulatory structure, successful and effective regulation must require: political will in the government to make it work; prominent regulatory leadership committed to serving the public interest; profound management of the regulatory process, including knowledge of the industry; qualified professional staff in the various related disciplines; equal and open decision-making mechanisms accessible to all the parties affected; and actions that respond to the broad political goals of the government (Wellenius and Stern, 1994). As a result, effective regulation is basically a political problem. It can be established only where there is strong government support and understanding of its goals, especially government will and commitments to regulate the sector. Experiences of countries also suggest that the development and establishment of effective regulation is a continuous and not a one-shot exercise.

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析論經濟管制與電信

鄭國泰*

摘要

經濟面向的管制致力於解除過去為避免自然獨占被私人所濫用所為之管制措施。本文研究發現：民營化，管制和競爭之間無庸至疑地環環相扣，且各有其必要意涵；研究其間的互動關係，吾人將確立民營化絕非孤立的概念或政策，也非唯一的萬靈丹。再者，電信是當代基礎建設很重要的一個環節，不但可以對其他部門提供必要且立即的服務，更是一國經濟發展和提昇競爭力之必要建設。由於資訊科技迅速發展和變遷，更加速了電信產業日進，當然更增加其過去所沒有之可能被私人濫用之危險性；因此，除了發展出適合該國系絡之經濟管制模式外，公營電信民營化更需要發展出競爭的市場結構，以及管制的環境及治理，方能有助以提供電信業者有效的誘因和責任，並能有助於減少制度設計中之不必要的控制，進而確保顧客之權益及為社會帶來更多的利益。

關鍵詞：經濟管制、電信、民營化、競爭、價格管制模式、報酬率管制模式

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