WPS 1419

POLICY RESEARCH WORKING PAPER

1419

Industry Structure and Regulation

Martin C. Stewart-Smith

With increasing private provision of public infrastructure and redefinition of the role of government, key questions must be addressed: How should providers of infrastructure be regulated? Sustainable success in regulation requires reforming the structure of each sector in a way that clearly defines the role of competition and the objectives of regulation—and making clear distinctions among the functions of policymaking, policy implementation, and operations.

Background paper for *World Development Report 1994*

The World Bank
Legal Department
Legal Reform and Private Sector Development Unit
February 1995

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Summary findings

As private firms become increasingly involved in the development of key infrastructure, redefining the role of government from that of service provider to regulator presents both challenges and opportunities. The factors that give rise to sector reforms color how much policymakers invest in regulatory design during the reform process.

Nevertheless, two factors are essential to sustainable sector and regulatory reform. First, the right structure must be established for the industry concerned, a structure that allows competition appropriate for that industry. Second, the objectives of regulation must be well defined, with a clear distinction between policymaking, policy implementation, and operations.

The extent to which competition can be harnessed to help make regulation efficient, effective, and sustainable depends on the intrinsic technical characteristics of the sector. Each decision affects the sustainability of the regulatory regime in the face of the threat of regulatory capture (both political and commercial).

Careful regulatory design is crucial not only for successful sectoral reform but also to balance the interests of various actors (government, consumers, developers, investors, and financiers). One model that has been relatively successful combines new entry, unbundled services, and the unambiguous spelling out of the legal rights and duties for both public and private service providers, administered by an autonomous regulatory authority. Problems with regulation often result as much from inadequate attention to sector structure and fostering competition as from weaknesses in the regulatory authority's institutional capacity.

As for the tools of regulation, despite differences in some details between licenses and concessions (and their many contractual variations), these are basically instruments that establish the rights and obligations of the contracting parties. Choices about where these rights and obligations are located in the legal hierarchy are shaped by a country's institutional capacity and legal traditions. But the existence of instruments to establish those rights and obligations does not eliminate the need for institutions to administer them, and thus carry out the regulatory function.

Establishing effective sectorwide regulation can be difficult in a developing country, but it is necessary. Policymakers will be able to create effective regulatory regimes where adequate attention is given to sector structure, competition, and institution-building.

This paper — a product of the Legal Department, Legal Reform and Private Sector Development Unit — is part of a larger effort in the department to share with interested parties legal policy research done as part of the department's operational work. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Nicola James, room MC6-448, extension 82758 (49 pages). February 1995.

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Legal Department
The World Bank

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INDUSTRY STRUCTURE AND REGULATION

In this paper, the term "infrastructure" is used to refer to the key sectors of an economy such as telecommunications, electricity generation, transmission and distribution, water and sewerage, roads, ports and airports. In addition, the term "Regulator" is used to refer to those entrusted with the supervisory role of government in terms of policy implementation, and does not assume a bias towards any particular structure (individual or number of persons) or location (within or outside of a particular government Ministry).

I. Introduction

In the process of state sector reform, infrastructure has presented particular challenges and opportunities. While the demands imposed by users seeking higher levels of service and price responsiveness have increased, so too has the capacity of the private sector to provide capital, technology and management expertise for infrastructure development and operation. However, the provision of infrastructure has been typically reserved to the public sector, often by laws, government directives, or even constitutional provisions. In recent years, experience has shown that two key ingredients, industry structure and regulation, have emerged as tools to catalyze the private provision of infrastructure. These ingredients are key because they serve to impact directly upon the sustainability of the regulatory regime and its capacity to resist pressures to take account of extraneous commercial or political factors.

On the other hand, during the reform process, the amount of investment or commitment by policy-makers in designing a regulatory framework which gives attention to these key ingredients depends on a number of factors. These factors include the availability of technical assistance and know-how and their funding. Furthermore, the pressures which gave rise to the reform in the first place also impact upon the commitment to regulatory design -- for example a reform program which is aimed at maximizing privatization receipts is likely to result in less attention being given to designing a regulatory regime which actively promotes competition between multiple operators.

In addition to these constraints on regulatory engineering, the intrinsic technical characteristics of the sector, (such as electric power generation or water supply) significantly

influences the extent to which these ingredients can be harnessed to lighten the regulatory burden without impairing its effectiveness or sustainability.

II. Industry Structure

Factors for Change

In infrastructure, as in any other area of economic activity, there is a dynamic to the economic and political forces that require response and adaptation over time.[1] It was not long before the twin shock waves in the early 1980s of deregulation, which emanated from the United States, and privatization, which emanated from the United Kingdom, impacted upon infrastructure sectors such as airports, telecommunications, gas, water and electricity as a natural progression to both the policy changes brought about at the political level and an extension of the deregulation and privatization program in other sectors of the economy, such as trade and finance.[2] The influences of these shock waves are evident in many developing and newly industrialized countries where the factors which gave rise to them in industrialized countries are shown as applicable in the context of development.

An example may be drawn from the telecommunications sector. The dramatic pace of technological development over the last decade in this important sector has given rise to significant policy reviews both in industrialized and developing countries. Customer demand, not only for the basic services of voice telephony, but also for quality value added services is exerting considerable pressure on traditional approaches to operation and management. In many industrialized countries this policy review has led to full privatization, such as in the United Kingdom and Japan, although the regulatory frameworks differ. Privatization of the telecommunications sector has also found its way onto the agenda in many developing countries, such as Mexico, Argentina, Chile, Hungary and the Czech Republic. In addition, sectoral restructuring, corporatization and deregulation without privatization are being actively explored.

Greater efficiency

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[1] Due to the capital intensive nature of infrastructure, be it telecommunications, water and sewerage, power generation and distribution or gas, the ability of these sectors to adapt to the dynamics of changing requirements and pressures inevitably leads to a slower process of change than in other sectors such as trade and finance.

[2] For example, in the United Kingdom, the Thatcher government first tackled firms like British Aerospace, Enterprise Oil and Jaguar -- none of which raised any particular regulatory or structural questions. In finance, deregulation involved the lifting of foreign exchange controls. However, by 1984, the government had turned to address the privatization of British Telecom, the first in a series of public utilities with enormous market power.

Aside from political considerations, but closely related to and directly under the influence of them, is the desire to bring about greater efficiency in key sectors of the economy in question. Historically, both bilateral and multilateral development agencies have promoted enterprise reform as the predominant spur to improve efficiency, but with control and ownership remaining firmly in government hands. Over the last few years however, private sector participation has been shown to be a viable instrument in the toolbox of policy-makers in sectors previously thought to have been the sole domain of the state. The traditional argument against private sector provision of public services and infrastructure centered on a wish on the part of government to be able to control the activities of industries so fundamental to the economy of the nation -- a rationale which lay behind, for example, the nationalization of electricity both in developed and developing countries. However, over the last decade, solutions have emerged in terms of combinations of industry structure and regulatory regime which permit private participation whilst allowing government control of the fundamentals of the sector. This is not to say that these solutions provide immediate answers to the complex difficulties of barriers such as subsidization[3] or tariff imbalances[4] and outright opposition by enterprise management. These issues of course need to be addressed, but they are more questions as to the political capital of the government sponsoring the reforms rather than questions to be resolved by industry and regulatory structures.

Improving the fiscal balance

In many developing and newly industrialized countries there is a growing realization that the historical organization of entire infrastructure sectors as integrated state monopolies is often not the most efficient way to provide key services, such as telecommunications and electric power. Recent experience has shown that monopolies are not inevitable, and have often been sustained by barriers to entry. There is considerable evidence to show that such sector structures provide ample opportunity for abuse of monopoly power, especially where the institutional capacity for effective regulation is weak. Even in developed countries it has been shown that

[3] For example, in Great Britain the nuclear levy, which is a subsidy on the costs of nuclear power, will continue for a number of years after privatization. The regulatory regime takes account of this by placing a license obligation on each of the 12 regional power distributors to purchase certain quantities of non-fossil fuelled power -- known as the NFFO, or "non-fossil fuel obligation".

[4] For example, significant cross-subsidization is evident in the power sector in Peru and in telecommunications in India. Generally, the telecommunications sector as a whole is a profitable one, even when the quality of service is poor, although it is quite common to find the tariff structure such that the provision of local services is heavily subsidized by trunk and international services and that without tariff rebalancing, particular local services would be uneconomic.

integrated state monopolies lead to major operational inefficiencies and overmanning.[5] The traditional view that the benefit of economies of scale derived from state monopolies outweighs the drawbacks of monopolistic behavior has been largely discarded, with a renewed focus on creating accountability in the provision of services through accounting to shareholders for matters such as loss of market share or poor returns on investment, coupled with the tool of arms-length regulation to ensure quality of service to end-users.

Inefficiency has of course not been the only impetus to revise sector structure and privatize.[6] The need to stem the significant drain on government budgetary resources was, and still is, a major factor for change, especially where the country was in acute budget deficit.[7] This goal is manifest at two levels. The first (which is complementary to the goal of increasing efficiency) is the reduction of the burden in terms of responsibility to make good operating expenses overruns, meet capital expenditure requirements and subsidize prices to users. The second level, which is the desire to maximize privatization receipts, is actually more likely to be at odds with other goals, such as the introduction of competition into the sector in question. It follows that there often exists a tension between policy

Traditionally, telecommunications networks and related services were considered a natural monopoly; a public utility performing a public service function. In addition to the monopoly of the fixed network, legal and technical barriers to competition by new entrants were the norm, thus adding to the monopoly power of the national provider. However, the development of lower cost exchange systems and network components has reduced the technological barriers to new entrants. This is also true in the case of mobile cellular technology. Nevertheless, whilst in most cases the technological barriers have been lowered by innovation, the legal and regulatory barriers have not developed with the technology and are often such that the state owned provider is constrained in its ability to meet user demand. Historic under-investment in the telecommunications sector in developing countries has led to poor quality service, equipment shortage and, in some cases, the rapid development of "quick fix" solutions which are costly and are arguably of short term benefit only.

1 *Telecommunications*

[5] For example, after the privatization of the telecommunications sector in New Zealand there was an overall price reduction of 44% in real terms for a basket of services by 1992. In addition, the number of access lines per employee increased from 85 in March 1989 to 163 in December 1992 and staff numbers fell from 24,500 in 1987 to 13,600 in 1992. Likewise, in the United Kingdom, overstaffing in the electric power industry was reduced both in the run-up to and after the privatization of the sector and the true cost of nuclear power was brought into the open.

[6] In the British privatization program, apart from improving efficiency the government's goals included reducing the public sector borrowing requirement, widening share ownership to the public at large, reducing government involvement in enterprise decision-making and the determination of public sector pay, and increasing employee share ownership.

[7] As international capital markets question further lending and multilateral agencies review policy, it is interesting to note the effect these influences are having in promoting power sector restructuring through privatization, especially in Latin America.

objectives, which may translate into a conflicting agenda for sector restructuring and the subsequent role of regulation.[8]

The privatization of British Gas, which was undertaken without unbundling of the sector, gave rise to important lessons which were applied by the British government to the privatization of electricity. The essential lesson was the importance of sector restructuring (in the sense of segmentation) before privatization.

Chile also made such mistakes in a privatization program for electricity which allowed cross-ownership and failed to unbundle generation and transmission. Industry structure and ownership concentration in the energy sector are therefore still problem issues in terms of their impact on regulatory effectiveness.

In Peru, however, early indications are that in the context of the forthcoming power sector privatization, the importance of restructuring before privatization (by means of a horizontal separation between generation, transmission and distribution) in terms of its impact on future regulation is recognized, based on lessons learned in other countries.

2 *Restructuring and privatization: country experience*

The early rush to privatize, due to the belief in privatization as a possible cure to the numerous problems so evident in key sectors such as power generation and telecommunications, meant that, in practice, the development of a "new regulatory framework" was often left to be dealt with as an afterthought. This was partly due to a vagueness about exactly what the regulatory framework was supposed to achieve. Over the last few years however, a clearer understanding has emerged that a piecemeal approach to industry structure and regulatory methodology is likely to deliver an unpalatable cocktail with unpleasant side-effects in the medium to long term. This understanding is based on experiences drawn from both developed and developing countries.

The starting point is therefore a long hard look at the industry structure of the sector concerned, not only in terms of understanding its present standing and how each of the services are packaged together (which goes to the understanding of the technical aspects of the sector)[9] but also in order to understand fully the implications for regulation of a particular model. This analysis of industry structure also means that the policy-makers will need to have a clear vision of what the sector should look like after privatization, in terms of structure in the medium to long term. Too often so-called regulatory failure is caused not by a failure of the regulatory processes themselves, but a lack of attention to detail in the appraisal of structure and in

[8] Though the view of the World Bank is that economic efficiency must prevail. Objectives such as raising privatization receipts should only be accommodated to the extent that they do not conflict with the main objective of improving efficiency : S. Kikeri, J. Nellis and M. Shirley *Privatization: The Lessons of Experience*, World Bank, 1992.

[9] In both natural gas transportation and electricity transmission for example, in order to allow open access to operate truly on non-discriminatory terms and to be able to police pricing most effectively, it is necessary to unbundle the services of transportation or transmission from the energy element in the overall end-user price.

addressing these issues in both law and regulation -- in other words, regulatory failure is more likely to stem from a failure to tailor the regulatory regime to the industry structure to be adopted.[10]

The inter-relationship between Sector Structure and Regulation

The realization that structure is the starting point allows the policy-maker to develop a clear formulation of the government's policy objectives for the sector concerned post restructuring, and to make the vital decision as to the structure of the industry to achieve those objectives. There is however a close relationship between structure and regulation. Adopting a particular structure for the sector, even if it is to remain unchanged, will have very real implications for the type of regulation and its effectiveness. In terms of the impact on regulatory effectiveness, the extent of the unbundling in the power sector in Great Britain has for example allowed the regulator, an individual supported by technical staff, three key advantages:

- easier information flow from the privatized companies; if one is proving difficult, another can be a useful verifying cross-reference -- this is particularly true of the twelve regional electricity distribution companies;

- a yardstick on performance, not just in prices, but also in terms of customer service standards and all other regulated activities; and

- competition in generation and supply since the electricity industry has been divided horizontally.[11] Competition is a strong ally to the regulator.

An example of this inter-relationship between the type or style of regulation and sector structure may be drawn from natural gas transportation to illustrate the trade-offs between the

[10] The term "regulatory failure" is widely used, but is in fact very subjective as it depends from which standpoint one is considering the failure. Regulatory capture, however, is perhaps a more helpful term and is a risk for all regulatory models. Regulatory capture results when the regulatory authority falls under the undue influence of either government, which is generally termed *political regulatory capture*, or the utility, which is referred to as *commercial regulatory capture*. In either case, the effect is to reduce significantly the ability of the regulators to act in an independent manner in accordance with the regulatory brief given on appointment.

[11] The entire power sector was horizontally divided between generation, transmission and distribution with competition being introduced in generation and supply, both at the wholesale and retail level. In addition, a spot market for power trading was established, called the Pooling and Settlement System. Some large industrial users have become pool members themselves, whilst most others have entered into direct purchase contracts with the generators.

amount of sector unbundling undertaken and the resultant impact on the type of regulation which needs to be instituted.[12] If a gas transportation pipeline operator is prohibited by law from trading in gas on its own account,[13] the economic incentives are very different from those of a pipeline operator who may also trade in gas. The pipeline operator will welcome requests for transportation services, since this will be its only source of revenue. If, however, the operator trades in gas itself, by allowing third party access it is diminishing its own ability to earn profits on the trading of gas that could have been carried utilizing that relinquished pipeline capacity -- it will therefore not be in the commercial interests of the operator to allow third party access, or at least allow access without attempting to discriminate as between itself as gas trader and third party users.[14] The decision to be taken by the policy maker is therefore whether or not to require the unbundling of trading and transportation. This decision needs to be taken in full appreciation of the likely consequences for effective regulation. Broadly, if the transporter is permitted to trade gas on its own account, the regulatory regime will need to be more invasive and proactive in order to ensure compliance with any open access obligations imposed. Also, the regulatory authority will need greater institutional capacity to be able to deliver under the terms of its brief.

In the power sector, complete vertical integration of generation, transmission and distribution as an industry structure will mean that intrusive *ex ante* regulation will be necessary in order to minimize monopolistic behavior against new entrants. Conversely, where the structure of the industry is more fragmented, regulation may be lighter The existence of multiple providers and unbundled services affords the regulator greater opportunity to obtain accurate and useful information, which is vital to effective regulation.

3 *Structure and regulation: the power sector*

Taking this illustration a stage further -- i.e. beyond looking at what economic activity is undertaken by the players in the industry concerned -- the same economic effect as a pipeline operator trading in gas may be brought about by cross-ownership structures at shareholder level or through nominee shareholdings that have the same effect in terms of economic incentive as allowing direct trading. This then raises complex questions as to what limitations are to be

[12] That is, regulation *ex ante* or *ex post*, proactive or reactive.

[13] With the limited exception of certain dedicated pipelines, this is the case in Argentina.

[14] Gazprom, the Russian gas producer and transporter presently allows some third party access to pipelines when convenient, but legal priority is given to Gazprom's own gas as over third parties. In addition, third party users are generally required to pay for transportation services in hard currency, even though production and sales may be domestic.

placed on cross-ownership and how they are to be policed, by the regulator or by merger controls in the country's anti-trust laws.

Fundamental decisions, such as where in the sector competition is to be introduced or the nature of the mechanisms to be used to regulate and protect, will therefore flow directly from decisions taken in relation to industry structure.[15]

Competition -- Can it be effectively introduced and where?

The importance of competition as an effective means of bringing about efficiency in sectors such as trade and finance is widely known. In sectors such as water and sewage, roads, electric power and telecommunications, the feasibility of introducing competition requires careful consideration. Where the policy maker is minded to introduce competition, two basic questions arise: how far should competition be introduced into the sector, and how is that competition to be introduced?

The answers to these fundamental questions will shape the future of the sector. For example, in relation to telecommunications, should the introduction of competition be limited to value added services only or include basic telephony?[16] In electric power, should competition be limited to generation, or should it be extended to distribution activities?[17] If so, to what level? In finding answers to these sorts of questions, the policy maker will need to have due regard for the particular nature or technical characteristics of the sector in question. This is simply because the introduction of competition is likely to be inherently easier in some

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[15] In the restructuring of the electric power sector in Great Britain prior to privatization, the decision to separate generation, transmission and distribution allowed the effective introduction of competition in generation and supply, leaving transmission and distribution as regulated natural monopolies. In Chile, where the almost unique opportunity exists to develop the natural gas industry from scratch, it is recognized that considerations as to future industry structure will directly affect the role, methodology and success of future regulation.

[16] Given the rapid development of new technology in telecommunications, attempts to define distinctions between value added and other services rapidly become constraints to entry in themselves, contrary to original intentions. Nevertheless, in the privatization of British Telecom, for an initial period of the duopoly of British Telecom and Mercury, cable companies were only permitted to offer voice telephony in conjunction with one of the duopolists.

[17] A distinction can be drawn between distribution as the physical network, plant and apparatus, which is still regarded as a natural monopoly, and the *activity* of distribution over these assets, which may be carried on by any person. Competition at the retail level was introduced in Great Britain by means of this distinction -- the former being the "wires business" and the latter being referred to as the "supply business".

sectors than in others.[18] Even within a particular sector, competition may be easier to introduce in certain parts of the sector as against others. The classic example of this is the relative ease with which competition in generation may be allowed in the power sector as against the provision of other services, such as transmission and distribution. Due to the importance of the particular nature of infrastructure sectors and the differences between them, set out below is a short summary of the salient features of telecommunications, power, natural gas and transport.

A. Telecommunications

Given the relative economies of scale of fixed networks and the need for efficient allocation of capital resources, governmental reviews of the telecommunications sector in developing countries often result in an approach which involves a mixed system of a monopoly national provider (made more operationally efficient, where possible) with the promotion of competition in certain services. One particular example would be the introduction of competition in areas such as equipment supply, both in terms of equipment sourcing and authority to supply.

Whilst there is this blend, the policy will generally tend to give more emphasis to one of the following objectives: either (a) the extension of the network and thus the level of telephone penetration, using modern technology where possible,[19] leaving value added services to follow in due course; the policy goal is, in short, to enhance the networks, be they at a local or national level, as quickly as possible; or (b) the improvement in the quality of service and facilitation or promotion of competition by permitting or encouraging new entrants into one or more of the three main sectors of the telecommunications market, namely (i) the supply of apparatus for connection to networks; (ii) the provision of services over networks and (iii) the running of the networks themselves.

Depending on the nature of its particular telecommunications sector, each country will emphasize these objectives differently. Where there is low penetration with disproportionate concentration in centers of population, the emphasis will be upon increasing the level of basic services by increasing basic voice telephony penetration and developing a wider network in

[18] For example, competition in roads is hard to conceive. However, in Argentina, the use of concessions for stretches of 100km has allowed the private sector to operate and maintain toll roads. In Hong Kong, the Tate's Cairn Tunnel was constructed by the private sector to connect Shatin and the New Territories to East Kowloon and in Thailand the Don Muang Tollway is planned to connect the international airport in Bangkok with the Bangkok Second Stage Expressway (Source: Princeton Pacific Group).

[19] For example, build operate transfer (BOT) schemes for private systems which interconnect to the national network.

geographic terms. Where there is significant penetration, but poor call completion rates or high call charges, the response will be to introduce competition in local and long distance services, as well as products aimed at the business community such as cellular or leased lines. Where privatization is pursued, each country is likely to adopt a different stance as to what parts of the telecommunications sector should be opened to private investment. The relative emphasis given to these objectives will flow through to effect the form of legal and regulatory framework which will be brought into being, and the extent of deregulation.

If the primary policy objective is the rapid physical extension of the network rather than competition and deregulation considerations, and if the achievement of that goal is perceived as requiring the participation of foreign strategic investors (which is often the case as such investors provide not only capital, but also the necessary know-how and technology), it is likely that the host government will assign low priority to the development of a regulatory framework which facilitates competition in the short to medium term. This is principally due to the preference on the part of governments to offer monopoly privileges in order to preserve a degree of cross-subsidization so that monopoly rents can be applied to fund network expansion, especially for rural services[20] -- an emphasis on exclusive franchises as over direct competition[21] which is questionable given the rapid developments in technology which can erode in practice the monopoly rights granted in the license, concession or law.[22] The result is effectively to defer consideration of a regulatory framework which facilitates or promotes competition as a matter to be dealt with in the future.

On the one hand, a policy which limits direct head-on competition and focuses on system or network expansion is understandable given the significant demand in many developing countries and the desire to spread investment as widely as possible. A period of limited competition may be considered highly desirable in terms of the amount of time needed to reduce subsidies, rebalance tariffs and downsize in staffing so as to be enable the existing operator to compete with new entrants on a level playing field.[23] Alternatively, a policy of allowing

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[20] Rural telecommunications, in particular public call offices, can in fact be highly profitable in their own right.

[21] In addition, those who are most likely to benefit from the promotion of competition and choice -- the consumers -- are often the least mobilized and organized as against the interests of industry.

[22] Callback, for example, is in practice significantly eroding the monopoly rights of CANTV in Venezuela on international services. This allows a call which originates in Venezuela to trigger a return call from the original recipient without the first call being completed. As a result, the actual completed call originates from outside Venezuela.

[23] In practice, this adjustment period can provide a window of opportunity to the incumbent operator to

(continued...)

limited new entry may be deemed expedient in order to foster the new entrant so that it may present real competition in the future; this was the cornerstone of the duopoly policy adopted in Great Britain for a limited period of time.

On the other hand, a real pitfall arises which is particularly problematic in countries with little regulatory capacity or experience. Policy-makers should recognize that the nature of the regulatory burden is markedly different when little to no competition is introduced; the burden on regulators is heavier. This is because there are minimal market pressures brought to bear on the service provider as a spur to efficiency. In practice, the developing countries with the least institutional capacity and experience of autonomous regulation and regulatory institutions often pursue this approach; an approach which calls for more proactive and invasive regulation and thus a greater regulatory burden. Ironically, those countries which have the least regulatory experience would be well served in introducing greater competition, since competition and market forces lighten the regulatory burden.

Where foreign strategic investors are invited to participate, host governments usually offer geographic or market segment exclusivity for the reasons mentioned above. Foreign investors will usually take whatever protection they can obtain, such as exclusivity and stabilization provisions[24] in the concession contract, license or acquisition agreements[25] supported, where possible, by similar provisions in sectoral regulations or legislation. The resulting entrenchment of exclusivity rights (supported by stabilization provisions for the foreign investors) acts as a constraint on the ability of the government in the future to permit competition and allow new entrants into the market. Consequently, even where the principal policy objective of a government is network enhancement, it is advisable to consider the future development of the sector and its deregulation (in the sense of the removal of barriers to new entrants and related issues) and re-regulation (in the sense of policing the behavior of enterprises in a monopoly or dominant market position). In practice, this will mean that terms and conditions for entry, licensing or concession should be reasonably well developed by the host government and its agencies and advisors prior to exposure to potential major investors for comment. This allows the longer term consequences of matters such as the grant of exclusivity to be weighed

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[23](...continued)
organize resistance to reform and new entry rather than engage in a measured program of restructuring in preparation for the new competitive market.

[24] Stabilization provisions can vary widely, depending on the nature of the risk as perceived by the investor, ranging from indemnities in relation to import duties or other taxes beyond an agreed level through to undertakings in relation to tariff increases and put options.

[25] There are of course examples of foreign investors *not* asking for geographic exclusivity, but in return expecting only limited supply obligations to be placed upon them.

by policy-makers in terms of impact on future regulatory effectiveness and wider sector policy considerations absent the pressure of the investors. This proactive approach to the development of new entry conditions is preferable to the host government reacting to initiatives drafted by the major investor, which confers a negotiating advantage on the investor.

Where the policy is directed primarily at the introduction of competition, there are a number of key issues which must be addressed to permit the restructured sector to function in the manner intended. One of these issues is that of interconnection of networks. Given that the restructured and corporatized national telecommunications enterprise will still occupy a dominant or monopoly market position in the absence of new entrants, the incumbent provider will be placed under an obligation to provide interconnection, either under the terms of its concession or License or explicitly in the enabling legislation. The terms of that right to connection will determine the scope and effectiveness of competition. However, it is not only the terms which are important, but also in what instrument those terms will be located, since in developing countries major investors may have little confidence in the general competition law and in the judicial system to award and enforce the necessary remedies.[26] Where possible, the right to interconnect should be placed at as high a level as possible within the hierarchy of instruments that make up the body of the law of the country in question. Usually, this will mean that the sectoral primary legislation will either place an obligation on the system operator or grant a right to third parties. The next level of

Other critical legal and policy issues which arise in the context of interconnection include the following:

- should the new entrant pay a fee to the incumbent network operator to compensate in part for the sunk cost of the local network?
- how should charges for the use of the relevant network be set and reviewed?
- is the new entrant to be entitled to require the incumbent operator to bill its subscribers for their use of the new entrant's services?
- on what basis should there be an apportionment of the risks of outages to either network as a result of the operation of the other network?
- should the incumbent operator be entitled to require that subscribers of the new entrant use access codes to enter the national network?
- what limitations should exist on the right of either the incumbent operator or the new entrant to make commercial use of information gained through interconnection as to the other's customer base and their requirements?
- what steps should be taken for the protection of proprietary products and services?

4 Interconnection issues in telecommunications

[26] These instruments range from primary legislation (such as a Constitution or Act of Parliament) through secondary legislation (such as a Decree or ministerial resolution) to local regulations in a federal jurisdiction and contracts, which are personal.

detail as to terms may then be included in secondary legislation (or regulations) made under the primary legislation or by ministerial resolution. Finally, greater specification may then be included in the concession or License, deriving authority from the instruments in the legal hierarchy.[27] The willingness of a government to tackle such issues in primary legislation, which necessarily means that they are more entrenched, may be seen as one indicator of commitment to reform of the sector. Where the country concerned has a weak judiciary or inadequate competition law, interconnection issues require more elaboration and specification in substantive rules which can be easily implemented as against process regulation which relies heavily on an independent and impartial judiciary.

The interconnection agreement between the incumbent operator and the new entrant is central to the development of conditions for genuine competition. The government will want to ensure, on the one hand, that the national telecommunications enterprise negotiates that agreement in good faith, and on the other hand, that the terms of interconnection will spur competition and avoid the creation of a duopoly.[28] The role of the government in this process can range from setting the general parameters for the interconnection agreement to prescribing the standard terms in the concession or license to providing standard form agreements with more general concession or license obligations prohibiting discrimination between any person or class of persons applying for an interconnection agreement where the applicant has been duly authorized and qualified by the Regulator or relevant Ministry. The degree to which the government intervenes in the contractual terms partly depends upon the reliability of the judicial system to balance the negotiating advantage of the incumbent operator, but also on the extent to which standardization impacts regulation in practical application. The key advantages to developing standard terms and conditions for interconnection are that (a) it reduces overall transaction costs, which ultimately benefits consumers, and (b) it lightens the regulatory burden insofar as it provides the regulator with a ready benchmark against which to test allegations of abuse or discrimination. For example, if the incumbent operator were to offer wholly unreasonable liability clauses, the reasonableness of that provision can be tested against the standard or model terms for that class of user.

[27] In Hungary, for example, the provisions relating to interconnection were not included in the primary legislation, but were dealt with in secondary sources.

[28] Although, in the case of the telecommunications privatization in the Great Britain, the creation of a duopoly was part of the government's declared policy, albeit subsequently reviewed. The rationale for this initial duopoly policy was the perception that it would facilitate competition by allowing the rapid development of a single competitor of some strength compared to British Telecom. For the purposes of interconnection however, the terms of the licenses are generic in order to prevent the blocking of future competition; the process of new market entry being controlled through the grant of licenses.

Finally, Value Added Network Services (VANs)[29] represent an area of the telecommunications market which is widely perceived as lending itself more easily to competition due to the lesser economies of scale than those which exist in basic services. Basic services cover the functions of transmitting and switching information over networks and switching facilities, be they local, national or international. In this area, a competing service provider without its own transmission facilities can do little more than resell capacity purchased from the national telecommunications enterprise.

In practice, the boundary between VANs and basic services has become blurred and the classifications in some instances are stretched. For example, packet-switching services constitute simply a more efficient method of ordinary telephony. As an alternative therefore, rather than distinguishing between value added services and basic services, a distinction can be drawn between the provision and use of services.[30] If competition is to be encouraged in VANs rather than basic services, it should be noted that lack of definitional clarity as to the activities authorized can result in effectively deterring major investors due to uncertainty as to the rights conferred and where the boundaries lie.

B. Electricity

Many of the issues in the power sector are similar to those in telecommunications, such as the introduction of competition in equipment supply. Beyond this, there is broad agreement that it is relatively simple to introduce competition in generation, unlike the transmission and distribution systems,[31] where there is a natural monopoly. The debate in many countries centers on the question of the separation of transmission and distribution services from the supply of electricity such as to allow competition in supply, at both the bulk and retail level. In many countries, the provision of distribution and transmission represents a rolled up package of services -- the electricity price therefore includes not only the energy charge, but also the use of system or "wires" charges. This means that the distributor, in countries where the sector structure allows exclusivity for the given distribution area, is in a monopoly position vis-a-vis end users within that area. This monopoly is even stronger where the power utility is a vertically

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[29] Services provided over the networks which involve some additional service beyond the transmission of voice or data; for example electronic information services, credit card verification, electronic mail and store and forward services.

[30] In this context, simple resale becomes a possibility. If pricing is not cost based however, this approach only permits entrants to undercut the national telecommunications provider for so long as prices are not rebalanced.

[31] That is, the *assets* of distribution and not the activity.

integrated entity, controlling transmission as well as distribution, especially where the consumer has no right of access. Accordingly, end users are not able to access other power suppliers.[32] It follows from this that the question of the extent of competition boils down to who holds rights of access and use of the transmission and distribution systems, and on what terms. These then are the same issues as interconnect rights in telecommunications.

Competition may, of course, be limited to wholesaling -- in other words, to the bulk supply points. This would mean that only those directly connected to the transmission system may purchase direct from generators. Typically, these users would be distributors (assuming that distribution is separate from transmission) and very large industrial users, such as aluminum smelters.[33] The introduction of competition at this level usually requires the introduction, through the legal and regulatory framework, of rights of access on non-discriminatory terms due to capacity limitations on the transmission network.[34] On the other hand, the arguments put forward by transmission system operators against open access[35] are that competition and open access threaten long term system security and reliability at a technical level.[36]

Beyond competition in generation and bulk supply, competition may also be introduced at the retail level -- that is, the right on the part of generators and other distributors to supply end users connected to the distributor's system thereby allowing the end user to bypass the monopoly of the local distributor.[37] This is, however, more controversial, especially where the

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[32] This inability to access is economic (in the sense that it would not be viable to construct their own systems) and, often, legal (in the sense that there are legal prohibitions against self-supply).

[33] The development of the high voltage transmission system in the United States has been such that even without direct government intervention such competition has developed by freely negotiated contracts for wheeling power. One reason for this may have been the fact that there has been more than sufficient capacity on transmission systems.

[34] In many developing countries, where the transmission system is tightly designed to single rather than double circuit security standards, transmission capacity is often limited. This is the case in Peru.

[35] The European Commission's draft directives on third party access are thought to have foundered on these arguments.

[36] In the experience of the National Grid Company in Great Britain, where open access applies, this does not appear to have been the case even where there are real technical constraints on the system -- for example, the Northern Ring and the Anglo-Scottish Interconnector. It should be noted however that in terms of industry structure, the restructuring of the power sector prior to privatization resulted in the transmission grid being separated from the business of trading in power.

[37] In Great Britain any person whose consumption is over 1MW (reducing to 100kW in 1994) may purchase power by direct contract with a generator or another distribution company acting as "second tier supplier". The key to this system is metering to enable disaggregation of flows and settlement.

distributor is under a universal supply obligation for all users within the distribution area and also has obligations to build out or extend the distribution system. There are two real risks in allowing open competition at this level; loss of market share to such a degree as to result in stranded investment and the risk of default under long term commitments under power off-take contracts from independent power producers. Accordingly, it is usually the case that a regime needs to be introduced which allows for the distributor to retain a customer base which is beyond competition. The term "franchise" has been used in this context.

In setting the level of the franchise limit, such as the initial 1MW threshold in Great Britain, due account is to be taken of the dynamics of the market and the franchise limit should therefore be flexible enough to ensure that it may be reduced as circumstances dictate in order to prevent abuse of the franchise market.[38] Alternative approaches to setting a franchise limit would be either to allow competition at the retail level only for new demand coming on to the system or to allow end users the right to choose but only with sufficiently long periods of notice to the distributor before being entitled to "contract out" of the franchise market. The issue of stranded investment may therefore be considered as little more than a transitional problem in the progression from a state monopoly provider to full competition at the retail level. Rapid technological development in intelligent metering systems is such that full retail competition is no longer to be ruled out on technological grounds.

There are a number of important policy and legal issues which arise in the context of wheeling electric power which will include the following:

- how are use of system charges to be categorized (such as entry, exit, infrastructure and demand related charges) and how will they be set and reviewed?
- to what extent should any connection fee be borne as a capital charge as against a demand related charge? A high capital connection fee may be a barrier to new entrants.
- who bears risk on outages and interruption and how are risk allocation provisions to be determined?
- what provisions are to be included for de-energization?
- will the local operator provide top-up and standby services and if so, on what basis?

5 *Use of System Agreements in electricity*

Similar to interconnection in telecommunications, the development and application of *use of system agreements* (being contracts which permit the use of another person's transmission

[38] One method is to place the distributor under an obligation to purchase power from the most economic source available, and where purchases have been found to have exceeded the requirement, the difference may not be passed through to the franchised end-user. Conversely, in Chile, limitation on electricity purchase cost pass through is brought about by the technique of setting tariffs by reference to a theoretical utility as a comparator.

and/or distribution assets to wheel electric power) is central to the development of genuine competition in the electricity sector. They provide suppliers the means of access to end-users who are embedded in a competitor's physical system and who would otherwise be captive customers of that supplier's competitor.[39]

If competition is only to be introduced at the wholesale level, these contracts will be limited to the use of the transmission system in order to allow direct purchasing from generators. If retail competition is to be included, even when limited, a form of use of system contract for the utilization of distribution assets will be necessary.

Where the national transmission company is prohibited from trading in electricity on its own account or is required to operate its "wires business" separate from trading with legal provisions requiring ring-fenced accounting, the use of system agreements will be limited to the provision of transmission services. However, given the need for system integrity and security of supply, backstop services are required in the form of top-up supplies where the user has taken more power than contracted for, and stand by where the generator fails to generate and the demand is met from other sources.

C. Natural Gas

The production of natural gas is often associated with the production of oil. As a result, the exploration for and production of natural gas has long been the domain of the major oil companies, and therefore the industry at first developed more in line with the oil business than on its own account. However, as gas reservoirs were discovered where production was not associated with the production of oil and the market for natural gas developed, replacing manufactured or town gas, the industry emerged in its own right. The activities in natural gas involve production (or regasification where liquified natural gas is imported), transportation through a high pressure pipeline system to regional off-take points, local low pressure distribution to customer premises' and the trading or sale of gas.

An important feature of the natural gas industry is the marked variation in prices at the well-head. Due to the high risks and capital investment associated with bringing a gas field on stream, the price is also a function of the level of the take-or-pay commitment and the length of the contract. These long term contracts with producers reflect the prevailing market conditions at the time. The level of take-or-pay risk is often a key determinant in addressing industry

[39] For example, generator G wishes to supply customer C who is embedded in a distribution system belonging to distributor D. The Use of System Agreement allows G to use its competitor's (D's) system to access C.

structure, since the risks will need to rest with those most able to bear and manage them. This factor may, of itself, preclude or limit the degree of possible competition for a considerable period. In other words, the possibility for full separation of the gas trading function from transportation and distribution in a mature gas market is likely to be limited by the risks inherent in large long term gas purchase contracts.[40] One approach to this difficulty has been to maintain the functions within the same legal entity, but require the separation in terms of internal business divisions. This allows some degree of transparency into the interaction between these divisions, but the British Gas experience has shown that this is likely to hamper regulatory effectiveness.

Prior to privatization, *Gas del Estado* of Argentina was an integrated monopoly in both transportation and distribution and acted as sole gas trader. However, it did not engage in production. Instead *Gas del Estado* purchased gas from *Yacimientos Petroliferos Fiscales*. As a result of restructuring for privatization, the operations of *Gas del Estado* were divided into ten; two separate businesses for transport, and eight distribution corporations. These corporations also provide services such as gas treatment and storage. The new regulatory framework establishes rules against cross-ownership with the aim of ensuring that business is conducted at arm's length.

6 *Natural gas in Argentina*

Nevertheless, if the benefits of competition are to be obtained, competition may be introduced at two levels; bulk supply and retail. These are similar to the options for the introduction of competition in the power sector. Large industrial users or gas-fired generation stations directly connected to the high pressure network may be entitled to purchase quantities of gas direct from producers for delivery either at the beach or the factory gate.[41] Obviously, to the extent that the national gas enterprise is losing market share, its risk under existing contracts increases. Where the market is expanding however, this risk is less significant.

Competition may also be introduced at the retail level, and the issues of connection and open access, as in telecommunications and electricity, become paramount to effective competition. As explained above, where the functions of gas trading and transportation are separated, competition and regulation are greatly assisted due to the resultant transparency.

[40] Where gas has been contracted for on field depletion contracts rather than supply contracts, field risk arises in addition to take-or-pay risk.

[41] The delivery point will determine who will need to enter into a gas transportation agreement with the transporter, the customer or the producer.

D. Transport

Unlike the telecommunications, power and gas sectors, the issues which arise in the transport sector are quite diverse. First, transport covers a wide range of activities and assets - ranging from shipping, buses and road haulage through to railways, ports and airports. The extent to which competition may be introduced is largely determined by physical limitations, for example there are a limited number of "slots" in a day available for aircraft at any given airport. The entry barriers to road haulage are low in comparison to ports and airports. Unlike the telecommunications and power sectors, the introduction of competition is likely to be more difficult in ports, airports and railways. There is of course competition to the extent ports or airports are geographically close to each other in terms of substitution, but the nature of the services are highly diverse compared to the homogenous nature of electricity. Competition in services such as stevedoring on board ship, shore handling and warehousing within ports is feasible although most of the functions related to safety, navigation and the environment are controlled. It follows that the terms of the licenses or concessions assume much greater importance since the incentives to efficiency are provided through these instruments rather than by the introduction of competition.

The privatized British Airports Authority (BAA) is subject to government regulation not only in terms of safety and environmental standards, but also in terms of each airport license. This enables the Civil Aviation Authority (CAA) as regulator to limit aircraft movements, allocate slots between airlines and establish rules on traffic distribution. In addition, all airports above a certain size are subject to economic regulation in accordance with conditions attached to permissions which enable the levy of airport charges. The CAA must also have due regard to international obligations, such as those under the Chicago Convention.

7 Regulation of airports in Grea: Britain

Throughout the world, the airline industry is heavily regulated in terms of economic regulation as well as matters such as safety, noise control and security. This regulation has involved allocation of routes, control of airports and the setting of fares. Deregulation in the United States in 1978 has been slow to be replicated in other countries, partly due to difficulties in amending international conventions and agreements at governmental level.

The nature of competition and regulation in aviation varies from route to route. One of the benefits of deregulation in the United States has been a reduction in average airfares and wider consumer choice. At the same time there have been a number of airline failures and significant mergers which have served to concentrate ownership within the industry. In addition, considerable local market power is derived from airlines operating from particular cities as their "hub", which may serve to restrict competition.

Railways have certain characteristics which have direct impact on the strategy to be adopted by policy-makers as against other modes of transport. First, there is a closer interaction between infrastructure and the vehicle which, although technical and operational, has commercial implications. Performance may be improved by focusing on either the infrastructure of the track and signalling, or on the rolling stock. Secondly, since railways are networks, there are complex interactions between users which give rise to constraints, such as the way train paths are determined.[42] Third, the infrastructure costs are a high proportion of the total operational costs of the system,[43] and rolling stock itself is expensive, with a long useful life and custom built. As a result, there is often no market for second-hand rolling stock. Lastly, railways often own real estate which is under-developed, and the sale or let of surplus land often can be used to partly finance new investment.

When the Argentine government reorganized *Ferrocarriles Argentinos* (FA) in 1989 in preparation for privatization, these factors played an important role in determining the way in which the private sector was to enter. FA was responsible for both passenger and cargo rail services, operating a network of six main railway lines and the urban and metro systems in Buenos Aires. This reorganization resulted in the letting of all profitable services by concession to the private sector and the closure of loss-making lines coupled with the sale of FA's considerable real estate holdings. In Buenos Aires, the metro system was reorganized into a new company under a separate regional authority to regulate operations in both the metro and suburban rail systems. Competition has therefore not been introduced directly, but efficiency incentives have been established for the private operators under the terms of their respective concessions. Conversely, in the proposed privatization of British Rail in Great Britain, competition is envisaged at two levels; first, the introduction of open access to the rail network for operators of freight and passenger services who obtain a license and, secondly, in the case of passenger services only, competition for the franchise to offer a particular service. It remains to be seen how this model will work in practice.

How is competition to be introduced?

Once the *extent* of competition has been decided, the policy maker should then decide exactly *how* that competition is to be introduced and what form it should take.

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[42] This is usually a centralized task, resulting in a national timetable.

[43] For example, track costs amount to approximately 48% of British Rail's total expenditure. This compares to airlines airport and navigation charges which are approximately 10% of their costs.

Many of the arguments over the extent of competition are actually arguments as to timing and, in this respect, a balance has to be struck by the policy-maker. If competition is allowed to develop too slowly, the incumbent provider has little incentive to eliminate monopoly rents. This is especially true if the market is robust and there is strong demand -- such as in telecommunications. In addition, slow development of competition increases the likelihood of collusion between the limited number of players, rather than competition between them. On the other hand, allowing competition too rapidly may result in a lost opportunity to gain organizational efficiencies for the incumbent provider, especially where that provider is organizationally weak. Instead of the incumbent provider being able to adapt and respond to market forces, it may fail altogether. If this is likely, restructuring before allowing full competition may be the only viable option provided that a deadline is introduced to that period. Slow adaptation in the face of minimal competition is likely to result in the incumbent service provider diverting energies to slow further the growth of competition rather than changing to meet the challenge. Equally, to admit too many small competitors at once may result in the incumbent provider continuing to dominate the market. It was for this reason that the British government endorsed the "duopoly policy" in telecommunications, which allowed for limited competition for a period of years.

In Hungary, the initial privatization plan for natural gas distribution failed largely due to political concerns about the ability of the distributors to adapt to market forces and the extent and timing for the introduction of competition. However, certain preparatory steps were undertaken to "demonopolize" the sector: the OKGT, which was the trust which operated the entire oil and gas sector, was divided into (a) MOL as owner of refineries, storage and transportation pipelines and (b) six regional gas distributors. The LPG businesses were hived-off and privatized separately.

8 *Adaptation to market forces: Hungary*

In the power sector, where the planning function plays a central role due to the universal supply obligation placed on distributors, it is important that the introduction of competition is handled in such a way as to ensure that capital investments with long pay-back periods or long term commitments to generators are not jeopardized, thereby leading to greater inefficiencies. This calls for a strategy which allows competition to be brought into the sector in steps.[44]

There are a number of options as to the precise nature of the mechanism which may be used for competition. The mechanism used will play a key role if the process of restructuring is to produce a new industry structure that operates more efficiently. For example, in order to allow effective competition, the restructuring of the British electricity industry required the

[44] In Great Britain, the franchise limit is designed to reduce in steps over a number of years, from 1MW down to 100kW in 1994 to its abolition in 1998.

creation of a mechanism for the pooling of power into a single market and for expeditious financial settlement between the players in the new competitive market. The Pooling and Settlement system was therefore the mechanism established to ensure the smooth day to day operation of the half-hourly spot market in power. A system somewhat similar to this has been established in Argentina in the context of the privatization of SEGBA.[45]

The inter-relationship between Competition and Regulation

Both academics and politicians have in the past emphasized that effective competition in a market reduces the need for external regulation, principally because strong competition for a market constitutes a self-regulating system which ensures the elimination of excess profits. Competition drives firms to reduce their costs as much as possible to minimize loss of market share to competitors, and spurs innovation, research and development. Furthermore, where there are many players in the market, the opportunities for collusive and anti-competitive behavior are severely limited. In comparison, regulation is often difficult to establish, cumbersome and costly and prone to neutralization by capture. It is therefore understandable that many have proposed that regulation in infrastructure is a transitory phase, to be replaced by competition once sufficient entrants are operating in the market. However, while the extension of competition undoubtedly serves to assist regulation, in infrastructure sectors in particular, regulation is still required in order to allow competition to be effective.

It may be argued that if the market is fully contestable, regulation *ex post* in the form of anti-trust law would be sufficient. The test would be such that the failure of any one competitor would not significantly alter the market power of any other player. However, in all country experiences it has been the case that infrastructure sectors fall below this test -- the failure of a service provider in infrastructure would have a dramatic impact on the market power of competitors. Thus competition and regulation are not to be seen as alternatives in sectors such as gas, telecommunications and electricity, but rather complimentary to each other.[46]

In infrastructure, transition in regulation goes more to the *style* of regulation employed rather than its elimination. When there is little or no competition, in order to be effective regulation needs to be proactive and intrusive in its style. This is because the utility being regulated will be in a position to exercise the power of market dominance and has little or no

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[45] *Servicios Eléctricos del Gran Buenos Aires.*

[46] Though in New Zealand, the government privatized the national telecommunications carrier and then allowed entry of private competitors in almost all segments of the market. In so doing, reliance has been placed on the general competition law to moderate the behavior of participants. There is no industry-specific regulation.

incentive to improve performance. Whether public or private, the temptation of monopoly profits is usually too great. As new entrants are introduced into the market and bring competition to bear, the need for proactive and heavy regulation is thereby diminished, becoming more reactive and defensive. In order to illustrate this transition, in the telecommunications sector one can envisage a proactive regulatory regime requiring the approval of the regulator before an interconnection contract becomes legally effective. In a reactive regulatory regime, the role of the regulator would be limited to facilitating dispute resolution on interconnection terms only if the parties cannot agree as between themselves.

A balance needs to be struck between sector restructuring or unbundling and economies of scale for the industry. In electricity generation, there are often little or no economies of scale in packaging power stations together for sale, even where the combination involves a mix of generation sources such as hydro and thermal plant. However, there are real technical efficiencies which go with an interconnected high voltage power grid due to the role an interconnected transmission system plays in terms of the security and reliability of the entire power sector. A sudden loss of load on one part of the interconnected power system, be it due to generator failure or transmission line outage, can cause significant disequilibrium to the entire system.[47] To minimize the risk of such occurrences, responsibility for system integrity requires to be assigned to one entity which controls the central dispatch function.[48] These technical efficiencies therefore place limitations on the extent to which the sector may be divided up, and the extension of competition must be such as to be compatible with these constraints.

Despite these concerns however, it is now widely recognized that the introduction of competition in generation and supply through an open access regime is possible without threat to the integrity of the interconnected power system. This is undoubtedly due to the broad success of the electricity restructuring and privatization in Great Britain and, to a lesser extent, in Chile. In some cases, the benefits of liberating entry to the market may go further -- it may actually serve to *increase* system security by virtue of higher levels of capital investment brought about by new entrants. Whether or not this benefit arises depends of course upon the particular configuration of the power system in question.

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[47] This may result in system splits where interconnection is lost, a mismatch of electrical time and emergency load shedding, resulting in brown outs or black outs.

[48] System dispatch involves the scheduling and calling up of generation in merit order, after taking account of transmission constraints and other outages, in order to meet expected demand on a continuous basis. This is because electricity cannot be stored in commercial quantities, and so supply and demand must be perfectly matched at all times.

To what extent can one rely upon the contestability of particular infrastructure markets to act as an ally to regulation and a substitute to actual competition? The existence of regulatory systems (which invariably require the grant of a permission, license or concession) of themselves weaken the impact of contestability; there will most likely be some potential entrants who may wish to enter the market to compete, but may not do so because they fail, for whatever reason, to hold the relevant permission or license. The regulatory regime itself therefore represents a barrier to free entry and an apparent limitation on competition.. There is therefore an inherent dilemma in the sense that where there is a natural monopoly, such as the transportation and distribution pipeline systems in the natural gas industry or the transmission and distribution wires in electricity, in order to promote or at least facilitate competition, a regulatory regime is necessary. The validity of the contestable markets theory is therefore limited in infrastructure sectors for this reason; the threat of the new entrant on the incumbent being limited not only by the existence of the regulatory instrument itself, but also by the longevity of such instrument.[49]

Liberalization may well benefit rather than detract from the integrity of an interconnected power system. In a country such as Peru, where the majority of generation capacity is in the north of the country and demand is in the south and central belt, privatization and liberalization of the power sector should result in new thermal generation capacity being built more quickly than would otherwise be the case. As new thermal generation may be sited closer to centers of demand for reasons of fuel supply, they will serve to balance the total interconnected system.

9 System integrity advantages of liberalization: Peru

[49] For example, in both power and telecommunications in Great Britain, the relevant licenses are for long periods; usually 25 years and termination requires 10 years notice. This renders the license, authorization or concession a very real asset in the hands of the utility. By way of contrast, in Argentina the system of re-bidding for concessions held every seven years seems to be an attempt to lower the barrier represented by the existence of the instrument itself by affording an opportunity to new entrants to outbid for the existing concession. One potential drawback to this approach is that existing concession holders will seek a pay-back period for capital investments within the seven year period before re-bidding in order to minimize risk.

III. Regulation and Regulatory options

Models for industry structure may exclude competition, contain a mix of competition and a dominant national provider or may permit extensive competition through radical restructuring. The regulatory framework which results will depend directly on the nature of the model adopted. Nevertheless, the regulatory processes and institutions which result also are dictated by the existing legal, political and social realities of the country.[50] The success of private utilities depends on the relationships between the regulatory regime introduced in the reform process and the country's branches of government; judiciary, legislature and executive.

Regulation is of course not new. It has long been a tool of policy-makers, being used along with ownership as a means of control. Historically, regulation would often be used to erect barriers against new entrants to the market, thus preserving the monopoly position enjoyed by the state-owned enterprise -- for example, in the case of telecommunications in the United Kingdom, it was only the deregulation that came with privatization which allowed competition in the supply of customer premises equipment, making available a wider range of equipment to customers; a range of equipment which had long been enjoyed and expected by customers in the United States.

The scope of this "old style" regulation varies quite markedly from country to country. In the context of a state-owned enterprise where direct control is exercised by politicians over such matters as the capital investment decisions of the enterprise, its prices and its staffing levels -- matters which would otherwise be dealt with by management in a truly competitive market -- regulation often deals with little more than setting technical standards which operate so as to prohibit, or at best, significantly hinder competition. Even where prices are within the scope of regulation, substantial cross-subsidization is a common feature and the relevant ministry retains within its grasp the right to intervene when deemed politically expedient.

In some cases, old style regulation was limited to prices (tariff setting) or technical and safety matters only without covering prices at all. Ownership is the control mechanism that covers all other areas. On the other hand, some forms of this "old style" regulation cover a wider range of topics, such as incentives for efficiency, customer service standards or investment and system planning.

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[50] B. Levy and P. Spiller *Regulation, Institutions, and Commitment in Telecommunications: A Comparative Analysis of Five Country Studies*, World Bank 1993. This paper illustrates by reference to Argentina, Chile, Jamaica, the Philippines and Great Britain the importance of designing regulation to the local environment.

Regardless of scope, the nature of "old style" regulation as a method of control -- lying in the shadow of the law and often based on a large measure of ministerial discretion -- is such that clarity and precision are starkly absent. Indeed, clarity or transparency is not considered of great importance from the control point of view, since regulation and ownership are in fact fused. This however only serves to leave enterprise management in doubt as to the scope of their authority in decision making; a dilemma which is particularly acute if the management is expected to behave in a commercial manner.

In the process of designing regulatory reform, it is important to determine the scope of any "old style" regulation which touches upon the sector concerned before devising a new regulatory regime. There are two reasons . First, where the scope of existing "old style" regulation is wide, the change to autonomous regulation may be seen as basically a transfer of responsibilities from the ministry.[51] In such cases, it will be easier to establish the necessary conceptual acceptance of an autonomous Regulator. An example of this is the acceptance in principle of an independent authority for the gas sector in the legislation relating to the Argentine gas privatization. Secondly, it is important to understand the legal basis on which the "old style" regulation is posited in order to be fully appraised of the detail as to how the existing law needs to be amended. This is a step around which a short-cut should not be taken (especially in countries where the process for primary legislation is arduous) as short-cuts will almost certainly result in inconsistent laws, which in turn results in a requirement for curative legislation to be passed to "fill the gaps".[52] Just as effective regulatory design requires analysis of the institutional capacity of the country in question, likewise it cannot be carried out effectively in isolation of the existing substantive laws which provide support mechanisms to the new framework.

It is however in the context of privatization that regulation takes on a new role. Not only does it play a more central role, but it also obtains a wider base. The process of privatization or significant private sector participation involves a recasting of government's role from that of a producer to that of regulator. Control, in the form of regulation, aims at the protection of customers and the promotion of competition. Regulation therefore becomes the new "border" between government and the industry.

From the regulatory viewpoint, two processes are involved:

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[51] Experience in countries such as Mexico, Morocco and the Philippines has shown that building regulatory capacity within the sectoral ministry itself underestimates the administrative constraints of establishing an effective regulator. This is discussed in more detail below.

[52] An example of this is the Water Industry Act 1991 in Great Britain, legislation which was required due to a lack of clarity when the original Water Act was passed to facilitate the speedy privatization of that sector.

1. Deregulation.

This process involves the review of the traditional regulatory regime with the aim of removing barriers to competition. The process of deregulation is not limited however to the abolition or amendment of rules, procedures or stated codes of practice which are constituted in secondary legislation, directives or lesser legal sources.[53] The deregulation process is wider. It also involves a review process which may have an impact directly upon the primary legislation or Civil Code, in some cases even upon the Constitution of the country in question. This process could entail, for example, amending the Constitution to allow the private sector to participate where the Constitution enshrines the *assets* of the sector or the *activity* of carrying out the functions of that sector as exclusive to the State.

The Hungarian Constitution and Civil Code states that certain assets, such as roads and transmission systems, are *exclusive state property*. The Civil Code expressly prohibits divestiture of certain state assets. For example, under §173 of the Civil Code, any conveyance of *exclusive state property* is null and void in law. The Hungarian Concession Act lists a description of both assets and activities which are exclusive to the State.

10 *Legal exclusivity: examples from Hungary*

Deregulation is also required where, for example in telecommunications, the laws provide a licensing function to the national carrier, which itself acts as a barrier to new entrants. Prior to privatization, British Telecom's approval was required for all customer premises' equipment, a control function which was removed from British Telecom at privatization and vested in the British Standards Authority. In the coal industry, the same issue arises when the law requires the national mining entity to license potential competitors for methane extraction.

Part of the deregulation process will also involve a review of those laws which touch upon the activities of the sector concerned but which are not sector specific. The specific law reforming the sector in question will usually be set in the context of these laws, such as the general competition or anti-trust legislation. This process involves the review of any exemptions conferred upon the State owned enterprise. It will also involve the removal of preferential legal immunities, such as the legal immunities from liability on both tort and contract enjoyed by British Telecom before privatization.

The precise barriers which constitute prohibitions (or, at the very least, significant impediments) to the participation of new entrants will vary according to the nature of the particular market concerned. The regulations may draw a distinction between networks and

[53] For example, secondary legislation such as Statutory Instruments, or Government or Ministerial Decrees, published practice notes of a particular Ministry or regulatory agency, procedures and rules of a technical standards authority and so forth.

services, with an express prohibition against the establishment of a competitive network but with more indirect barriers to service competition. The barriers are not always direct, explicit and negatively stated. For example, in the market for the supply of equipment in telecommunications,[54] the barriers may exist as an express prohibition against the provision of such equipment except by the national telecom or its subsidiaries. The same barriers may exist in an indirect manner. Potential new entrants to the market for equipment supply may be hindered by virtue of regulations which confer upon the national telecom a right of prior approval or consent on technical grounds before their equipment may be connected to any part of the national system.[55]

The cumulative effect of regulation should be noted. A single restriction or barrier may not constitute a particularly onerous impediment, but the cumulative effect of many indirect barriers can be such as to deter active participation by new entrants.

2. *Re-regulation.*

Coupled with this deregulation process is the development of new regulatory regimes, or *re-regulation*, which is aimed at facilitating competition and setting the new environment for the industry by emulating market mechanisms within the confines of accepted policy. The re-regulation process necessitates the reallocation of responsibility for the supervision of technical and safety regulation, usually from the national service provider to the regulator. This reallocation process includes the complete separation of the previous regulatory functions and the operational functions of the national service providers.[56]

The re-regulation process usually involves the passing of the necessary legislation establishing the Regulator, conferring industry watchdog powers upon it. The re-regulation process involves the development of a tailored regulatory structure with a high degree of sectoral

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[54] This includes customer premises equipment or apparatus, private automatic branch exchanges (PABXs), and public switching systems or exchanges.

[55] It was a legal challenge in the United States under anti-trust law to such a requirement imposed by AT&T which led ultimately to the break-up of Bell Telephone and the rapid expansion of competitors such as MCI and Sprint.

[56] This separation is necessary to avoid the national provider controlling access to the market by potential competitors, for example in relation to the approval of the technical and safety standards of competitors' customer premises equipment.

orientation.[57] Before embarking on such a process however, an important prerequisite to regulatory design is the analysis of overall institutional capacity.

Institutional Capacity

The choices available to policy-makers in the design of re-regulation are restricted by the institutional capacity of the branches of government in country in question.[58] This capacity is made up of the legislative and executive institutions, focusing on the formal procedures for law-making and the appointment of legislators, the bodies of government which implement and the relationship between these functions.

The institutional capacity existing within the country shapes the placement of the core regulatory rules within the spectrum of available mechanisms. The best option in terms of the balance between flexibility and certainty would encompass enabling legislation which establishes the principles and parameters within which regulatory institutions may exercise certain delineated discretionary powers to allow flexible implementation of regulatory policy. Where there is a distinct separation of powers between the legislature and executive and there is limited experience of regulatory institutions, the rules can be set out in detail in the laws creating the regulatory scheme.[59] Examples of this approach which have succeeded are to be found in Chile and Peru.

Conversely, where the executive is dominant and arbitrary administrative actions are common, it may be possible to create an enclave body of rules in a license or concession contract. The ability of this mechanism to satisfy investors as to the stability of the contractual regime assumes a capable and independent judiciary to arbitrate disputes between the government and the service provider, the judiciary having a reputation for impartiality and enforcement of private property rights and contracts (including enforcement against uncompensated government expropriation).[60] Other important factors include the role of informal rules of custom and social interest which serve as restraints on arbitrary action by individuals and institutions.

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[57] This is not to preclude the institutional option of a core non-sectoral regulatory authority with sub-divisions that are sector specific, a structure which is common at the state level in the United States and which is being explored by a number of developing countries, such as Thailand and Indonesia.

[58] B. Levy and P. Spiller (1993).

[59] Though at some cost to flexibility to adapt to new innovations in the sector, especially in the case of telecommunications.

[60] If the judiciary lacks this capacity, the Bank may provide assistance with wider judicial reform, as in Venezuela: Judicial Infrastructure Project (Loan No. 3514 VE).

Reliance upon project-specific rules concerning pricing, quality of service and competition to be embodied in a license or concession contract carries some dangers if the government lacks the skills and bargaining leverage to ensure that the resulting contract fairly balances public and private interests. If the contract is unbalanced, the government will ultimately face public pressures to utilize other tools such as taxation or price controls to ensure that the public interest is protected. The Bank can assist here by supporting institutional development and providing funding for technical assistance.

The Role of Regulation

With full or majority privatization, ownership no longer exists as a mechanism of control for government, except of course to the extent that the State retains a stake in the privatized company and can exercise shareholder rights commensurate with either the size of that shareholding under the general Company Law of the country in question or where the State retains a "golden share", in which case there is negative control[61] still present through ownership.

Regulation therefore affords a means of fostering an environment which not only enables potential new entrants access to the market, but which also provides a means of replicating the effects of competition as closely as possible. The aim is to prevent abuse of a dominant market position by a private monopoly or by a public monopoly against new entrants.

Although regulatory regimes are diverse, there are certain common features which make it possible to classify them by the framework adopted and the functions they perform. These common features are:

- the establishment of a new Regulator which is charged with administering economic regulation and consumer protection, usually on a sectoral basis. This regulator may be an autonomous agency, but equally may constitute a non-ministerial government department. Experience has shown that independence confers advantages, namely investor confidence in the regulatory framework being operated in such a way as to minimize political interference;

[61] Negative control in the sense of only being able to *block* or vote against certain corporate actions, such as a take-over or merger. Another approach is to define enduring service standards or performance targets in the charter of the utility before privatization and to structure voting rights such that any later amendment to those provisions must be supported by the holder of the golden share.

- the law empowers the Regulator by delegating authority. The duties of the Regulator are also spelt out, and security of tenure conferred;

- the cornerstone of economic or price regulation is established, although the particular form of economic regulation adopted may differ markedly; and

- the authority to review the terms upon which industry participants operate is clarified, such as the policing of license terms for interconnection and other matters affecting competition.

Regulation may be categorized by structure, people, procedure and price control methodology:

(a) *Structure*

The structure of the industry which is adopted will have an impact upon the effectiveness of the Regulator in the performance of its duties. Experience has shown that full vertically integrated utilities are the most difficult to regulate, largely due to lack of information flows from regulated enterprise to regulator, but also due to the limitations on the opportunities made available to competition. A lesson has been learned the hard way -- competition assists the regulator in performing its functions.

(b) *People*

The Regulator may be constituted as a commission or panel of regulators or may be a single appointee with the appropriate staff. In Great Britain the regulator of each privatized industry is an individual appointed by the relevant Minister; the Director General of Electricity Supply in the case of electricity. He is supported by OFFER, the Office of Electricity Regulation which is a non-ministerial government department. The British approach to Regulators has therefore placed a great deal of emphasis upon the appointed Director General. This focuses responsibility, although it could also provide scope for a strong personality to color the regulatory process. A suitably qualified individual with a clear sense of his brief may, however, prove a more effective and responsive regulator than a panel or commission of appointees. In the developing country context, given the importance of infrastructure to the country and the need for transparency, the commission approach is to be preferred despite drawbacks of slower decision-making. In any event, the importance of "the right person for the job" is not to be overlooked. The Regulator should also have access to advisors with strong expertise in the

industry in order to permit quicker resolution of debates and to facilitate efficient operation of the Regulator as a whole.

The security of tenure to be afforded to the regulators is clearly an important issue, and since the Regulator often is quasi-judicial in its functions and powers, appointment and removal procedures akin to those for the judiciary provide a possible model, assuming that the judiciary is sufficiently separated from the other branches of government. The number of years of appointment[62] and the parameters within which they are to operate should be clearly stated within the law. In addition, the law should lay down in what circumstances the regulator may be removed from office. Typical grounds for removal are bankruptcy, crimes of dishonesty or gross misconduct, similar to those in relation to the judiciary. If the area of tenure is left as a matter of ministerial discretion with no clear legal rules, the independence of the regulator will be undermined. Equally, these rules and procedures should be publicly known. Thought should also be given to the nature of disclosure requirements to the legislature as well as the public at large as to the outside interests of the regulators, with a prohibition on any financial interest in the regulated enterprises.

In practice it is not enough to put in place a regulatory system without assurance that the privatized enterprise will be actively policed and that there is the will to promote or at least facilitate competition. New entrants need to be comforted that the regulators have sufficient commitment and capacity in these respects before they will be willing to enter the market with any vigor. Equally, investors in the privatization of the state enterprise need to be confident as to the ability of the regulators to withstand, within the law, the pressures placed upon them by politicians to focus on political rather than commercial objectives. A commitment to competition in the relevant sector is important therefore not only at the ministerial level, but also on the part of the regulators.

The issue of accountability is often raised. Accountability, or rather a fear of the loss of accountability, is usually the main argument put forward for *not* establishing an autonomous Regulator. The necessary balance between accountability and independence can best be achieved by a combination of judicial review of individual decisions and of transparency in the regulatory function. The Regulator should operate under a procedural framework which allows any interested party, including the government or consumer groups, to provide inputs into the decision-making process. The Regulator should prepare a written statement of the reasons for

[62] The appointment of regulators may be the responsibility of the legislature, the head of State or prime minister or the line ministry. In each case, the important feature is the extent to which the regulators are secure in that appointment, and in this regard, appointment by a wider consensus such as the legislature serves to assist that security of tenure.

its decisions, both to enhance public confidence in the transparency of the process and also to facilitate judicial review. The regulatory scheme should also include opportunities for review by the legislature of the work of the Regulator. A useful approach is to require the Regulator to submit a report, preferably annually, to the legislature on its activities and on any significant competition issues which may have been encountered and which may require legislative action. In this way there is an opportunity for public discussion of the performance of the Regulator, while at the same time preserving the independence of the Regulator on a day-to-day basis.

In certain cases, the Regulator may deliver its report to the legislature through the sectoral ministry. In order to ensure that the relevant ministry acts as a "conduit" rather than a "filter", the law should also require that the regulators publish a full unabridged copy of any annual report submitted to the line ministry and that written instructions from the ministry may be referred to in public.

Whatever the legal safeguards, in practice of course, the personalities involved will materially affect the true functional independence of the Regulator and its accountability to the legislature.

(c) *Procedure*

The nature of the procedures to be adopted and utilized by the regulators will impact greatly upon their efficiency in carrying out their functions. The approach of due process, open hearings and rights of appeal adopted in the United States has advantages in that all interested parties have an opportunity to participate and there is transparency in decision making. The disadvantage to this approach is the cost of decision-making, both in terms of money and time (aside from costly lobbying on the part of interest groups and the regulated enterprises), although the gains obtained from transparent decision-making procedures are seen by many as outweighing those costs. Conversely, in Great Britain the view is taken that expeditious decision-making is paramount, resulting in procedures which are more discretionary, resulting in closed negotiation and limited rights of appeal. Nevertheless, the strong impartial judiciary provides recourse under the existing procedural and substantive rules governing judicial review of administrative decisions.

The availability of judicial review by the courts will depend not only on legislative enactment, but also upon the internal administrative procedures adopted and published by the Regulator. Where these procedures lay down in great detail the consultation process (for example the number of days to elapse between one step and the next) or where there are detailed rules as to the content of decisions, the decision making process is more transparent. However,

judicial review is easier to instigate on the basis of the failure to comply with a procedural step, which may result in a decision being overturned. As a result, procedural steps undertaken thereafter based on that decision may then be declared void. Conversely, an absence of administrative procedures is likely to result in legitimate interests complaining of being denied the opportunity to make their views known when a decision does not favor their interests. The courts will equally have greater difficulty in carrying out a judicial review the wider the discretionary nature of the regulator's powers. Clearly there is a trade off involved between speed of decision making and procedure and a balance needs to be struck in context.

(d) *Price methodology*

The cornerstone of economic regulation is the control of prices paid by the ultimate consumer as well as by the different businesses or divisions which go to make up the regulated company and where those divisions relate to third party users of their systems or services.

There are, however, different methods to achieve price control. One approach, which has a long track record in the United States, is that of regulating the rate of return. The key feature of this approach is the periodic review of the tariffs which the utility wishes to bring into effect. This involves the examination of the utility's operating costs, capital employed and cost of capital during an agreed test period in order to determine a fair rate of return. This information, together with assumptions as to demand, is used to calculate the total revenue requirement, and from this requirement the level of tariff is determined. In order to avoid discrimination, an examination of each tariff for each service takes place involving the allocation of common costs. Once approved, the tariffs generally remain in force until the utility seeks a review. There are many variations on the theme, but these are the fundamentals of rate of return regulation.

Telefonos de Mexico is the main provider of telecommunications services in Mexico. To date, only private networks, equipment sales and cellular are open to competition. *Telefonos de Mexico* was privatized by direct sale in 1990. It is regulated by the Secretariat of Communications, utilizing an RPI-x price cap similar to that applied to British Telecom. Those services which are outside the specified basket covered by the formula, such as cellular telephony, are therefore unregulated.

In addition to economic regulation, the company is subject to constraints and competition goals under its Concession. The legal monopoly it presently enjoys over all fixed-link telephony is to terminate in 1996, when new entrants may offer long distance services. However, this monopoly is contingent upon *Telefonos de Mexico* meeting stated network expansion targets; a mechanism which acts as an incentive to invest and expand.

11 *Mexico: The regulation of Telefonos de Mexico*

One of the criticisms of rate of return price regulation, being essentially a "cost plus" approach, is that the regulated enterprise has little incentive to make efficiency gains. As a result, Great Britain has adopted a modified form of rate of return regulation. This modified form, referred to as RPI-x, allows the utility to make any changes it wishes to its prices during a predetermined period of four to five years, provided that the average price of a specified basket of its services does not increase at a rate greater than RPI-x, where RPI is the rate of inflation and x is a factor determined as representing the projected efficiency gains over the predetermined period.

The relative advantages of the RPI-x approach over rate of return regulation may be summarized as:

- RPI-x is less likely to result in inefficiency and "gold plating" since the utility may retain gains which are made above x. Since part of the efficiency gain is passed on to customers in x, prices tend to be lower than they would be under rate of return regulation.

- RPI-x affords the utility greater flexibility to adjust its pricing structures within the confines of the basket of regulated services. Services outside of the basket are, generally, not regulated.

- RPI-x is generally simpler to operate on the part of the Regulator and the utility since it does not require the detailed calculations and verification of inputs associated with calculating the total revenue requirement in rate based regulation.

Despite these advantages, there is some doubt as to the transferability of the British price regulation model to developing countries, given the particular characteristics of the overall institutional capacity as described above. The British model confers a substantial degree of discretion on the regulator which is counterbalanced by surrounding institutions.[63] Chilean benchmark regulation or more traditional rate of return regulation, such as in Jamaica, are posited on specific and detailed rules which may be easier to implement in the developing country context in the sense that there is less reliance on the support mechanisms of overall institutional capacity to control discretion.

[63] For example, the regulators cannot unilaterally amend license terms without the agreement of the regulated utility. If the utility does not agree with the proposal, reference is to be made to the Mergers and Monopolies Commission for recommendation. Even then, the Secretary of State may veto the recommendation. (Telecommunications Act 1984, Sections 15 *et seq.*)

Why establish an autonomous Regulator?

This is a key question which is often either overlooked or simply misunderstood. In short, the independence of the Regulator is important in order to avoid what is commonly referred to as "regulatory capture", whereby the regulators fall under undue influence of either the government or the industry which they are supposed to be regulating on an arm's length basis.

In certain ownership and accountability structures between the government and national providers of infrastructure, regulation may be simply synonymous with ministerial control, exercised by ownership. This structure was often used in the case of Post & Telecommunications and in certain countries still is the structure used, for example in India.[64]

> Jamaica's experience with regulation has been mixed. At first, the regulatory regime was based on a system of licenses which were highly detailed, specifying rates of return. The judiciary was to be the enforcer of these commitments -- such that in 1962 the new government perceived the license system as an undue constraint on parliamentary sovereignty. As a result, the Jamaican Public Utility Commission was established in 1966, modelled on the US approach. The lack of institutional capacity and support mechanisms to provide balance resulted in clashes between the commission and the utilities, culminating in nationalization. The effect was a marked reduction in investment and increase in inefficiency. With privatization in the late 1980s, which returned to the detailed license enforced by the judiciary, the result has been a significant influx of investment and system expansion. (Levy, Spiller 1993)

12 *Regulatory experience of Jamaica*

Where public corporations are used as the entity to provide services, the accountability structure may be established in such a way as to recognize a discrete regulatory function. Usually, this discrete function is with a limited regulatory brief however, reporting to the relevant ministry on a regular basis. This particular structure, or variations close to this, are common in developing countries.[65] In this particular accountability structure, the regulatory brief is confined to economic regulation and customer service standards with the ministry retaining direct control over investment planning and incentivization. In practice, the actual scope of the regulatory brief varies from industry to industry in different countries. For example, within the ministry responsible for electricity, the regulators may be no more than a directorate, department or division of that ministry.

[64] Except for international services which are provided by VSNL and local services in Delhi and Bombay which are provided by MTNL (both corporatized entities), the Department of Telecommunications under the Ministry of Communications provides all services. The main operator is therefore a government department.

[65] For example in the electricity sector, EGAT in Thailand which is a wholly owned government corporation, or the National Railway Corporation in Korea.

It should be noted that in both the departmental structure and the public corporation structure, the ministerial role is significant; the ministry is both judge and jury. There is wide scope for political influence upon management decisions, fundamentally affecting the ability of management to conduct the business in a commercial manner. The temptation to political interference is particularly strong in infrastructure, even where the regulatory brief includes economic regulation, because governments consider that price increases contribute to inflation and impact adversely upon their electoral standing. This has led to extensive cross-subsidies and price increase suppression against which the regulator can do little due to dependency.

The desire for control goes beyond prices. Government involvement generally in sector policies is a reflection of its desire to control the implementation of policy such as personnel operations, investment and borrowing. These desires make both the establishment of an autonomous Regulator and the maintenance of that independence difficult to achieve.

Conversely, an autonomous Regulator places the regulators firmly between the ministry and the utility. The management of the utility are thus able to focus on commercial rather than political objectives and to account appropriately to shareholders. Such a utility operates under the normal company laws applicable to private enterprises and is independently audited. The management produces full financial statements as part of their accountability to the shareholders. In this idealized structure, the utility's shareholders may also be consumers. Consumers and third party users will make their views known directly to the legislature, via lobbying for example. The privatized utility therefore operates under a web of checks and balances of accountability to shareholders and consumers, but avoids ministerial interference in operations and investment decisions.

Given the importance of infrastructure sectors, there will typically be some form of regulatory instrument, such as a license or concession, which permits or requires certain activities to be carried on in the ordinary course of business. The license or concession will be granted or contracted between the government and the utility at the time of privatization or corporatization. It will however be policed by the Regulator under the terms of the powers and duties given to the regulators in the law and the regulatory brief. In the developing country context, caution is required on the part of the government in framing the terms of the license or concession in order to minimize the risks of regulatory capture by the regulated enterprises. For example, where the government is inclined to invasive rather than light-handed regulation such that the regulators are in close daily contact with those they regulate, the opportunity for

commercial regulatory capture is greatly increased ultimately reducing regulatory effectiveness.[66]

Establishing an autonomous Regulator in this context means that:

(a) *The Regulator has exclusive authority to oversee performance by the utility, so that the standards to which the utility will be held accountable are relevant and publicly known.*

Where an enterprise operates under a concession contract, the terms of that legal instrument cover a wide range of important issues, such as performance targets, customer service standards and pricing. In addition, within the ambit of the concession contract are included issues which one might expect to be dealt with by the Regulator under a licensing regime. In common law jurisdictions there is a debate about the legal nature of licenses in this context which is beyond the scope of this paper, but which plays a role. In short, the debate is to what extent a license is a contract (rather than an authorization or simple administrative instrument) in the sense that consent is required of the regulated enterprise before amendment can be made, and what steps need to be taken for its amendment. To the extent that it is a contract, the Regulator can play a significant role in checking unilateral changes to conditions on the part of the ministry or public authority which granted the license. In civil law jurisdictions, concessions or administrative agreements are somewhat different in that the government effectively has a residual right to unilaterally modify the terms of the concession without the prior agreement of the concessionaire, although this right in administrative law is generally restricted to unusual circumstances which give rise to intervention in order to protect the public interest, followed by compensation to the concessionaire where appropriate.

An example of this role is seen in the context of the recent furor in Great Britain arising from the announcement by the Department of Trade & Industry that some 30 coal pits would be scheduled for immediate closure. The political backlash in Parliament called for the overturning of contracts and investment decisions taken by many of the newly privatized electricity companies to build new Combined Cycle Gas Turbines -- referred to as "the dash for gas" which took place immediately after privatization. Opponents argued that this "dash for gas" had significantly reduced demand for coal.

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[66] Unduly onerous reporting requirements upon the regulated enterprise, such as the direct involvement of the regulator with the management accounts, purchasing policy, staffing decisions and investment criteria which are placed in the concession or license at inception due to a lack of trust of the operator is ultimately self-defeating. Better light-handed but effective regulation than heavy handed invasive regulation that is not sustainable due to commercial capture.

In order to maintain a higher level of demand for coal in electricity generation, politicians called for OFFER, the Regulator for the electricity industry, to be persuaded to rule that the contracts for the purchase of electricity from these planned gas fired power stations were "contrary to the license obligations to purchase electricity from the most economic source". OFFER undertook a detailed review in December 1992, and ruled that the power contracts were within the terms of the electricity companies' obligation of economic purchasing; the contracts were to stand. The regulator then came under enormous pressure from government, which led to a further review in February 1993 in which the regulator is clear in his defence of his independence from energy policy issues unconnected with the electricity industry. Professor Littlechild, the Regulator, states in this further review that "*the development and operation of an energy policy is properly the function of the government. My own powers and duties are limited to the electricity sector. The Electricity Act 1989*[67] *sets out my functions and requires me to take account of other considerations relevant to electricity*". However, the issue of lesser demand for coal is not relevant where the electricity companies have acted within the parameters of their Licenses. The regulator was able to insist that government take responsibility for addressing public interest issues through general energy policy[68], rather than dealing indirectly with those issues through consideration of legally inadmissible factors in regulatory decisions.

On the other side of the equation, the regulator must be capable of maintaining independence from those it regulates. It may be argued that the establishment of an autonomous Regulator, especially with sector specific orientation lends itself to being captured by commercial interests. On the other hand, the ability of autonomous regulators to access information improves since the regulated enterprises know that information divulged is less likely to be used against them politically. There is, in fact, no evidence to show that autonomous regulators are more prone to regulatory capture from those they regulate than regulators from within a sectoral ministry. On the contrary, the overall success of regulation has been more limited in the experience of sector reforms where autonomy was not established for the regulators.[69]

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[67] The restructuring and privatization law for the sector.

[68] From the shareholders' point of view, it could be argued that interference with the freedom to contract within the regulatory framework would represent a change to the "regulatory bargain" which was struck at privatization, being the description of the regulatory framework and the terms of the Licenses as contained in the Prospectus. The Prospectus is the document upon which the investors rely when forming a judgement as to whether or not to purchase shares in the companies as they are floated on the stock market. The decision as to the balance between the public interest (in the form of the government's overall energy policy) and regulatory independence needs to be established at privatization as part of the "regulatory bargain" between the government, shareholders and the industry.

[69] For example in Morocco, the Philippines and Venezuela. In the case of Venezuela, the reform of the telecommunications sector led to the creation of a regulator within the sectoral ministry, making the appointment more directly subject to political pressures.

(b) *The regulators must have security of tenure, a clear brief and the Regulator must possess skilled staff with an understanding of the industry which they regulate, making dispute resolution less costly and more focused.*

Security of appointment is essential to the ability of the regulators to be autonomous and de-linked from the political cycle. There is a balance to be achieved insofar as long term appointments, while providing the regulators with confidence to use their autonomy against short term political pressures, at the same time increases the risk of regulatory capture by the industry being regulated. The Regulator need not be experts themselves in the industry they regulate, but the Regulator needs to be staffed with the appropriate skill mix to be able to comprehend readily the operators' actions and submissions. Suffice to say that speedy resolution of industry specific issues is of benefit to all concerned, not only in terms of money costs, but also management time.

Closely related is the ability of the Regulator to hire its own staff and fund its activities. These practical matters directly impact the effectiveness of the regulatory oversight. Staffing should not be within the restrictions of the civil service and public sector pay constraints to ensure high calibre staff. Further, funding should be from sources aside from the appropriations process of central budget (such as a levy on turnover of licensees) in order to avoid the Regulator being cash starved into submission. At the same time, checks do need to be placed on what may become a swollen bureaucracy, and account to the legislature through, say, the Ministry of Finance or the Auditor-General may be given as to how the independently raised funds were actually spent in accordance with the regulatory brief.

(c) *Major investors and institutional shareholders will have greater confidence in the utility knowing that it operates under a strong autonomous Regulator.*

The view is usually taken by investors that an autonomous Regulator is less prone to political interference and therefore the business in which they have invested is less likely to be required to meet political or social objectives which were not originally contemplated. This confidence will tend to affect the share price in a positive way and consequently affect the ability of the company to raise necessary capital. In short, there is investor confidence in the rule of law. One of the factors in evaluating potential investment is political risk, and the absence of an autonomous Regulator operating in a transparent framework will increase the private sector's perception of the presence of that risk.

Regulation from within the sectoral ministry

The establishment of a regulatory function for infrastructure activities has become over recent years a central theme of the policy dialogue between the World Bank and member countries, and has become a feature of many technical assistance and reform loans. These functions have, in some cases, been established within the sectoral ministry, supported by more staff and widened powers. In the case of Mexico, since major regulatory issues were dealt with in the detail of the licenses granted, the regulatory function was left within the ministry.

Experience has shown however that there are several important constraints associated with this approach which serve to limit regulatory effectiveness. A freeze for example on public sector recruitment or pay has immediate impact in terms of the ability to hire appropriate qualified staff, especially where there is limited implementation experience. In addition, as part of the sectoral ministry, the regulators are directly influenced by the political cycle of changes of administration, which adversely affect the continuity and autonomy of the regulators and investor and public confidence in their impartiality.

An autonomous regulator in developing countries?

Given the complexities in not only establishing, but maintaining an autonomous Regulator, an important question is the extent to which these are achievable in the developing country context. There are particular problems which arise with attempting to create an autonomous Regulator in developing countries.

The nature of the industry sector's structure in developing countries is closely related to the political and economic history of that country, which in turn serves to influence the view of regulation and regulators within each country. Sectoral arrangements have historically followed those adopted in industrialized countries, and so we find, for example, that in the electricity sector the role of regulation depends on whether the French or British system was adopted, or whether the system was nationalized or diversified. Since the legal traditions are likewise influenced in the same manner, the legal tradition itself may prove to be an impediment to the establishment of such a Regulator.[70]

Broadly, the British approach provides for the electricity industry to carry on its activities under license, and the role of government, in general terms, is confined to regulation. There is

[70] In countries with a strong French tradition, the concept of the administrative law may be such that there is significant conceptual difficulty with the establishment of an autonomous regulatory authority separate from the executive power and the judiciary.

no direct participation in operations. Conversely, nationalization brings operation within the government's scope of activity, either by means of a government department[71] or a public corporation. However, this may well be limited to only part of the process, for example covering only electricity transmission and distribution but not generation. The diversified approach involves regionalized responsibility for generation, transmission and distribution with a variety of players, be they federal, state, private companies, public companies, municipalities and so forth. The point is that each of these approaches results from a different historic role or scope to regulation.

The concept in legal terms of an autonomous Regulator will be more difficult to absorb in systems which do not generally permit the delegation of executive power and where significant direct government control exists. In some francophone countries, the terms of the Constitution operate so as to require any authority which is exercising governmental functions, such as a sectoral regulator, to be an integral part of the government organizational structure. In other words, the law precludes the possibility of autonomous Regulator. Nevertheless, there is evidence to show that where the "old style" of regulation covered a wide scope (connection, customer service standards, technical and safety matters, and tariffs for example), acceptance of a Regulator with autonomy has been easier than in jurisdictions where the legal tradition is one of direct ministerial control. Furthermore, in certain jurisdictions the legal and de facto independence of a Regulator may be a well accepted principle, especially where there already exists such an authority in relation to other sectors.[72]

On the other hand, whilst the concept of an autonomous Regulator may be achievable legally and acceptable politically, a balance needs to be kept. Proliferation of agencies will of itself create a problem; that of "regulatory fragmentation" where a multiplicity of agencies, with overlapping jurisdictions in some cases, adversely affects management decision making and becomes administratively cumbersome.

Where there is sufficient political commitment to ensure a successful privatization program, a separate budget for the Regulator, adequate staffing and a clear brief should be forthcoming. The Regulator may be funded from part of the privatization receipts and an

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[71] For example, in India most telecommunications services are provided by the Department of Telecommunications.

[72] In terms of the law, the establishment of an independent regulatory authority for the natural gas industry in Argentina did not seem to present particular difficulty. Whether that independence can be maintained is too early to tell.

adequate fee structure thus allowing the authority to hire long term and adequately qualified staff and to develop an "institutional memory".

Alternatives: the French Concession System and Build-Operate-Transfer (BOT) schemes

What options are available to the policy-maker apart from the creation of an autonomous Regulator? One of these regulatory options is the concession, broadly based on the French model.[73] Another is the Build-Operate-Transfer (BOT) approach, which has many characteristics of the concession system and has been used in some developing countries as a means to promote infrastructure development.[74]

The Concession

The purpose of a concession is to regulate an activity which is considered (often as a matter of law) to belong to the public sector. The concept of *service publique* is key to the concession. This is because the concession implies a transfer of some of the attributes or powers of the public sector to the private sector for a defined period of time, regulated by the contract of concession. Powers which derive from sovereignty, such as compulsory acquisition of land or the ability to levy duties, which are exercisable by the concessionaire even where the concession itself may be silent, serve to illustrate this implied transfer of powers. As a result, concessions may well lead to the grant of greater rights to the concessionaire than would otherwise be the case with sector-wide regulation. Nevertheless, with these rights go obligations: to provide service continuity on a non-discriminatory basis and to adapt services to the changing needs of consumers.[75]

> The French administrative court, the Conseil d'Etat, in the case of Compagnie Générale d'Eclairage de Bordeaux vs. City of Bordeaux defined the Concession as "***a contract providing for the building of a public works or provision of a public service by an individual or a company, at their own expense, with or without subsidy or guarantee of interest, who are granted in return the right to operate the public infrastructure or the public service and to charge the users of the public works or the persons benefiting from the public service.***"

13 *The Concession: A definition*

[73] For example, in Chile, the use of Concessions as the instrument governing the private provision of public services is derived from the influences of the French legal tradition. However, there are some key differences; whereas concessions normally have limited life, ranging from 6 to 75 years but with most in the range of between 30 to 40 years, the most striking feature of concessions in Chile is that they are unlimited in time.

[74] For example, BOTs and their variants have been used in the Philippines, Turkey, Thailand and in Pakistan.

[75] These obligations also exist even if the Concession contract does not expressly state them; they are related to the nature of public service.

Concessions should be distinguished from other forms of contract for the provision of public services. Simple operation and maintenance agreements can be distinguished due to the limitations on the risk which the operator bears. Under a concession and *affermage* or lease, the operator bears financial risk. Furthermore, the concession differs from *affermage* in that the concessionaire rather than the public authority bears the costs of financing the facilities, repair and renewal and typically does not provide any part of the income earned to the public authority granting the concession. Generally, the concessionaire finances and builds the facilities, not the public authority.

14 *Concessions and other forms of contracts*

The concept of *service publique*[76] is also important because it serves to define the scope of the concession. The scope of concessions to private operators is, however, limited by the grant of monopoly rights to either the State or a public authority.[77] Whereas originally all concessionaires were private companies or consortia, some now are either wholly or partly state-owned, usually as a result of the nationalization of these private consortia.[78] The concession is perhaps best seen typically as a bridge between the public and the private sectors by allowing the private sector to provide public services.[79]

The concession may be granted to any company considered by the government to be technically and financially able to provide the public service, and, where applicable, to construct at its own expense relevant public works.[80] The concessionaire must provide those services in accordance with the terms and conditions of the contract of concession and in accordance with administrative decisions of the public authority

[76] A *service publique* was generally thought of as any activity of public interest which is carried out under the responsibility of a public body and subject to the administrative law and administrative courts. Over time however, public service was widened so as to include industrial or commercial activities carried out in the general interest of the public, but similar to private economic activity in that the activity also involves the seeking of profits. The civil courts have jurisdiction in relation to the latter category of public services.

[77] For example, in France, monopoly rights were granted to Société Nationale des Chemins de Fer Français, the French national railway company in 1937 and this grant was reaffirmed in 1982.

[78] The history of the use of concessions serves to illustrate the fact that, over long periods of time, perceptions as to whether a particular sector is naturally within the domain of either the public or the private sector are apt to change.

[79] Until the 1920s, in France the direct provision of public services by governmental authorities was considered to be a limitation on free enterprise. Thus, leases and concessions were used to contract out the provision of these services.

[80] If no facilities are to be built, the concession will be limited to operation and maintenance.

granting the concession. Also, the autonomy of the concessionaire is an important feature.[81] In addition, the public authority granting the concession is not liable to finance the infrastructure provided by the concessionaire and the service is ideally provided in a cost efficient manner due to the commercial and financial responsibility of the concessionaire.

If, however, significant restrictions are placed upon the concessionaire in terms of price control or extensive social obligations, the public authority granting the concession may need to provide subsidies,[82] which in turn will serve to limit the efficiency of the concession.

The concession system does provide a useful tool to achieve new infrastructure expansion in those developing countries which are able to attract private equity investment and debt financing on the basis of a developed body of contract laws which balance private and public interests. It should be recognized however that the function of regulation is exercised by the governmental authority, and therefore the issues of institutional capacity for sector specific regulation still need to be addressed to the extent that regulation is exercised on the concessionaire outside of the specific contractual terms and conditions of the concession. In short, the concession does not eliminate the need for sector wide regulation.

Build-Operate-Transfer (BOT) schemes

Various consultants, contractors and developing country governments have promoted a particular approach to infrastructure projects which have been executed on the basis of Build-Operate-Transfer schemes.[83] The characteristics of BOTs are essentially drawn from non-recourse project financing and the concession system, whereby the host country government grants to a private consortium the right to finance, build and operate specified facilities for the provision of public services. Once the project has repaid its debt and the consortium of investors have recouped their investment, ownership and management of the completed facilities are transferred from the private consortium to the host government.

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[81] Where the public authority has participated directly in the consortium holding the concession, it has been argued that the autonomy of the concessionaire is thereby impaired. In France, concessions have been rescinded by the Conseil d'Etat (the Administrative Supreme Court) on the ground that the concessionaire's autonomy has been insufficient.

[82] For example, in the provision of urban transportation services.

[83] Variants of the BOT include Build-Transfer-Operate (BTO), Build-Own-Operate-Transfer (BOOT) and Build-Own-Operate-Supply (BOOS) projects.

The viability of a BOT depends upon the extent to which project sponsors and lenders are prepared to take risk in the particular developing country. Theoretically at least, the host government is shielded from the financial risks of the project, though in practice contingent guarantees are often required of the host government.[84] This risk allocation process invariably involves difficult and detailed negotiation. Taking this with the difficulties of clearly describing the circumstances of transfer, BOT schemes have not been widely used even though considerable interest has been expressed in them.

As a regulatory tool, the BOT approach is little different from the concession. The terms and conditions of the project contracts, especially the Implementation Agreement, establish the framework of rights and obligations of the operator. Accordingly, only the behavior of the operator in relation to the particular project is regulated by the BOT project contracts themselves. It follows that the supervision function and any extraneous regulation, intended to govern the sector as a whole, are left to the governmental authority granting the rights to the project company. The issues of regulatory capacity and independence are therefore not directly addressed by the adoption of any BOT model.

The Expressway and Rapid Transit Authority of Thailand (ETA) built the first stage of the Bangkok expressway system with a view to linking transportation from the north, south and east of the city and by-passing its center. Due to the benefits of the first stage of the expressway, in June 1987 the Thai government authorized ETA to consider private investment in the second stage of the road system by granting a concession to the private sector to build and operate the project for a period of 30 years under conditions and procedures laid down by the ETA. In December 1988, ETA signed contracts with the Bangkok Expressway Company Limited (BECL), a private sector consortium, to construct and operate the second stage of the expressway. Under these contracts, BECL has borne all costs of construction and investment risks without government guarantee. The expressway and its accessories were transferred to the ETA immediately after construction, rather than at the end of the 30 year concession period. The ETA continues to own the assets and regulates the behavior of BECL in their operation.

15 *Thailand: A BTO in infrastructure*

[84] These guarantees may cover foreign exchange risks, political risks and some commercial risks outside of the control of the project company.

IV. Conclusions

The private provision of infrastructure involves a complex inter-play between industry structure, regulation and competition. Decisions taken by policy-makers as to the structure of the sector will directly impact on regulatory effectiveness. Experience has shown that difficulties in effective regulation have as much to do with inadequate attention to sector structure as they do with the institutional capacity of the Regulator itself. Competition is a close ally of effective regulation of infrastructure, and not an alternative to it. Furthermore, competition allows the sector to respond to market forces and often results in market driven sector restructuring. Nevertheless, in infrastructure sectors, regulation is necessary to maintain effective competition, if only to prevent market concentration and the abuse of a dominant market position by any operator. Regulation is also needed to police open access and interconnection (in sectors such as electricity and telecommunications), thereby allowing new entrants to enter the market.

As regards the tools of regulation, despite the declared differences between the licensing system, the concession system and BOTs, these are in fact little more than different legal regimes or instruments which serve to establish the rights and obligations of the contracting parties. There is a menu of available choices as to where the rights and obligations of service providers are placed, primary sector wide legislation, secondary legislation, license or concession, and those choices are shaped by the overall institutional capacity and legal traditions of the country in question. Nevertheless, of themselves these instruments or contractual regimes do not do away with the need to establish effective institutions to carry out the regulation of the sector. This need for effective sector-wide regulation therefore remains, often as a pre-condition to new entry, and whilst difficult in the context of developing countries, the policy-maker will be much better able to take positive steps towards the creation of an effective independent regulatory regime following the introduction of competition and sector restructuring.

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