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Management of Public Utilities in China*

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1. INTRODUCTION

This paper focuses on public utilities (telecommunications, electricity, gas, water, transportation (roads, railways, buses, ports, airports,...) and postal service) which are sometimes referred to as *economic infrastructures*. It does not concern itself with the so-called *social infrastructures* such as education and health, or with the *financial infrastructures*. There is little debate today regarding the fact that, when possible, public utilities should be privatized (although several developing countries did not succeed in doing so).[1] As a result, this paper will not cover issues of privatization. It will, instead, discuss the specific questions surrounding the regulation and liberalization of public utilities in developing countries. To that end, we first discuss the characteristics of developing countries that have a bearing on the analysis of regulation and competition policy.

An essential concept in this discussion is the marginal cost of public funds, that is, the social cost of raising one unit of funds. This cost includes a deadweight loss[2] because governments raise revenues by means of distortionary taxes. It is estimated that this deadweight loss amounts to 0.3 in developed countries, meaning that it costs citizens 1.3 units of account every time that the government raises 1 unit. The inefficiency of tax systems in developing countries, coupled with the corruption that is sometimes also present, makes it extremely difficult for governments to invest in infrastructures and affects the cost of all types of public interventions, particularly, regulation and competition policy. According to World Bank data, the deadweight loss in developing countries is well beyond 1. It has been estimated at 1.2 in Malaysia and 2.5 in The Philippines, while in Thailand it ranges between 1.2 and 1.5 (Jones, Tandon and Vogelsang,

* I thank Xinzhu Zhang for many insights about the Chinese regulatory framework.

[1] See Laffont and Meleu (1999) for a positive theory of privatization for Africa.

[2] The deadweight loss depends on the type of tax used because the tax systems are not usually optimized.

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1990; Mookherjee, 1998). In developing our analysis we take the high cost of public funds as a given because, although tax reforms are necessary in many developing countries, it is unlikely that they will be in place quickly owing to the many financial, human and political variables involved.

An essential instrument of regulatory and competition agencies is the ability to audit costs. Yet, developing countries are hampered by a lack of well-developed accounting and auditing systems (Trebilcock, 1996). This is due to the lack of proper training programs; to the political and social difficulties that hamper the payment of incentive salaries to auditors to reward effort and discourage corruption; to the lack of up-to-date technology such as computerized systems (which makes it harder to discover cost padding and evaluate real costs); and to the inability to impose high penalties in cases of documented wrongdoing (because of the strong limited liability constraints of most economic agents).

Many developing countries also suffer from widespread corruption due, in particular, to the low internal costs of side transfers. When two parties (such as a firm and an auditor or a bidder and the auction organizer) arrange a private deal, they must take into account the costs of being discovered and the need to use indirect compensation (which is less efficient than direct compensation). The cost of these side transfers is expected to be lower than in developed countries because they are more difficult to identify and, in addition, social norms may place a positive value on some types of side transfers (for example, when they take place within families, villages or ethnic groups). Accordingly, it is more difficult to fight corruption (Tirole, 1992).

Inefficient credit markets and the sheer lack of wealth make limited liability constraints more binding in developing countries. It is important to stress this point because many of the problems in regulation and competition policy result from difficulties in borrowing and attracting foreign capital. It is also worth highlighting the complementarity of general competition policy and good banking sector regulation. When the banking sector is inefficient and makes borrowing costly or impossible, an effective competition policy may destroy the rents that allow firms to invest, or may create instability.[3]

Other characteristics that hamper public utility regulation concern the government. In particular, two characteristics of developed countries that are often missing in developing countries are constitutional control of the government and some degree of ability to enter into long-term contracts. The lack of the checks and balances typical of well-functioning democracies (supreme courts, government auditing bodies, separation of powers, inde-

[3]Mishkin (1997) concludes that "developing countries may need to move slowly in financial liberalization in order to keep a lending boom from getting out of hand".

pendent media[4] makes the governments an easier prey to interest groups and patronage. The lack of political democracy and well-functioning political institutions increases the uncertainty of future regulations and makes it difficult for the government and the regulatory institutions to make credible commitments to long-run policies. Consequently, the economic policies of developing countries are even more sensitive to ratchet effects and renegotiations.

Another shortcoming of developing economies is the weakness of the rule of law. Poor enforcement of laws and contracts biases contracting toward self-enforcing contracts or leads to renegotiations.

Finally, it is essential to stress that the liberalization and deregulation of public infrastructures in developing countries often fails to attract the level of foreign capital that is necessary.

These features will be kept in mind throughout the discussion that follows, and when necessary specific advise for dealing with these difficulties in regulating and promoting competition in public utilities will be presented.

Section 2 discusses the structuring of regulatory agencies that favor competition, and the trade-offs involved in choosing whether or not to engage in the vertical disintegration of incumbent monopolies between the competitive segments and the natural monopoly ones. Section 3 presents the regulatory rules required by the monopoly segments in developing countries. The crucial issue of the management of the interface between the monopoly segments and the competitive segments is addressed in Section 4 where access-pricing rules adapted to developing countries are discussed in greater detail. Section 5 is devoted to competition policy *per se* for the segments opened to competition. Concluding comments are offered in Section 6.

2. STRUCTURAL ISSUES

2.1. The Structure of Regulatory Agencies

A first consideration in structuring the government entity that will have responsibility for regulation and competition policy is whether these functions should be the purview of one integrated agency or separated ones. In this regard, recent experience in Australia and New Zealand is enlightening.

New Zealand employed a very novel approach to regulation, relying only on general competition laws enforced by the courts and by an industry-wide competition authority. This approach was first used to regulate telecommunications and then power. The notion of *self-regulation* by industry

[4]See Besley and Burgess (2001) for an empirical study of government responsiveness to media activity.

was also introduced. In this case, industry participants form councils to negotiate the main rules and access conditions.

Although New Zealand's experiment was not an immediate failure, the government recognized, after some years, that there was still a need for regulatory control of industries that are not competitive enough. Indeed, this proved necessary even in telecommunications, which is the most competitive industry of the ones we are considering here. The concern is that light control of the industry is not sufficient to contain abuse of dominant position. The number of cases brought before the courts show that rapid technological change and the technology intensive nature of the industry make it difficult to find a firm guilty of abuse of dominant position. Moreover, the procedures involved make for very long delays. As a result, relying solely on competition laws has proved inefficient even when these laws are well developed and enforced. On the basis of this experience, therefore, we can conclude eschewing regulation is not the right option.

Integrating general competition policy and regulation into a single agency is only possible if the regulatory agency is a multi-industry one as in Australia. Australian regulation is organized around a federal multisectoral agency (the Australian Competition and Consumer Commission—ACCC), specialized agencies, and regional regulation. The ACCC is composed of sectoral and functional bureaus and coordination entities. The Commission deals with product safety, consumer protection, access, mergers and restrictive trade practices in all the sectors under study in this report.

The ACCC was created in 1995 following the recommendations of the Himler Report. It has taken over a nonnegligible part of the duties of specialized regulators by acquiring responsibility for promoting competition in a larger sense. For example, the regulatory body responsible for telecommunications was closed after the creation of the ACCC. The Utility Regulators Forum, created in 1997, is responsible for coordinating regulatory activities within the ACCC. The Australian case involves integration *at the federal level* of regulation and competition, even if regional agencies are also used. This system can be compared to the one prevailing in the United States where multisectoral ruling takes place at the state level, specialized regulation is the responsibility of the federal government, and competition policy is dealt with separately.

Integrated regulatory agencies are attractive option for developing countries because they face a significant shortfall in adequately trained personnel. This is especially the case for the telecommunications, electricity and gas industries. While there are substantial economies of scope between the regulatory institutions of those industries, they seem much less important between regulation and competition policy. To avoid creating a too powerful institution, we would generally favor a separate competition agency and, except for very large countries, integrated regulatory agencies at the

federal level. The only exception might be water which could remain at the local level. Technological intensity requires federal regulation to reduce costs, but accountability requires more decentralized institutions.

Good advice on this structural issue must take into account political constraints, initial conditions and industry specifics. The variety of solutions implemented in developed countries and the experience of the different Latin American countries (Argentina, Chile, Peru, Brazil, Bolivia...) suggest that the trade-offs are complex. They involve balancing differentiation versus coordination; creative versus destructive competition between regulators (see Laffont and Pouyet, 2000); better enforcement by local authorities versus better control by the government; local corruption versus federal corruption (see Bardhan and Mookherjee, 1999); industry specific expertise versus sharing resources; and diversifying the risks of institutional failures versus coordination (Aubert and Laffont, 2000; Smith, 2000).

Box 1. The Structure of Regulatory Agencies in China

General speaking, China has a mixed structure of regulatory agencies consisting of both industry-wide and sectoral agencies (ministries or departments) at both central and regional levels. According to the law, the State Development and Planning Commission (SDPC) is the government body in charge of price regulation of public utilities. Another major SDPC's authority is to regulate market entry and investments in public utilities. In addition to the SDPC, there are also some sectoral specific ministries that complement the SDPC including the Ministry of Information Industry (regulatory agency of telecommunications) and the Ministry of Railways etc. The later ones are generally the implementation bodies.

Another structural feature of the Chinese regulatory agencies is the hierarchical structure between the central and local regulatory bodies. First, there are regional SDPCs along each layer of administrative governments. Similarly, there are some implementation bodies, either industry-wide or sectoral, at each local government level that complement regional SDPCs. The separation of power between the SDPC and local SDPCs is that the former is usually in charge of the control of entry and investments for big projects and the approval of price adjustment proposals submitted by local SDPCs while local SDPCs take care of smaller projects and make price adjustment proposals.

The general trend in the reform of regulatory structure is to delegate more and more of the regulatory power to regional governments. For instance, to provide incentives for the regions to make investments in electric power, the central government has given to local governments the authority to approve entry and investments in electric generation. It also allows the local governments to make price purchase arrangements with independent power producers, subject to the approval of the SDPC. As a result of decentralization of regulatory power, installed generation capacity has increased rapidly and substantially so that China has in some sense solved the shortage of energy problem since 1998, which plagued the economy for a long time. It is also the case in telecommunications where except for basic telecom services including fixed-line and mobile phone services, not only extensive deregulation has taken place nationally, but also that when regulations remain, local regulatory agencies have gained much more discretion in terms of approval of market entry and investments and price regulations. Similar delegations have also happened in the gas and transport sectors etc.

With respect to the structural choice between industry-wide versus sectoral regulators at the central government level, the trend is not clear at the moment since until recently, the reform of regulatory agencies have focused on separating management from regulatory and policy making functions and the attempts to set up independent regulatory agencies in China's context have begun only recently. Indeed, the government just announced that an electric regulatory agency will be created which is the first of its kind in China, at least judged by the name and the status of it. But this event comes within a specific institutional setting, because unlike telecoms, railways, and transport etc., there is now no specific regulatory body in charge of electric regulation in China.[5] In other words there is in some sense a vacuum of power in the regulation of electricity. So it is really hard to judge at this moment whether it will be another old style implementation agency just bridging this power gap or it is going to be a real institutional innovation which signals that the government has determined to take a sector specific agency approach which will eventually take the regulatory power of electricity away from the SDPC.

2.2. The Structure of the Industry

The industries under consideration were formerly public natural monopolies providing public services such as telecommunications, electricity, gas or transportation. Segments of these industries are now viewed as potentially competitive. Some examples are long distance telecommunications service and electricity generation. These are, therefore, the segments opened to competition. Other segments continue to be considered natural monopolies. These include, for example, the electricity transmission grid, railway tracks, and to some extent so far the local loop in telecommunications. These industry segments remain regulated and may eventually face new forms of regulation (see Section 3).

Three types of market structures can be envisioned for these industries: (1) vertical disintegration, (2) vertical integration and (3) competition in infrastructures. Under *vertical disintegration* the firm controlling the bottleneck (the natural monopoly segment) is not allowed to compete in the services using the bottleneck as an input. For example, the local telephone company owning the local loop is not allowed to compete in long distance service using the local loop to access consumers. In the case of *vertical integration,* the firm controlling the bottleneck becomes one more competitor among many service providers using the bottleneck as an input. Finally, in the case of *competition in infrastructures,* competition then takes place between vertically integrated firms, each of which controls a restricted access point and provides services.

The comparison between the first two cases raises the issue of the economies of scope that vertical integration makes possible, and the problems of fa-

[5]The Ministry of Water Resources and Electricity was restructured and disappeared in 1998 and the regulatory functions, were taken over by the State Economic and Trade Commission, another government agency which mainly takes care of the management of SOEs.

voritism it raises. The bias in developing countries should be toward vertical disintegration because the economies of scope are likely to be independent of the characteristics of these countries (at least for given technologies), while favoritism is more difficult to counter.[6] Case 2 and case 3 rest on a comparison of the fixed costs associated with competition in the provision of the "bottleneck" (like local telephony) and the gains one may expect from this competition (Auriol and Laffont, 1992). The comparison is difficult for developing countries where the high cost of public funds makes more expensive both the duplication of fixed costs and the information rents resulting from a monopolistic provision of the bottleneck.

These comparisons are further complicated by the dynamics of the industry which may be moving towards case 3 as in the telecommunications industry. Then, vertical disintegration may in fact slow down the emergence of competition among vertically integrated firms providing both local and long distance telephony. Recommending vertical disintegration may then be particulary inappropriate. However, for railways,[7] gas or electricity, vertical disintegration of the track, the pipelines or the electric transmission grid from transportation or the generation can be recommended if competition in services is introduced.

In all these cases there is a choice between a single regulated entity that owns the tracks, the pipelines, or the grid, or shared ownership of the bottleneck by users who agree on rules for using it. The comparison is here between the inefficiency of regulation and the free-rider problems of joint ownership. In a country where regulation is easily captured one may favor the second alternative, despite the lack of consumer representation that it entails.

A particular problem for the gas industry is the market power of producers, especially when there are foreign producers involved. The bargaining power of consumers with respect to producers may be enhanced by the existence of a vertically integrated network operator who also owns gas fields. This argument is used in Europe with respect to the supply by Algeria, Russia and Norway, and also in Argentina where YPF (recently acquired by Repsol) sells more than 60 percent of the gas produced.

More generally, there is a question about the affordable competitiveness of the market structure, given that developing countries also need to attract foreign capital.

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[6]This should be balanced with another consideration which is the importance of transaction costs which will be higher in case 1 due to the lack of enforceability of contracts and the lack of commitment which produces constant renegotiations. See also Ordover et al. (1994). Another consideration in small countries and some industries such as electricity, is that only a vertical structure provides a critical level of business attracting the interest of foreign investors.

[7]Except maybe where competition by roads or (for large countries) competition between vertically integrated firms interconnected with reciprocal access rules is possible.

Box 2: The Structure of Industry

The general trend is to separate the monopolistic segment from competitive ones. In other words, vertical separation is taken to be the mainstream restructuring form of industrial structure. For instance, mobile services were separated from the incumbent, China Telecom, in the restructuring reform of the telecom sector in 1998. In electric power, the government just approved a new restructuring plan to separate generation from transmission and distribution even though transmission and distribution will remain to be integrated for a while. As can be expected, this move is driven by the desire to facilitate efficient regulation and prevent favoritism.

However, the government didn't approach the restructuring uniformly. Indeed, other forms of industrial structure such as vertical integration and competition in infrastructures have also been implemented or allowed to exist. In this regard, it is interesting to contrast the different restructuring approaches in electricity and telecommunications.

In the power sector, entry in generation was allowed to independent power producers since mid 1980s while the State Power Company owned not only the monopolistic transmission & distribution networks but also competitive generation assets. Given the general situation of shortage of generation capacity, everything proceeded smoothly until excess capacity of generation and capacity constraints of transmission appeared since 1998. Then, serious problems of favoritism have been claimed when the State Power Company no longer wanted to dispatch the power from independent power producers. Indeed, the power markets have become quite segmented among different regions and power exchanges among provinces count for only about 20% of total transactions which is considered not reasonable given the huge geographical differences, with Eastern China being the load center and having no generation assets and Western China being endowed with much of the resources for power generation (rivers and coal mines). Worries about the serious favoritism problem, particularly when more stations such as the Three Gorges Project are going to generate power soon, and the desire to build an integrated national market have contributed to speed up the restructuring reform in the power sector. Recently, the government approved a new reform package in which separation of generation assets from transmission and distribution is one of the main contents. That is vertical separation will be adopted in the power sector.

In the case of telecommunications, however, a different approach has been adopted from the beginning. More precisely, competition in infrastructures was created in the telecom sector. This has been implemented in two ways. On the one hand, entry was liberalized in the competitive services and competitors need to buy access from the incumbent. For instance, beginning in 1994 when China Unicom was created, competition was introduced in long distance, mobiles, and data services even though China Telecoms still kept the dominant position in local services the access of which was needed by its rivals in competitive markets. It did cause some problems in creating competition in local services, because China Unicom which can, as a matter principle, provide local services, has until recently only deployed network in three cities or regions, namely Tianjin, Chongqing, and Sichuan. Given the natural monopoly feature of local services, it should not come as a surprise. However, such institutional arrangement did achieve an important policy goal, i.e., to increase the access of telecommunications services. Indeed, the penetration rate of fixed lines has reached 21 per 100 person, a remarkable achievement without any dispute by any standard. This puts China at a position that is ready for a leapfrog.

On the other hand, competition in infrastructures has also been introduced through restructuring of the existing operators. After the implementation of

major restructuring in 1998 in which operation was separated from the government functions and some services like mobile were divested, the Chinese government initiated a new restructuring reform in 2001. The main theme this time is to separate China telecom on a geographical basis, namely dividing it into the South part which inherited the brand name and the North part which will be integrated with the China Netcom, originally a carriers' carrier and widely considered to be politically well connected. In addition, each company is allowed to enter each other's territory. After this round of restructuring, both China Telecom and China Netcom can provide long distance and local services. Remember that China Unicom has been granted license in local services before but it has chosen to do it only to a limited extent. It seems that the government is not convinced by the natural monopoly argument of local services. Fueled by the desire to create competition in local services but also worried by the network expansion needs, this time the government has chosen this horizontal restructuring approach which will not only create competition in the market but also keep it viable.

It is important to note that competition pressures come not solely from within the same industry. Indeed, in the railways, competition by mode is the main form of competition and it works. Indeed, in response to the competition pressures from road, airlines, navigation etc., the railways made great efforts to raise speed. A restructuring plan is being drafted by the government to separate infrastructure from transport.

3. REGULATION AND DEVELOPMENT

The regulation of natural monopolies requires finding a balance between efficiency and the cost of the information rents. High-powered incentive schemes (such as price caps) which induce cost minimizing behavior yield large rents to the most efficient firms, while low-powered incentive schemes (such as cost of service regulation) control those rents but create weak incentives for minimizing costs.

3.1. The High Cost of Public Funds

As stressed above, a major characteristic of developing countries is the high cost of public funds. It is easy to see that this high cost calls for higher prices of the commodities produced by the natural monopoly and for lower-powered incentive schemes (high shares of cost reimbursement). Before presenting the intuitive reasoning for these results, it is important to emphasize that we are assuming here perfect observability of cost and full commitment of the regulator.

Intuitively, we know that higher costs of public funds mean a higher cost of giving up rents and also a higher inefficiency cost. However the relative cost of rents increases faster because when an additional rent is given up to a particular firm to support an efficiency improvement, the same incentive must also be provided to all the more efficient firms. The optimal regulation sacrifices some efficiency in order to decrease such rents. Thus, this is an argument in favor of cost-plus schemes relative to fixed-price schemes or,

in the language of regulatory theory, rate of return regulation versus price caps.

A higher cost of funds also means that it is more valuable to price above marginal cost, i.e., to use public utilities prices to finance fixed costs and the government's budget. In particular, it is a mistake to advocate marginal cost pricing for public utilities in developing countries.

The implied difference in pricing between developed and developing countries can be substantial, since a move from a cost of funds of 0.3 to 1 translates into a relative deviation from marginal cost which is double in the second case. Since effort levels also decrease as cost reimbursement rules are tilted toward cost-plus schemes, marginal costs are higher and, therefore, prices should be even higher in developing countries.

Box 3: About the High Cost of Public Funds in China.

The high cost of public funds implies that it is better to finance the fixed cost and contributions to government revenues through tariffs or regulation tax rather than through general taxes. That is industrial wide budget balancing should be maintained. In the power sector, for instance, prices were used to cover only operation and maintenance costs before 1992 and the investment costs were covered by the government through fiscal revenues. As a result, there was a lasting shortage of supply of power. Since then, electric tariffs have been raised to reflect full costs. More precisely, the Chinese government has implemented the so called "one plant, one price" policy, which is essentially meant to guarantee full cost recovery regardless of the financing structure. This has helped to attract investments in the power sector.

Another important case is in telecommunications in which the installation fee was introduced since early 1990s. Indeed, about one third of each year's capital investments in network expansion was covered by installation fees. While this policy has been criticized a lot and the installation fee was eventually eliminated in 2000, many argue that China would not have been able to develop so fast its telecom infrastructure without the installation fee policy.

Still another example can be found in China's railways where a special surcharge was levied on the top of tariffs to finance the huge investment costs, which guarantee the funds necessary for the rapid development of railways networks in China. Before this policy was introduced in late 1980s, however, all capital expenditures of the railways sector had to be allocated from general taxes.

This issue also concerns a debate going or currently about how to finance the universal service cost in telecoms. The Chinese government is determined to reform the current USO financing mechanism of cross-subsidization by creating universal service funds. But it has been hotly debated whether or not it should be the business of the Ministry of Finance or the Ministry of Information Industry or some other special agency.

3.2. Monitoring

The impact of monitoring on the power of incentives is quite different depending on the type of monitoring.

Monitoring of *effort* generally enables the regulator to reduce the information rents and calls for higher-powered incentive schemes. A less-

efficient monitoring technology will call for relatively less-powerful incentive schemes. Indeed, low incentives and monitoring are substitute instruments to extract the firm's rent. A decrease in the use of one instrument makes the other instrument more attractive. As a result, an increase in the cost of public funds induces low incentives both directly and indirectly (as explained above) through a decrease of the more costly monitoring.

We have emphasized so far the strong assumption of perfect observability of costs. In practice, however, costs are not perfectly observable and one must also take into account the possibility of cost padding, i.e., the many ways in which a firm can divert money. Cost can now be increased by undue charges, which benefit the management and the workers. The analysis (Laffont and Tirole 1993) shows that the imperfect auditing of cost padding calls for a shift towards higher-power incentive schemes. In the extreme, if auditing did not exist, only fixed-price contracts would be possible. Indeed they would be the only ones preventing unlimited cost padding by making firms residual claimants of their costs. It is therefore very obvious that weak auditing technologies, as can be expected in developing countries, will result in an even higher desire to shift toward fixed-price mechanisms. This effect is reinforced by the savings in auditing costs resulting from fixed-price mechanisms in countries with a high cost of public funds.

The impact of the lack of auditing cannot be overemphasized. It is a crucial point, which conflicts with the findings of the previous paragraphs, but easily dominates the other effects. In the absence of reasonable accounting, price cap regulation is the only way out. It is only through price cap reviews that some cost elements can be brought in, leading to some cost-plus shift through the ratchet effect (see below).

Making cost information public may be a way for the regulator to improve the quality of accounting by fostering more truthful disclosure of information by the firm, establishing its credibility for honest behavior.

Box 4: Monitoring and Auditing in China.

The weak monitoring and auditing system has major impacts on the regulatory policies in China. For the moment, the Chinese government has chosen a kind of cost of service regulation with strong cost-plus flavor, more precisely the administered prices which in general have neither upward nor downward flexibility. Moreover, historical cost standards are adopted and cost disallowances are rare. In theory, such pricing policy would need perfect observability of output or a good control system of monitoring and auditing, which are obviously not available in China. Constrained by such inabilities, the government must ask enterprises to make price adjustment proposals and then approve their pricing policy. As can be expected, these regulatory policies provide no incentives for enterprises to cut cost. But to appreciate the full impacts of such policies, one needs to realize that, like rate-of-rate regulation, there are also lags between price adjustments. Moreover, these rigid prices have not been fully implemented due to the weak enforcement power of the government.

3.3. Hierarchical Regulation and Corruption

The next point to consider is the need to devolve regulation to the regulatory agencies or ministries. A main role of these institutions is to partially bridge the informational gap between public decisionmakers and the regulated firm. This gives rise to another issue, the possible capture of the regulatory agency by the firm. Such collusion will occur with greater probability if the stakes of collusion are high, if the cost of side transfers between the firm and the regulator are low, and if no incentive mechanism is in place for the regulators.

The stake of collusion amounts to the information rent that an efficient firm obtains when the regulator hides the fact that it is efficient. From our previous analysis, it is increasing with the level of effort chosen by the less-efficient firm (since it is equivalent to the gain obtained by an efficient firm when it mimics an inefficient one). The maximum bribe that a firm will be willing to offer to the agency is this stake. However, it should be discounted by the price of internal transfers, which includes the cost of being discovered as well as the need to use often-indirect transfers that are less efficient than monetary transfers. Capture is avoided if the agency is paid an amount larger than the discounted value of the stake of collusion when it reveals the firm is efficient (we will call this constraint the collusion-proof constraint).

In the simplest cases, the regulatory response to the fear of capture is to satisfy the collusion-proof constraint at the lowest possible cost. This includes shifting optimal regulation toward cost-plus schemes to decrease the stake of collusion, and improving monitoring to increase the cost of side transfers.

Three features of developing countries call for even higher shifts toward cost-plus mechanisms. First, we can expect a lower cost of internal transfers because of less stringent monitoring of illegal activities. Second, incentive payments to the agency are more costly because of the higher cost of public funds. Third, it may be politically more difficult to create such strong incentive payments.

So far we have dealt with a case where the optimal regulatory response entails no corruption. If we extend the framework to a case where, for example, regulators are more or less susceptible to being corrupted (some requiring low bribes, others requiring higher bribes), it may be optimal to let some corruption occur if the proportion of regulators requiring low bribes is small enough. Creating incentive payments which suppress the corruption of this type of regulators would be too costly, because the high payments required to fight corruption would have to be incurred even for the other type of regulators (for whom it is not necessary). Then, the same features of developing countries, which militate in favor of low-powered

incentive schemes (high cost of public funds, poor auditing technologies), suggest that it is optimal to let more corruption happen at equilibrium.[8]

Therefore, the effect of corruption appears complex. If we consider corruption of cost auditing it calls for higher power incentives, but if we consider corruption in information reporting, lower powered incentives are required.

Box 5: Hierarchical Regulation and Corruption in China.

Regulation of public utilities has been decentralized substantially in China both to the regional agencies and to the sectoral agencies. While no conclusion can be drawn whether centralized or decentralized agency is more susceptible to capture, there are some institutional factors that make regional regulation less robust to corruption.

On the one hand, the local regulatory agencies are subject to no effective control of the central government while the local governments can easily affect their policies. Such institutional arrangement will necessarily cause concerns of market segmentation or favoritism to local players. On the other hand, social networks are more developed and effective which imply that local regulations can be captured more easily than national regulations.

A case in point is the development of many small-sized power stations. As a result of relaxed regulation on entry, in many regions small coal-fired plants and hydro plants have been built. These plants with below-efficient sizes are not only inefficient but also produce heavy pollutions. Indeed, the sizes of these plants are in general below 5-MW and they produce on average three times more than those produced by the more efficient plants with a minimal capacity of 30-MW. To solve this problem and to create a more efficient industrial structure, the government has issued strict regulations to close down these plants. Unfortunately, these regulations are not strictly implemented. To the contrary, the number and installed capacity of small generation plants continues to increase and crowds out more efficient generation capacity. The problem is that the local governments exert their influence on the local regulatory agencies for not implementing the restructuring policies initiated by the central government. In some cases, the local governments simply collude with these plants against the central government through hiding information and false reporting. In other cases, when the central government checks on site the situation, the local government sends a warning in advance to the plants and then the informed plants close the plants temporarily to avoid being caught. When the checks finish, business is as usual.

The local government's incentives to help local generation plants come from the fact that local production help increase employment and local tax revenues which contribute to local officials' promotion. So by keeping silence and collaborate with local plants on this matter, the local government has an easy life.

However, there is another factor that may counter the argument that regional regulation is more prone to capture. This is related to the current division of labor between central and local regulatory agencies. Remember that in general the central regulatory agencies are in charge of control of big projects in terms of investment size while the local regulatory agencies take care of small ones, which implies that there are higher stakes to bribe the central regulation. In

[8]See also Laffont and Meleu (2000) for an analysis of how the separation of regulatory powers may help fight corruption.

this sense, one may argue that the probability of corruption may be smaller but the impacts are bigger with central regulation.

3.4. Commitment

Let us consider now the important issue of commitment, more specifically, the fact that governments in developing countries have even less credibility to commit to long-run regulatory rules than those in developing countries.

A lack of commitment puts the ratchet effect into motion. Faced with incentives in the first periods, firms fear that taking advantage today of these incentives (efficient firms make more money by having low costs) will lead to more demanding incentive schemes in the future. The way to commit credibly to not expropriate rents in the future is to learn nothing today about the firms' efficiency. Instead of offering, as in the static case, a menu of contracts with variable sharing of overruns, which induces self-selection, the extreme attitude is to offer a single contract which induces under-effort of the good type and higher-than-first-best effort of the bad type. The inefficiency created by the lack of commitment is an inappropriate provision of effort levels over the various periods, which has no simple interpretation in terms of the power of incentive schemes. In the case of linear schemes it can be shown (Freixas et al. 1985) that the ratchet effect pushes toward high-powered schemes which create higher rents in the first period to induce the revelation of types. More generally, the less commitment ability there is, the less the regulator should try to separate types and the more so if the cost of public funds is high.

Box 6: Enforcement Failures in China.

Lack of commitment is indeed a serious problem that plagues regulations in China. The most serious case comes from the enforcement of price regulations. In telecommunications, the regulatory officials openly admits that price regulation is not as effective as it is used to be. Even though administered prices without any flexibility are officially imposed, price wars are common. Indeed, when competition is introduced, it is questionable to what extent price regulation can be enforced in general in a rapidly developing sector like telecoms.

In China's mobile phone sectors, the receiver-pays-principle is currently adopted. But many cases have been reported where the caller-pays-principle is illegally adopted. While the government has punished and corrected some cases, it has not been eliminated completely. It is also the case of IP phone services where competitive pressures have led to dramatic price cuts in comparison to the official prices. It seems that the Ministry of Information Industry can do nothing but to let it happen. There are also indirect price cuts in the form of free calling times and subsidized handsets etc. which are officially not allowed. But they happen daily.

The second case is related to the enforcement of concession contracts. Concessions have been introduced in power, toll road, and water etc. In many cases these innovative forms of regulation have contributed to the development of these sectors. But there are also some cases of enforcement failures due to the change of market conditions and the unsustainable terms put into the contracts.

In the power sector, the government has allowed independent power producers (IPPs) to compete with the incumbent, the State Power Company (SPC). These IPPs enter into the market by signing power purchase agreements (PPA) with the SPC which consist essentially of a load factor and a unit average price to recover both generation costs and capacity costs. When a shortage of energy condition prevails, the PPAs are enforced without much problem. But when the market conditions change with an excess supply of capacity, conflicts of interests arise and the PPAs cannot be enforced. In particular, utilization of installed capacity is much lower than the specified load factor and the bulk power prices are also lower than the contracted prices.

The impacts on generators are different depending on the vintage of the plants. In particular, the new plants suffer seriously because they still have a large part of cost to recover. To make things worse, the contract structure with a unit price and a load factor gives generators strong incentives to produce as much power as possible regardless of their economic costs, because the more they generate the more profits they can earn. This only complicates the favoritism problem and makes economic dispatch more difficult to realize. It seems that the government can do nothing about this. With the impending reform to create competition in generation, it remains to be seen how the government can overhaul these PPAs when part of their assets will become stranded.[9]

Enforcement failures of contracts have also taken place in water where concession contracts have been used to attract foreign investments. A typical example is the Sino-French Water Company which is a joint venture for water production with a term of 30 years between the Shenyang Water Company (state owned) and the Sino-French Hong Kong Water and Investment Company. The ownership structure is that each owns 50% of the joint venture. According to the agreement, the Shenyang Water Company should buy all the water produced by the joint venture. The purchase price should be negotiated each year between the Chinese parent company and the joint venture but the prices should guarantee a minimum rate of return of 18% for the joint venture. Since it was in operation in 1996, the purchase price rose rapidly while the retail price didn't catch up. This caused huge losses to the parent company which made the contract unsustainable. The contract was stopped in 1999 when a listed company, the Shenyang Development Company in which the parent company has 80% of ownership, bought out the joint venture with money raised from the capital market. The operation of the joint venture was taken over by a subsidiary 100% owned by the Shenyang Development Company. In the end, the initial BOT contract was changed into a management contract.

Another example which is related to the regulation of entry can be found in telecoms. A case in point is the so called "Sino, Sino, Foreign(Zhong, Zhong, Wai)"controversy. When the China Unicom was created in 1997, it needed huge amounts of capital to deploy its own network both in fixed line and mobile services. At that time, raising a large amount of money through IPOs either in China or in foreign capital markets or from other channels seemed not immediately possible. On the other hand, foreign companies were eager to invest in China's huge telecom markets. But unfortunately, foreign investments were not allowed in basic telecoms services. To solve this problem, China Unicom overcame the legal barrier indirectly by establishing subsidiaries with

[9]There are factors both lessening and worsening the stranded cost problem. Since China has allowed an accelerated recovery of costs with short-term debt, most of the costs may have been recovered. Indeed, there may be a windfall gain or negative stranded cost problem after competition is introduced. On the other hand, because of the cost-plus nature, capital cost and O&M cost may be higher than usual.

100% ownership. Then, these subsidiaries set up joint ventures with foreign companies. So comes the name of the arrangement which is essentially a way of raising capital. By heavy closed door lobbying and, in the meantime, with the recognition that the government has to give China Unicom some favorable policy for its competing with China Telecom, the Ministry of Post and Telecommunications, the ancestor of MII, tacitly accepted this practice. But later on after huge investments were sunk, the government announced that this practice was illegal and foreign capital had to exit. This has caused an outcry. Even though the government has made some arrangements to compensate those foreign companies that have sunk their investments, some problems have remained and China paid its price in the negotiations toward entering into the WTO. While one can argue that the original practice was not legal so that it should not be enforced in the first place, such practices are not uncommon in a country like China which still has a weak rule of law. Indeed, it is easy to find other practices with similar quasi-legal features. For instance, the current Chinese regulations require that the ownership shares of ICPs by foreign companies cannot surpass 50%. But it is only a fact that most ICPs are actually owned by foreign companies. It is easy to find such evidence but the government has chosen to keep silent on this.

The lack of ability of regulators to commit can be mitigated by the repetition of their relationship with the firms and the building of the regulators' reputation of not expropriating the rents derived from future efficiency improvements.[10] It can be expected that this substitute to commitment of institutions will be less easy to achieve in developing countries.

No general analysis exists of how easy commitment is, depending on the type of regulatory regime. Regulatory institutions must be particularly scrutinized in developing countries for their ability to provide long-run incentives through their power of commitment, since a major goal is to attract foreign investment. For example, price capping has been pushed in the Western world as a way to provide high-powered incentives. However, price caps are regularly renegotiated while a commitment to a fair rate of return *might* be less prone to costly renegotiations (Greenwald 1984).[11]

3.5. Weakness of the Rule of Law

Enforcement of regulatory rules is poor in developing countries for two reasons. First, enforcement is costly, and optimal enforcement decreases with the cost of public funds. Second, the principal agent paradigm with full bargaining power attributed to the regulator does not fit the reality of developing nations. Note however that weakness in the bargaining position at the renegotiation stage calls for increased investment in enforcement. Finally, corruption of the enforcement mechanism itself or of the regulatory mechanism calls for less enforcement. Thus, the weakness of the rule of law in developing countries is not only due to poor human resources, it is also part of an optimal regulatory response (see Laffont, 2001).

[10] See Gilbert and Newbery (1988) for a model of infinitely repeated contracting in which some collusive equilibria do not exhibit the trading inefficiencies associated with shorter horizons.

[11] However, one can also commit to a fair renegotiation of price caps.

3.6. Financial Constraints

Financial constraints compound the difficulties of asymmetric information for regulation in many circumstances. The basic intuition can be stated in simple moral hazard control problems with risk neutrality. Moral hazard in a delegated activity can be controlled without giving up a rent to the agent if penalties are possible even when the observation of the performance is noisy. However, if such penalties are not possible because of limited liability constraints, only rewards for good performance can induce appropriate effort levels, i.e., information rents must be given up.

The greater the financial constraints the greater those rents. Both the strength of financial constraints and the high cost of public funds favor a shift toward less powerful incentive schemes in developing countries. The irony of the situation is that, even though these countries should make more effort to emerge from underdevelopment, inducing effort is much more difficult in developing countries.

3.7. Summing Up

This section has detailed the many arguments that favor a move toward less powerful incentive schemes (and, therefore, a move toward less efficiency) in developing countries.

However, the use of performance evaluation to improve the fundamental trade-offs between efficiency and rent extraction presumes a perfect or at least unbiased auditing of that performance. The main argument against such advice is the cost padding effect and the corruption of the cost audits which, on the contrary, favor fixed-price mechanisms that save all the auditing costs.

Thus, we may distinguish three stages of development concerning regulation. In the first stage, the auditing mechanisms are so poor that powerful incentive schemes should be advocated. They promote short-run efficiency in activities that are immune to ratchet effects, but they strongly favor ex post inequality (since the efficient types make more money than the inefficient ones), they encourage some types of corruption of regulatory and political institutions, and they are costly for the rest of the economy because they create a money drain toward the regulated monopolies. This first stage should be used to develop a good auditing system. Once it is in place, one can move rather discontinuously to stage two of development by promoting less powerful incentive schemes for the reasons explained above. Then, as development continues, the optimal solution is to slowly move toward more powerful incentive schemes in stage three. The quality of regulation in each of these stages depends critically on the ability of the government to commit credibly to the implementation of the schemes.

4. PROMOTING COMPETITION BY PRICING ACCESS

Let us again distinguish between the three market structures considered in Section 2 to discuss appropriate access pricing rules in developing countries.

4.1. Vertical Desintegration

Consider the simplest case where the final services are produced by competitive industries at constant marginal costs. Ramsey pricing tells us that the access price markup over the marginal cost of access for a given good relative to the access price for this good should be inversely proportional to its demand price elasticity. Such a pricing scheme can be decentralized; price caps can be applied to the regulated firm in charge of the infrastructure, relying in this way on the firm's demand information. Of course, that information is the province of the users of the infrastructure. The utility can infer this demand information from the demand for access as long as the users report truthfully the type of final good for which they use the infrastructure.

It may be difficult to promote such truthful reporting in developing countries when inspection systems are easily corrupted. Moreover, price discrimination resulting from sophisticated Ramsey pricing may be manipulated by interest groups (see Laffont-Tirole, 1993, Chapter 11). Consequently, in the case of developing countries Ramsey pricing should be based on broad categories of usage which do not raise complex inspection issues and should be decentralized by price caps.

Another concern in developing countries is the market power of users of the infrastructure. However, the regulation should not attempt to undo, via access pricing policy, the monopoly power of the users of the infrastructure. Indeed, such a policy requires a lot of knowledge from the regulator and raises issues of favoritism. In the absence of long-term contracts, there is a potential for expropriation of some large users' investments, which is quite negative for attracting foreign capital. In this case, other policies should be used to foster the competitive use of the infrastructure (see Section 5).

The discretion surrounding the determination of price elasticities and raising the problem of capture is transferred to the choice of weights when using price caps. A nondiscretionary method for choosing weights in the price cap, such as last year quantities (plus an exogenous change in the level) should be selected in developing countries.

4.2. One Way Access with Vertical Integration

We consider now the case of a vertically integrated utility which provides access to the infrastructure and also sells a service using the infrastructure (the incumbent), and wediscuss two subcases.

Suppose first that the competitive users of the infrastructure provide an imperfect substitute to the service provided by the incumbent (mobile phones versus fixed link telephony with a lot of unsatisfied demand). In this case, regulation of access should be treated just like regulation of an end-user service, because the incumbent will be willing to provide access that increases its business with little effect on its own service market. For example, global price caps including final goods as well as access goods can be used. (See Laffont-Tirole (2000), Chapter 6.)

The situation is more difficult when competitive users offer services that are very close substitutes of the services provided by the incumbent. Then, the Ramsey rule tells us that the access price should be high enough to avoid inefficient business stealing and to balance the budget of the incumbent. One is tempted to favor a generous (for the incumbent) access pricing rule, such as efficient component pricing, to avoid foreclosure and to focus regulatory resources on implementing quick and high quality interconnection. Alternatively, one can use a global price cap supplemented by maximum prices determined with the efficient component pricing rule. It should be recognized that it is a very difficult case requiring a lot of regulatory expertise, making it difficult to implement good solutions in developing countries. Indeed, examples from Côte d'Ivoire, Ghana, Tanzania and elsewhere show that incumbents in the telecommunications industry are using various strategies to avoid competition (foreclusion, delays, raising rival's cost...).

4.3. Two Way Access for Competition in Infrastructures

When there is competition in infrastructures, as is the case of telecommunications, in particular, final prices are usually deregulated but the regulation of access prices remains an issue. For example, in the internet, the bill-and-keep doctrine amounts to a zero access charge, something that is currently being debated (see Laffont et al., 2001).

According to the literature, access prices in telecommunications should be regulated because firms (at least for symmetric networks) can use access charges to collude against consumers (high access charges induce high final prices) and to block entry (see Armstrong, 1998 and Laffont et al, 1998a and 1998b). One possible solution is to impose the bill-and-keep doctrine because of its simplicity and because it encourages competition in final prices.

A more difficult situation occurs when networks are asymmetric in size or traffic. In particular, it is important to ensure that network competition does not interfere with network development.

The regulator may mandate negotiations for interconnection under the threat of arbitration by an international body. It is unlikely that he will often have the information to choose access prices itself. This is an area

where it is particularly clear that it is not enough to declare that competition is possible or even to sell licenses for competition to really take place. The inability to ensure fair competition may even delay competition and lead to implementation of the alternative option, that is, of regulating the monopolist with a strict program for developing the network.

Box 7: Access Policy in China.

Under the current development of competition, access pricing policies are implemented differently in railways, electricity, and telecommunications. In railways, since competition in transport services has not been introduced, there is no separate access policy. Instead, tariffs are designed that integrate both transport and infrastructure services. However, there is a very complicated settlement system among different administrations[12] which has been used to settle revenues including access revenues among administrations.

The settlement system has been changed several times but the main features remain more or less the same.[13] In a nutshell, in the settlement process the revenues received by each administration are divided into two parts: i.e., access and non-access revenues. The access revenues will be allocated or settled through settlement prices for each administration which are determined based on various types of traffic and also on concerns about redistribution. Without going into the details of the determination process, we can conclude that the access charges are essentially based on a revenue-sharing scheme which depends neither on cost nor on demand.

There is no explicit transmission prices in China's power sector. All the transmission costs are incorporated into the final prices on a cost-plus basis. The pricing mechanisms in China's power sector are formed as follows. First come the bulk prices which are, together with other elements of power purchase agreements, regulated by local governments and subject to the approval of the SDPC. Then, transmission costs including fixed costs of transmission network, O&M, line losses, and retailing costs and cost of capital are added to obtain the total costs of power supply to form the final prices.

In telecommunications, access and interconnection prices are also to a large extent determined on a revenue sharing basis. For instance, termination from mobile to mobile networks imposes no charge. But since China adopts RPP in mobile networks, such regime is equivalent to an equal sharing of revenues under CPP. Indeed, such revenue sharing scheme is also explicitly implemented for the interconnection from fixed line to fixed line networks. More precisely, the interconnection charge is regulated to be equal to half of the rival's retail prices. The termination charges for a call between the mobile and fixed line networks are a little bit more complicated. For a call from the fixed line network to the mobile network, the former does not need to pay access charges. But remember RPP is adopted in China's mobile services. So it is equivalent to such a regime in which the calling party receives part of revenues just covering termination cost.

[12] The state railways enterprise consists of 14 administrations.

[13] More precisely, the settlement system in China's railways has gone through three periods: (1) the period of settlement prices (1978-1986), in which all revenues had to be turn over for settlement and the settlement prices was determined arbitrarily, (2) the period of settlement prices and double connections (1987-1993), in which the administration turned over all revenues for settlement and the settlement prices were determined on performance basis, and (3) the period of in-administration revenues retained and through-administration revenues settled (1994-), in which only access revenues are settled.

For a call from mobile to fixed line network, the former will pay the later an interconnection charge of 0.06 yuan/minute (the average marginal retail price is 0.1 yuan/minute).

To sum up, the current access and interconnection pricing is in general not cost based. So one may ask what are the main motivations for adopting such pricing principles. First of all, access and interconnection pricing determined on a revenue sharing basis alleviates the regulator's asymmetric information problem. Indeed, lack of information on cost and weak auditing systems are the main features of the Chinese economy. Second, these policies have a flavor of asymmetric regulation, at least in the way that they are practiced. Indeed, one can argue that to price access and interconnection between asymmetric networks such as China Mobile, the dominant mobile player, and China Unicom, which have quite different calling patterns on equal sharing of revenues basis has the obvious objective to facilitate entry of the latter, because their access revenues are got to be unequal. Indeed, some disputes have arisen between these two operators in the past when new services were introduced. For instance, when China Unicom negotiated termination charges of its new CDMA network with China Mobile and wanted to keep the current bill-and-keep policy, China Mobile was strongly against it arguing that China Unicom has now obtained enough market shares which make asymmetric regulation unnecessary. The dispute was turned over to the MII for arbitrage and a closed door solution was arranged.

Of course, one may argue that revenue sharing schemes may be more susceptible to collusive agreements which will be translated into high final prices. But since China is still far away from well developed network competition, it is reasonable to conclude that collusion will be less a concern than the promotion of competition through access and interconnection pricing policy.

5. COMPETITION POLICY

We have argued that competition policy is not appropriate to deal with the complex and rapidly evolving technical issues concerning the interface between the competitive and noncompetitive segments of infrastructure industries. It remains to be seen what kind of competition policy is appropriate for the potentially competitive segments.

Three ingredients are needed for competition. First, there must be enough firms or potential entrants into an industry. Second, those firms must not enter into collusive side-contracts. Furthermore, if a firm has developed a dominant position through innovation it should not abuse this position.

It should first be stressed that, in most developing countries, the major problem is the dearth of participants, particularly in infrastructures where investments are usually sunk for long periods. As a result, the major problem is how to attract local or foreign capital to those industries, that is, how to create the conditions that make investment attractive. The work required to favor entry is not the usual task of a competition agency. Unfortunately, it concerns most of the characteristics of developing countries that were discussed earlier and which cannot be easily resolved: inefficient

financial sectors, lack of credibility of institutions, lack of enforcement of laws, inefficient transportation and communications, lack of information available to consumers, etc., what Carlin and Seabright (2000) refer to as "competitive infrastructure".

This is particularly the case in infrastructures where technologies favor high concentration and international trade cannot be relied upon to create competitive pressures. The difficult question is: which rate of return will attract the optimal level of investment? If this optimal rate were known, competition policy should ensure this rate and no more. Probably, this can be achieved more easily through concession contracts with regulated prices than with competition in infrastructures.

More traditional competition policy can be relied upon in the case of the competitive use of infrastructure. As observed by Rey (1997), collusion is facilitated by entry barriers, market concentration and capacity constraints, and these factors are more likely to be present in developing countries. As already observed, the transaction costs of collusion are also likely to be lower in LDCs. Similarly, predatory strategies may be particularly dangerous in countries where credit markets are weak. Rey (1997) argues also that the high entry barriers often found in developing countries give more force to the market foreclosure argument when discussing the essential facility doctrine. He also recommends a more cautious attitude toward vertical restraints.

Competition policy during the liberalization process should apply to the competitive segments of the deregulated industry; namely, generation in electricity, long distance service in telecommunication, and operating services in transportation. This is particularly important in developing countries where attracting capital for infrastructure investment generally requires giving sizeable market shares to investing firms.

In particular, merger and acquisition rules in developing countries must be designed with an emphasis on simplicity, nondiscretion, and adaptability to the rapidly changing market structures. One possibility is to establish explicit market share constraints (foregoing efficiency arguments), which are revised periodically.

Some industries may need more innovative combinations of regulation and competition. For example, under normal conditions, the electricity industry may be appropriately competitive and need only the oversight of competition authorities. However, when capacity constraints are binding, either under conditions of peak demand or because of supply shocks, generation firms may enjoy such power in local markets that price regulation becomes necessary.

More generally, the difficulty to attract capital generates market structures that are imperfectly competitive and calls for a more intrusive regulation of conduct than classical competition policy. It also creates conflicts

between privatization committees or regulatory institutions, which are well aware of the constraints on competition imposed by the need to attract capital, and the competition authorities, which ex post tend to breach the explicit or implicit agreements that restrict competition.

In any case, it should be clear that US-style competition policy (with its armada of lawyers and economists) is neither affordable nor achievable in developing countries. Designing simple and transparent rules for these countries, particularly to prevent horizontal collusion and abuse of dominant position, remains a worthy task. Nevertheless, the benefits that can be expected from competition policy are quite small in the foreseeable future for several reasons.

The lack of adequately trained staff is particularly acute, in view of the complexities and ambiguities of the economic analysis of such questions as predatory behavior and vertical restraints. Emerging industries will be necessarily highly monopolistic and interest groups will have considerable potential for interference.

Yet, competition agencies should be developed. Their first major goal is to play an educational role by advocating the social benefits of fair competition and concentrating on specific goals. For example, competition is weak in developing countries because transactions are localized as a result of poor communications systems and inefficient trading organizations. Focusing attention on these areas should be particularly fruitful.

Finally, in pushing for competition in infrastructures it must be remembered that a major goal is to achieve greater population coverage in access to basic public services. Monopoly provision which allowed cross-subsidies, when properly[14] used, was a powerful redistributive instrument. Competition makes redistribution via prices more difficult, and there are not always easy substitutes, in countries with very inefficient and often corrupt tax systems (Laffont and N'Gbo, 2000, and Gasmi et alii 2002). Then, it may be easier to achieve universal service obligations within a concession contract than through oligopolistic competition

Box 8: Competition Policy in China.

It is argued in China that competition policy is less relevant in developing economies because on the one hand, natural monopolies are taken care of by regulation, and on the other hand, there is no meaningful market power created by any enterprise's dominant position which is the purview of competition authority. Indeed, most Chinese firms are still small in comparison with big names of multinationals. While the view may underestimate the role of competition policy, it does point out the important fact that competition policy may have different dimensions in developing countries and one has to take into account the institutional features in China. But since competition policy in-

[14]In addition to favoritism and rent-seeking, cross-subsidies may induce inefficient bypass and create poor incentives for service quality provision and proper coverage of under priced consumers.

cludes the promotion of fair competition, let us focus on the anti-trust aspect of competition policy.

The most important problem of competition policy in China's context is the so called administrative monopoly which means that market power is usually created by the abuse of administrative power. The unduly exertion of administrative power, whether by ministries or local governments, is meant to create entry barriers which will segment the market, in particular the segmentation of local markets. Indeed, many cases have been reported on this. For instance, in the power sector, power exchanges are not actively transacted because of local governments' influence. Actually, the issue here is not a matter of competition policy but how to solve the conflict of interests and counter the abuse of power by the local governments.

Another feature of competition policy is it has to deal with price wars among SOEs. In other words, predation strategy is more relevant in China's case. For instance, price wars are so fierce in the airline industry that price regulation cannot be seriously implemented even though the government tried various ways to curb them. In telecoms, price cuts, directly or indirectly, are often observed. While it may be difficult to judge whether it is a real competition policy problem or a soft budget problem which is typical of SOEs, these problems do raise an important question: to what extent competition can be introduced without ownership reform?

6. CONCLUSION

This paper has highlighted the departures from developed countries practices that are required in developing countries on the basis of normative economic theory. However, a number of caveats must be borne in mind.

First, more empirical work is needed to more precisely characterize the specific features of developing countries that are relevant for regulatory economics. Such work should naturally lead to distinguishing various stages of development and to obtaining a classification of countries requiring differentiated policies.

Second, even though we have mentioned some characteristics of governments, a broader political economy of reform, taking into account specific historical and political situations is necessary.

Third, liberalization, competition and regulatory policies are very recent developments, especially in the very poor countries. The empirical evidence is limited and not of easy access. Moreover, it is never in a form that would allow rigorous econometric tests. Case studies and theory are the only available tools that can be used under these circumstances, but this should be done with a lot of caution, in particular because the economic theory relevant for developing countries is so far only sketchy.

Nevertheless, we hope that this paper provides a useful framework for those who have the difficult task of advising developing country authorities on more efficient ways of providing public services.

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