ON PRIVATIZING INFRASTRUCTURE INDUSTRIES

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In the first half of the 20th Century, nearly all nations, developing and industrialized, used a ministerial state-owned enterprise (SOE)[1] to operate infrastructure industries.[2] In the last two decades, nearly all developed countries and more than half of developing ones have decided to abandon the ministerial SOE in at least some infrastructure industries, usually for privatization and frequently for competition. Converting a ministerial SOE into a reasonably independent corporation,[3] whether mostly publicly owned or completely privatized, usually causes the performance of the firm to improve. After corporatization, service quality is higher, capacity grows more rapidly, waiting lists for new service and repair are shorter, the financial performance of the entity is stronger, costs are lower, and prices are more aligned with costs. Fully privatized firms usually are better performers than corporations that are mostly publicly owned, but this difference is small compared to the advantages that both organizational forms have over ministerial SOEs, especially if competition is encouraged. The key point is that operating efficiency is substantially improved if the enterprise faces a hard budget constraint and is relatively free of political interference in its day-to-day business decisions.[4]

The second conclusion from the research literature is that the institutional details concerning the regulation of corporatized entities is extremely important in influencing industry performance. Specifically, performance is better if regulators are independent of both the

legislature and the executive, if regulatory processes are open and transparent, if judicial review is speedy, if the standards for judicial review clearly focus on whether the agency acted within its mandate and had a reasonable basis for its decisions, if regulatory policy is designed to favor largely unregulated competition, as opposed to monopoly or managed competition, wherever competition is feasible, and if regulation of the residual monopoly is oriented towards maximizing economic efficiency (including suppression of monopoly pricing and anticompetitive behavior). Moreover, privatization is likely to be more successful when most, if not all, of these governance institutions (including the commitment to competition) are in place before privatization proceeds. The purpose of these notes is to provide some documentation and explanation for these assertions.

ORIGINS OF REFORM

The cause of the privatization wave of the late 20th Century is primarily the poor performance of these industries under the era of ministerial SOEs. Typically these industries provided what came to be regarded as poor service at high cost; however, poor performance had been a feature of these industries for decades, so the question remains why reform in the 1980s and 1990s, rather than before. Here the plausible answer is that as performance deteriorated, these industries became a growing impediment to economic development. This problem was exacerbated by two technological developments. The first was technological progress in transportation and communications that substantially reduced the costs of international trade and thereby enhanced the attractiveness of trade-based growth strategies. The second was the information technology revolution that brought forth not only modern telecommunications

systems, but also revolutions in production and transactions methods that relied upon the telecommunications system.

The performance shortfall in infrastructure industries had several direct causes. The first was politicized pricing policies that typically held prices below cost and thereby led to government subsidies, and under-investment and inadequate repair and maintenance of the capital stock. The second cause was the infusion of a patronage system into employment, leading to low labor productivity and high labor costs. In many countries these problems were compounded by a policy to practice near-autarky in the acquisition of equipment, an especially costly policy in most developing countries in which neither the scale of production nor technical know-how were sufficient to produce anything remotely resembling reliable equipment at reasonable cost.

A third cause of reform, especially in the developing world, was the more general decision to adopt more sweeping economic reforms regarding fiscal and monetary policy. The goal here was to end chronic monetized government debt that led to high inflation rates. Privatization provided a double benefit: an end to state subsidies combined with a short-term windfall in the form of revenues from the sale of the SOE.

THE FIRST TRAP: EXCLUSIVITY WITHOUT REGULATION

At the time of privatization, most governments intensely debate the form that privatization will take, and eventually, upon the advice of some management consultants, prospective investors, and officials in international organizations, most decide to create temporary monopolies and to worry about setting up regulatory institutions and introducing

competition after privatization is completed.[5] The decision to create a monopoly is based on the argument that foreign investors require it in order to purchase the privatized firm for a substantial amount, to continue to pursue a "universal service" objective to serve all communities and, for consumer services, to serve households that can not afford service that was priced to recover its full cost, and to commit to a major investment program to improve service.

The decision to create a temporary monopoly is always controversial when made and remains so afterwards because part of the argument supporting it is inconsistent with elementary economics and so leads to disappointment in post-privatization performance. When privatized, a monopoly sells for more than a competitive firm if the monopoly is either unregulated or regulated loosely, for then purchasers are buying a stream of monopoly profits, which is more valuable than a stream of competitive returns. By granting a period of exclusivity of supply and deferring the issue of establishing a regulatory system, governments create a temporary monopoly that has the opportunity to earn substantial excess profits for many years. As a result, governments receive a higher price for privatized firms. But high monopoly prices, in the absence of a substantial state subsidy for customers with a low ability to pay, reduce the demand for service, so that monopoly leads to less, not more, private investment. Meanwhile, customers and, more generally, the economy continue to suffer from an underdeveloped infrastructure.

Recent studies of privatization of telecommunications in developing countries bears out these simple economic arguments. Granting a temporary telephone monopoly reduces network expansion by between ten and forty percent, and the annual growth rate of the network by more than two percent during the period of exclusivity.[6] Allowing even the imperfect competition for wire-line service that can be created by multiple wireless carriers improves the performance of

the latter.[7] This possibility encourages wire-line carriers to make service more attractive in order to retain these customers. Thus, entry by competing wireless carriers causes the incumbent to expand wire-line service significantly more rapidly than if the incumbent wire-line company is given a wireless monopoly.[8]

THE SECOND TRAP: WEAK REGULATORY INSTITUTIONS

The decision to create a private and at best weakly regulated monopoly arises in part because governments, in their haste to acquire the financial and performance benefits of privatized firms, rarely want to wait to consider the institutional details of how the monopoly should be regulated and how, when competition does arise, the relationships between entrants and the incumbent will be managed. Effective regulation is far from easy to create, and surely can not be regarded as an afterthought to be slapped together later.

The Regulatory Challenge

Successful privatization of a formerly state-owned infrastructure monopoly almost always requires the creation of a new regulatory institution. This institution must have several key features if it is to be effective in optimizing the performance of the industry. Basically, regulation must not become a *de facto* instrument for re-expropriating the capital investments of private companies. This goal requires that firms be able to charge reasonable prices that recover their costs.

Regulation also must encourage efficient investment. To do so, regulation must not impose requirements on regulated firms that raise their costs but do not improve the value of

their service as viewed by their customers, and must give regulated firms significant latitude in making decisions about investment and employment. At the same time, efficiency requires that prices be capped somewhat near the level that would emerge under competition, and that carriers make sufficient investments to provide all services that are demanded at these prices.

Because competition is an effective tool for creating an environment in which firms operate efficiently, a competitive market structure is an effective means of increasing penetration and usage of the system. Consequently, regulation must be pro-active in supporting the development of competition where it is feasible. Where technology does not create a natural monopoly, regulated monopoly is never as efficient as unregulated competition, yet incumbent monopolists in one component of the industry frequently can extend their monopoly into other parts that clearly can be competitive. For example, electric distribution monopolies can also monopolize generation, local telephone access monopolies also can monopolize long distance and information services (such as internet access), and railroads can monopolize local distribution by trucks of long-distance freight.

In a network industry, an incumbent monopolist has the potential to exploit two anticompetitive advantages over competitors. First, customers may prefer to buy all services from the same source. If the incumbent's monopoly is not the result of superior efficiency, but arises because entry is difficult due to some combination of business practices by the monopolist and regulatory policies, customer preferences for "one stop shopping" will cause an unwarranted monopoly to extend into related markets. Second, competitors in one market must buy services from the incumbent monopolist in order to offer their own services. If these services have prices substantially in excess of costs or are degraded in quality, the competitors are crippled in the

competitive market.

For example, most nations with privatized telecommunications have tried to introduce competition into some aspect of the network, such as in long distance, mobile telephony, and internet services, and all have been forced to face these issues. In some cases, regulators have prevented local access companies from entering competitive markets. An example is the U.S. ban on entry into long distance by Bell Operating Companies (BOCs), the local access carriers of the formerly integrated American Telephone and Telegraph Company (AT&T), which was in effect for fifteen years. In some cases regulators have imposed "equal access" requirements, which means that all competitors must be provided monopoly telecommunications services on the same price and technical terms as affiliates of the monopolist.

Finally, to induce adequate investment, regulatory policy should be stable, predictable and timely. Stability and predictability mean that policies change only when significant changes have occurred in the environment in which the industry operates, and timely decision-making means that the agency responds reasonably quickly when such changes arise. These features of regulation enable regulators to avoid becoming an important source of business uncertainty, which, if not avoided, inhibits economically and financially warranted capital investments by regulated firms.

The Importance of Structure and Process

Whether regulatory institutions can be relatively effective at dealing effectively with these issues and thereby improving the efficiency of an infrastructure industry depends on the details of their structure and process. The structure and processes of regulation determine who is

empowered to make which decisions, and what they must do to implement those decisions successfully.[9] Scholars who have studied regulatory reform generally agree that an effective regulatory system has the following ingredients.[10]

Independence. Regulatory decisions about prices, entry, and technical interconnection arrangements must be removed from the day-to-day pressures of ordinary politics if they are to avoid being viewed as a means for rewarding political allies. This requirement does not mean that democratic politics should not constrain and direct regulatory policy, as discussed in the next paragraph. But it does mean that regulators should have considerable autonomy in the short run. In a regulated industry, prices are primarily as means for recovering costs and making appropriate signals to other business about which markets to enter, whereas in the political sphere prices of state-operated entities tend to be seen as taxes. Likewise, in the regulated domain investment and employment decisions are expected to be driven by the desire to provide efficient service to a large base of customers, not as means to reward political allies through patronage and politically influenced procurement.

To assure that short-term political interference does not lead to inefficiencies in prices, investments, and service attributes, regulators need to be independent – that is, insulated from day-to-day political pressures. Independence is provided in two ways. First, regulators can have the authority to make decisions without review or approval from elected officials except through the passage of new laws that repeal a regulation. A useful way to measure this element of independence is the number of separate political actors who must agree to overturn the policy, with a greater number of "veto gates" implying greater independence.[11] Second, regulators can have fixed terms that prevent removal from office (except in the case of malfeasance) until their

term has expired simply because the president, minister, or legislature would have made a different regulatory decision.

Clear mandate. Democratic responsiveness in independent regulatory agencies is created by clearly crafted laws that tell the agency what it is supposed to do with some precision. In the case of telecommunications, the underlying mandate of the agency should specify that its task is to provide services to as many citizens as possible at prices that fairly reflect the cost of service, and that where possible this task should be accomplished through creating a sufficiently competitive market that little or no regulation is necessary. Moreover, this mandate must tell the agency how to make decisions, and what it must do to cause its decisions to have the force of law. A clear legislative mandate not only gives the agency objectives, but it tells the agency how it should proceed to develop rules that achieve these objectives. The next few features of an effective regulatory system are the most important elements of this process.

Competence. Regulation is a technically demanding activity that requires considerable expertise in engineering, accounting, finance and economics. To succeed, a regulatory authority must have access to talented people in these disciplines, either by employing them or contracting with them. Fundamentally, competence primarily requires a sufficient budget to afford skilled professionals and the flexibility to acquire their services solely on the basis of merit, as opposed to patronage or other political factors. Competence within the regulatory agency is necessary for decisions to promote efficient operation of the industry.

Transparency. The idea of transparency applies not only to the policies and implementing rules of the agency, but to the process for making those rules. Transparency means that the regulatory rules and policies are clear, so that regulated firms and their customers

know, or can easily find out, what regulations apply to them and how to comply with them. In addition, transparency means that regulated firms, their competitors, and their customers understand how to initiate a regulatory proceeding to resolve a dispute, and what kinds of information regulators will expect from them in order to render a decision. In short, those who are affected by regulatory rules need to know how these rules can be changed in order to make regulation predictable and responsive.

Openness. An open regulatory process is one that allows all who are significantly affected by a regulatory decision to participate effectively in it. The heart of this requirement is that regulation must not be a secret, bilateral bargain between the regulator and a regulated company which is unobservable to anyone else except for the ultimate announcement of a decision. For example, if the issue is pricing by a firm, and if the policy is that prices should bear a reasonable relationship to cost, the customers and competitors of a firm must have access to the methods used to estimate costs and hence to set prices, and the right to challenge these methods in front of the regulator and the regulated firm.

Competition advocacy. Some mechanism must be in place to institutionalize advocacy of competition in the regulatory process. Regulation and competition are inherently conflicting policies: the former makes centralized decisions about prices, entry, investment, and quality, while the latter is a decentralized process in which each competing firm makes independent decisions that are driven by the goal of profitably winning customers by offering them a superior combination of products and prices. To prevent regulation from being destructive of competition requires vigilant attention, which can be accomplished by creating a competition advocate. A common way to institutionalize competition advocacy is to grant standing in regulatory

proceedings to the agency that is responsible for enforcing competition law.

Formal oversight: judicial review. To protect against error, incompetence, corruption or simply laziness, the regulatory system should include opportunities for external review of individual decisions as well as overall policies. Judicial review can play an important role by giving parties affected by a decision the opportunity to challenge it on either of two grounds: the agency exceeded its authority or otherwise did not carry out its objectives as stated in its legal mandate, or the agency did not base its decision on the information that was presented to it. In both cases, agencies need to be given some discretion about how to make difficult decisions when neither the law nor the evidence is clear, so that the standard of review should be reasonableness; that is, a rational person, after considering the law and the facts, could have made this decision. Judicial review also must be timely. Because technology and market conditions evolve rapidly, judicial decisions about the validity of a regulation can impose substantial uncertainty and costs if they are made years after the regulation is promulgated.

Effective judicial review is not created simply by passing a law that does a good job of laying out the duties of the court. In many nations, the judicial system has not traditionally been strong and independent, and even more rare is a system in which judges are well-informed about the economics that must underpin good regulation. Thus, an important part of building an effective system of judicial review is educating judges about the economics of the law and legal institutions, and appointing new judges with an appropriate legal education. Whereas an extensive reform of the judiciary seems a bit much to ask as part of the privatization program for a single industry, in most countries the scope of privatization is very large, and of broader reform of commercial law still broader. Pro-active construction of an economically informed judiciary

is a very important part of these broader reforms.

Formal oversight: statutory review. Independence of the regulator does not mean that statutes granting regulators a mandate should never be reconsidered. The requirement that regulators regularly report to political leaders about how laws are being implemented, with identification of vague or inconsistent laws and suggestions for amendments, are the most effective means for democratic oversight of the direction of regulatory policy, enabling elected authorities and their ministerial appointees to review the overall policy without becoming involved in specific cases or minor details.

CONCLUSIONS

One can not seriously argue that privatization of infrastructure industries has failed to improve performance and to benefit the economy, consumers, and government macroeconomic policy. But privatization equally certainly has achieved less than it could because far more attention has been paid to the purely budgetary implications of privatization than to the institutional details of regulating the privatized entity while it retains substantial market power and managing the transition to competition. For the most part, developing countries and their international advisers have underplayed the importance of setting up the right governance institutions, leading developing countries to establish weak regulation and ineffective judicial review. The agenda for the coming decade is to focus on getting the institutional details right to avoid later performance disappointments as well as political conflicts.

FOOTNOTES

1. A “ministerial SOE” is an entity in which managers are political appointees who serve at the pleasure of elected officials, many (maybe all) of its jobs are regarded as patronage, prices and revenues are treated like taxes, and expenditures are part of the government’s budget.

2. Herein “infrastructure industries” means more or less the utilities sector: electricity, natural gas distribution, pipelines, railroads, telecommunications, and water and sewage. The exact definition can be debated, but the key characteristics are that the industry is highly capital-intensive, is in input to virtually every major other industry, provides consumer services that are regarded as essential to achieving an adequate standard of living, usually is permitted to be a monopoly out of the belief that it has ubiquitous economies of scale and scope that make competition inefficient and perhaps impossible, and has significant “network effects” that require some degree of standardization and coordination among suppliers.

3. The meaning of an “independent corporation,” and the related concept of an “independent regulator,” are discussed in detail elsewhere. The basic idea is that both are sufficiently isolated from elected political leaders that the firm and its regulators can make decision about the day-to-day operation of the industry without the approval or effective intervention by the latter. But independence does not mean beyond political control. Instead, it means that political control is exercised through the more open and deliberative processes of legislation and judicial review of decisions for conformance with legislative mandates.

4. Quite a bit of useful research, most of it supported by the World Bank, produces the basis for this general assessment. Much of this work deals with telecommunications because it usually has been among the first major industries to be reformed, in part because telephone companies are easy to sell for a high price. Examples of work in this area are Mark Armstrong, Simon Cowan, and John Vickers, *Regulatory Reform: Economic Analysis and the British Experience*, MIT Press, 1994; World Bank, *Bureaucrats in Business*, Oxford University Press, 1995; Brian Levy and Pablo T. Spiller (editors), *Regulations, Institutions, and Commitment*, Cambridge University Press, 1996; Rava Ramamurti (editor), *Privatizing Monopolies: Lessons from the Telecommunications and Transport Sectors in Latin America*, Johns Hopkins University Press, 1996; and Bjorn Wellenius and Peter A. Stern (editors), *Implementing Reforms in the Telecommunications Sector: Lessons from Experience*, World Bank, 1994. For a review of this literature, see Roger G. Noll, "Telecommunications Reform in Developing Countries," in Anne O. Krueger, *Economic Policy Reform: The Second Stage*, University of Chicago Press, 2000.

5. The reader is entitled to know that the author of this chapter was on the losing side of this debate in several countries. In the case of Mexican telecommunicastions, these objections were committed to writing in Roger G. Noll and Fernando Salas, "Restructuring Telecommunications in Mexico," unpublished report, Secretary of Commerce and Finance, 1989.

6. Scott Wallsten, "Telecommunications Privatization in Developing Countries: The Real Effects of Exclusivity Periods," Stanford Institute for Economic Policy Research, May 2000.

7. The potential competitive overlap between wire-line and wireless arises because some consumers have both and can decide which system to use for a call based on relative prices, and because other consumers do cancel wire-line service when they acquire wireless. For example, in Korea estimated that between 20 and 40 percent of wireless customers either drop wire-line service when they subscribe to wireless or are first-time subscribers who would have subscribed to wire-line service had wireless not been available. Nakil Sung, Chang-Gum Kim, and Yong-Hun Lee, "Is a POTS Dispensable? Substitution Effects between Mobile and Fixed Telephones in Korea," unpublished manuscript, Korea Telecom Management Research Laboratory, available over the internet at: papers.ssrn.com/paper.taf?abstract_id=222288.

8. See Scott Wallsten, "Competition, Privatization, and Regulation in Telecommunications Markets in Developing Countries: An Econometric Analysis of Reforms in Africa and Latin America," Stanford Institute for Economic Policy Research, May 1999.

9. See Mathew D. McCubbins, Roger G. Noll and Barry R. Weingast, "Structure and Process, Politics and Policy: Administrative Arrangements and the Political Control of Agencies," *Virginia Law Review* 75(2) (March 1989), pp. 431-482.

10. See, for example, Noll, *op. cit.*, and Brian Levy and Pablo T. Spiller, *op. cit*.

11. For a useful application of this concept, see Philip Keefer and David Stasavage, "Bureaucratic Delegation and Political Institutions," Working Paper, Development Research Group, World Bank, May 2000. In this paper the authors show that as the number of veto

players increase, the ability of an independent central bank to control inflation and avert financial crises also increases.