This work is distributed as a Discussion Paper by the

STANFORD INSTITUTE FOR ECONOMIC POLICY RESEARCH

SIEPR Discussion Paper No. 06-35

PRIORITIES FOR TELECOMMUNICATIONS REFORM IN MEXICO

By
Roger G. Noll
Stanford University

May 2007

Stanford Institute for Economic Policy Research
Stanford University
Stanford, CA 94305
(650) 725-1874

The Stanford Institute for Economic Policy Research at Stanford University supports research bearing on economic and public policy issues. The SIEPR Discussion Paper Series reports on research and policy analysis conducted by researchers affiliated with the Institute. Working papers in this series reflect the views of the authors and not necessarily those of the Stanford Institute for Economic Policy Research or Stanford University.

PRIORITIES FOR TELECOMMUNICATIONS REFORM IN MEXICO

by Roger G. Noll

Abstract

During the past two decades, the performance of the Mexican telecommunications sector has improved substantially. Privatization of the former state-owned monopoly carrier led to a substantial increase in its efficiency, and the introduction of competition into all segments of the industry has led to substantial increases in penetration and utilization. Nevertheless, the performance of the sector is not as good as it could be, primarily because of weak governance institutions. This essay reviews the history of the Mexican reform, the performance of the industry since the reforms began, and the weaknesses in the regulatory and policy framework. The essay concludes with a series of proposals for institutional changes that would improve performance.

Presented at the World Bank Conference on Economic Policy Reform in Mexico, December 2006.

PRIORITIES FOR TELECOMMUNICATIONS REFORM IN MEXICO

by Roger G. Noll[1]

In 1991, Mexico embarked on a substantial telecommunications reform program. Among the reforms were the privatization of the state-owned telecommunications monopoly and, a few years later, entry of competitors into all segments of the industry and the creation of an independent regulatory authority. Despite these reforms, the Mexican telecommunications sector remains more expensive and less developed than it could be, largely because of the continued dominance of the largely unregulated dominant provider, Telmex and its mobile sibling Telcel.

This essay serves two purposes. First, the essay provides information and analysis on the comparative performance of Mexican telecommunications among its peer group of nations, i.e. nations with per capita income in purchasing power parity between USD $8,000 and $12,000 and with a large enough urbanized population to be reasonable benchmarks for Mexico. Second, this essay examines the relationship between the performance of the telecommunications industry and its structure and governance institutions, and identifies changes in the structure, rules and procedures of telecommunications regulation that would be likely to improve this performance.

AN OVERVIEW OF TELECOMMUNICATIONS REFORM IN MEXICO

Research on privatization and regulatory reform reaches two profoundly important conclusions: privatization almost always improves performance, but post-

privatization governance institutions and market conditions are extremely important in determining the magnitude of the improvement.[2] The history of Mexican telecommunications is consistent with both conclusions.

As of the second half of the 20th Century, nearly all nations, developing and industrialized, used a ministerial state-owned enterprise (SOE) to operate the telephone system.[3] Mexico was among the last to nationalize telecommunications, converting the firms in the industry to ministerial SOEs only in 1972. During the period of nationalization, the telecommunications sector suffered from under-investment, non-remunerative prices, high operating costs, and operating losses that were financed by the central government. As a result, Mexico, like many other nations, began to consider major reform in the 1980s, and by 1989 concluded that the best option was privatization.

The political origins and intentions of telecommunications restructuring in Mexico were unexceptional. Poor performance, stricter fiscal controls and the commitment to a more open economy led Mexico to consider privatizing a long list of industries. Telecommunications was an attractive target because of its strategic significance in a trade-oriented growth policy, the potential for significant improvements in service, the opportunity to derive substantial revenues from the sale, and the prospect of using the political cover that privatization offers to raise prices and to eliminate a fiscal drain on the budget.

Since the decision was made to restructure the industry, the Mexican telecommunications sector has been through a dramatic transformation. In December 1990, Telmex was sold to a consortium that included a large Mexican company, Grupo Carso, and Southwest Bell, an American local exchange carrier that is now part of

AT&T. In the amendments to its concession that accompanied privatization, Telmex was given a seven year monopoly in domestic and international telecommunications services in return for commitments for investments and pricing. Initially, Telmex was not regulated except for enforcement of the concession by the Secretaria de Comunicaciones y Transportes (SCT). Thus, for the first few years Telmex was an almost completely unregulated monopoly.

In 1995, the "Ley Federal de Telecomunicaciones" (Federal Telecommunications Law) was passed. This law adopted a policy to create a fully private and, eventually, competitive industry, and established a regulatory framework to apply during the period that the industry was dominated by Telmex. A 1996 presidential decree created the Comisiȯn Federal de Telecomunicaciones (Federal Telecommunications Commission), or Cofetel, an offshoot of the SCT, to implement the regulatory framework. In the next few years some competition emerged as entrants were given concessions to operate in long distance, mobile telephony, and fixed local access, but the competition suffered from the fact that Cofetel was a weak regulatory agency that could not cope with Telmex's entrenched power as the incumbent former monopolist.

Converting a ministerial SOE into a reasonably independent, partially privately owned corporation,[4] whether mostly publicly owned or completely privatized, usually causes a substantial improvement in performance. Because of the legal status of corporations in most nations, corporatization increases the financial security and independence of the firm, which in an industry like telecommunications, with little risk and substantial demand, virtually guarantees that the firm will be financially viable. Consequently, after corporatization, investment increases, service quality improves,

capacity grows more rapidly, waiting lists for new service and repair become shorter, financial performance improves, costs fall, and prices become more aligned with costs.

Research on telecommunications restructuring in developing nations concludes that the types of reforms introduced in Mexico should improve performance. Fully privatized firms usually perform better than corporations that are mostly publicly owned, but this difference is small compared to the advantages that both organizational forms have over ministerial SOEs. The key point is that efficiency is substantially improved if the telecommunications operator faces a hard budget constraint and is relatively free of political interference in its day-to-day business decisions. If competition is strong, even if limited to a few firms, performance is improved even more.

Mexican experience is consistent with these generalizations. After Mexican telecommunications was restructured, its performance improved significantly. From 1990 to 2005, the number of wire-line telephones in service almost tripled (from 6.4 million to 18.9 million fixed lines). Wireless telephony grew from nothing to nearly 50 million telephones in 2006. Yet the limited scope of competition has caused the improvements to be less than could have been achieved.

Mexico's performance in telecommunications is not impressive when compared with nations at a comparable state of development. Table 1 contains data about telecommunications penetration for twelve nations that form a reasonable peer group for Mexico. Telephone penetration per 100 households is the most commonly used indicator of the development of the sector. The list includes all nations except Iran for which per capita GDP is within US $2,000 of Mexico's and that have populations of more than five million, plus three Latin American nations that are out of this income range, Argentina,

Columbia and Venezuela. All other Latin American nations are either poorer than the lowest-income nation in the group (Venezuela) or have fewer than five million inhabitants.

In this peer group, Mexico is in the middle with respect to use of the Internet; however, Mexico's Internet utilization rate is less than half that of the best-practice nations within the peer group, Chile and Malaysia, and substantially behind Argentina, Bulgaria, Romania and Turkey. With respect to access, Mexico has the lowest wireless penetration and the lowest total penetration of fixed line plus wireless in the peer group. Columbia, Tunisia and Venezuela, the poorest nations in the peer group with per capita incomes more than $2,000 below Mexico, all have more wireless telephones and higher total telephone penetration than Mexico. Even Ecuador, with $4,100 per capita GDP, had wireless penetration in 2005 of 46.3 percent (exceeding Mexico) and a total telephone penetration of 59.0 percent (compared to Mexico's 63.4 percent). Thus, Mexico's telephone penetration represents the norm for nations with per capita incomes around $6,500, and best practice for countries around $4,000.

The most plausible explanation for Mexico's poor performance is that the industry was initially privatized to unregulated monopoly and remains dominated by one firm that is only weakly regulated.

The decision to create a temporary monopoly in telecommunications was controversial when made and remains so today.[5] At the time of privatization, Mexican officials intensely debated the form that privatization would take, and eventually, following the advice of management consultants, prospective investors, and some officials in international organizations, decided to allow Telmex to be a temporary

monopoly and to postpone setting up regulatory institutions.[6] The decision to create a monopoly was based on three arguments. First, foreign investors would require it in order to purchase Telmex for a substantial amount. Second, monopoly facilitated pursuit of a "universal service" objective – to serve households who could not afford service that was priced to recover its full cost, and to bring service to areas that were under-served because of difficult terrain, low population, or generally low incomes. Third, monopoly was regarded as necessary to get private firms to commit to a major investment program to improve service even to businesses and high-income households. Major investment would be required simply to eliminate the long waiting-list for service and the high rate of failure in completing or holding calls.

The argument that monopoly leads to more investment and greater utilization is inconsistent with elementary economics. When privatized, a monopoly sells for more than a competitive firm if the monopoly is either unregulated or regulated loosely, for the purchaser of a monopoly is buying a stream of monopoly profits, which is more valuable than a stream of competitive returns. By granting Telmex a period of exclusivity and deferring the establishment of a regulator, Mexico created a temporary monopoly that had the opportunity to earn substantial excess profits for many years. As a result, Mexico probably received a higher price for Telmex when it was privatized than it would have received under privatization to either regulated monopoly or competition.

A high privatization price and subsequent monopoly prices for services do not lead to greater investment and more service. In the absence of a substantial state subsidy for customers with a low ability to pay, high prices reduce the quantity of service that is demanded, so that a monopoly will undertake less, not more, private investment than a

firm that, due to regulation or competition, charges lower prices (but prices that are still above the average cost of service). Meanwhile, under unregulated monopoly customers and, more generally, the Mexican economy suffer from an underdeveloped telecommunications infrastructure. Research on the privatization of telecommunications in developing countries bears out these simple economic arguments. Granting a temporary monopoly reduces network expansion by between ten and forty percent, and the annual growth of telephone penetration by more than two percentage points.[7]

The results for Mexico show that creating a monopoly in telecommunications did not deliver the benefits that were said to have motivated reform. Table 2 shows the penetration of telephone service in Mexican states in 1998, the year after Telmex's exclusive rights came to an end. The table shows that telephone penetration in states with less than $3,000 per capita GDP in 1999 was about five lines per 100 households. Thus, the monopoly period did not bring anything remotely close to universal service in under-served areas.

The reason for the slow growth in telephone penetration during the exclusivity period is apparent in Table 3, which shows the financial performance of Telmex in 1998 compared to private telephone companies in the United States and the United Kingdom. Among these companies, Telmex had by far the largest operating margin, with over a third of its revenues going to operating profit.[8] Typically well-managed telephone companies have operating costs in the range of 75-80 percent of revenues, whereas for Telmex operating costs are in the range of 60-65 percent of revenues. Telmex also had the lowest fraction of revenue and profit going to investment, despite the much more undeveloped state of telecommunications in Mexico. These data show that the

privatization to monopoly succeeded in creating monopoly profits, but did not succeed in inducing Telmex to reinvest these profits to increase service.

REGULATORY INSTITUTIONS AND POLICIES

Given that the industry was going to be monopolized for nearly a decade and highly concentrated thereafter, a well-designed regulatory system was essential to protect consumers and, when competition was finally introduced, to prevent monopolistic abuses by the incumbent against entrants. Unfortunately, Mexico never developed an effective regulatory system. The regulatory system governing the transition from state-owned monopoly to privatized competition was put in place long after privatization, is still not fully developed, and has not worked well because it has too little authority.

Economics research concludes that the design of regulatory institutions has a substantial effect on the performance of the telecommunications industry. Specifically, performance is better if:

* Regulators are independent of both the legislature and the executive;
* Regulatory processes are open and transparent;
* Judicial review is speedy, and the standards for judicial review focus on substance: whether the agency acts within its mandate and has a reasonable basis for its decisions;
* Regulatory policy is designed to favor largely unregulated competition, as opposed to monopoly or managed competition, wherever competition is feasible;
* Regulators are given substantial authority to compel information from regulated

firms to control prices of monopoly services, and to compel pro-competitive behavior; and

* 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 occurs. Despite problems with its governance structure, Mexican telecommunications policy produced several positive results. In 1996, 1997 and 1998, the government held successful auctions for electromagnetic frequency assignments for paging, cellular telephones, local microwave distribution, and wireless personal communications services (PCS). Several companies entered wireless telephony, especially mobile service. The introduction of prepaid calling for radio telephones increased both penetration and usage because these policies allowed customers to gain firmer control of the money they spent on telephone service.

Nevertheless, all of the major regulatory issues about interconnection rules and prices remain incompletely resolved in Mexico, primarily because the front-line regulatory agency, Cofetel, does not have a statutory policy mandate, the procedural and decision-making authority to issue decisive, timely regulations on issues that create significant conflicts among the players in the industry, and the power to enforce its regulations effectively after they are adopted. As a result, the prospects for achieving high penetration and competitive pricing are not good.

Successful privatization of a formerly state-owned monopoly infrastructure provider requires an effective regulatory institution to cope with the power of the

incumbent before competition can be firmly established. This institution must have several key features if it is to be effective in optimizing the performance of the industry.

One requirement for effective regulation is that 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 to their customers, and must give regulated firms a significant degree of latitude in making decisions about investment and employment.

At the same time, effective regulation also must avoid becoming an instrument simply for advancing the interests of firms in the industry. 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. The 1990 revised Telmex concession attempted to achieve this objective by including growth targets in the number of lines in service, but after these targets expired, growth slowed. Post-1996 regulation has not proven to be effective in causing fixed access penetration to grow.

A competitive market structure is an effective means of increasing penetration and use 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 not as efficient as unregulated competition as a means to prevent monopoly prices and to increase service. Moreover, incumbent monopolists in one component of the industry frequently can extend their monopoly into

other parts that clearly can be competitive, which further reduces efficiency. This issue has been the center of controversy in long distance, and is a serious policy controversy in Internet services.

In a network industry like telecommunications, an incumbent monopolist in local access 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. Examples are terminating access service and interconnection service. If these services have prices substantially in excess of costs or are degraded in quality, competitors are crippled.

At some point, all nations that have tried to introduce competition into some aspect of the network, such as in long distance, mobile telephony, and Internet services, have been forced to face these issues. In some cases, regulators have prevented local access companies from entering competitive markets. An example was the U.S. ban on entry into long distance by Bell Operating Companies (BOCs), the local access carriers of the original fully 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. An example is the U.S. requirement that BOCs provide equal access to all

ISPs and other information service providers.

Mexico has in place formal policies that provide protection against anticompetitive activity by Telmex. The basic telecommunications law states that competition as the preferred market structure, and establishes policies against pricing services below cost and in favor of technically acceptable interconnection. These policies imply that Telmex has a responsibility not to subsidize its competitive affiliates and not to disadvantage competitors by providing technically inferior interconnection. Nevertheless, the Mexican regulatory system continues to subsidize access service from usage charges, and has not adopted clear rules regarding acceptable and unacceptable policies regarding Telmex's operation and obligations in competitive markets. Hence, long-standing controversies about interconnection among competing firms in long distance, local access and internet services remain unsettled.

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. In practice, regulatory policy in Mexico is neither stable, predictable nor timely.

The Importance of Structure and Process

Whether regulatory institutions can be relatively effective at improving the

efficiency of telecommunications, or any other 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 should 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. The main functions of prices are to be a means for recovering costs and for making appropriate signals to other business about which markets to enter, whereas in the political sphere prices of state-operated entities tend to be treated as just another tax. 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 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 politics. Independence is provided in two ways. First, regulators can have the authority to make decisions without review or approval from elected officials except by passing 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. Regulators should not be removed 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 with some precision what it is supposed to do and how it is supposed to do it. 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 in which 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. Transparency applies not only to the policies and implementing rules, but also to the process for making 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. Advocacy of competition should be institutionalized in the regulatory process. Regulation and competition are inherently conflicting policies: the former uses a centralized process to make decisions about prices, entry, investment,

and service 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.

Formal oversight: statutory review. Independence of the regulator does not mean that statutes granting regulators a mandate should never be reconsidered. Indeed, periodic reporting requirements 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.

The Mexican Regulatory System

The history of Mexican telecommunications reform began with preparations to privatize Telmex, which was initiated in 1990 and completed in 1991. Until 1995, the only formal regulatory system was the enforcement by the SCT of the revision of the Telmex concession that permitted privatization. The concession granted the newly privatized Telmex a temporary monopoly in domestic and international long distance telephone service, but in return required Telmex to expand its wire-line network. In theory, competitors could have entered local service, but in practice no concessions were granted. Two companies, Iusecell and Pulsar, sought but were denied concessions for fixed wireless local service. Others did not seek to provide local service until they were also permitted to enter long distance or mobile telephone services.

The revised concession agreement also specified that a general tariff regulation would apply to a basic basket of core services: installation fees, monthly service charges, usage charges for local calling, and prices for domestic and international long-distance calls, with the first two tariffs differentiated between residential and commercial customers. The concession agreement stipulated that the method of tariff regulation would be a price cap for the bundle of these services, with the proviso that no service would be cross-subsidized.

As a practical matter, Telmex has set prices so that the price cap ceiling has not been reached. The price cap is stated as a maximum value for a price index of basic residential and business services. Initially, the cap was a weighted average of historical prices, adjusted for inflation. The cap increases each year by the rate of inflation minus 4.5 percent. Due to rapid technological progress, increased usage that captures scale economies in parts of the network, and improved operating efficiency, Telmex has had productivity gains in excess of the 4.5 percent target, allowing it to earn increasing profits while not raising prices as fast as is allowed under the price-cap formula.

The 1995 telecommunications law and the 1996 presidential decree that implemented it elaborate upon the rules and policies regarding the industry and establish an institutional framework for carrying them out. Although creating an independent regulatory agency by statute was considered at the time the act was being drafted, the final version of the act lodged authority for regulating telecommunications in the SCT. The Act also retained the concept of concessions as a means of licensing entry, which entails a far more elaborate specification of the facilities and services that the carrier will offer than would be the case if carriers received licenses or permits.

The presidential decree that implemented the Act created Cofetel and delegated most of the day-to-day regulatory functions to this agency. The law included the provision that facilities-based telecommunications firms had to file tariffs and that Telmex could be subjected to regulation of specific prices upon a finding by the antitrust authority, CFC (the Federal Competition Commission), that Telmex was a dominant carrier in that market. The decree gave the responsibility to implement this part of the law as well as to oversee compliance with the price-cap rule to Cofetel.

Interconnection arrangements, including pricing, can be regulated by Cofetel if operators request intervention after failing to negotiate an agreement. The premise of interconnection policy is that interconnection issues should be resolved by the carriers. This approach creates two problems. First, because some interconnection issues inherently bring carriers into conflict, bilateral negotiation can not be expected to work very well, and the presumption in favor of negotiation inevitably causes delay. Second, in other cases carriers may be in a position to use interconnection agreements to engage in price collusion. For example, interconnection prices between competing local access carriers (including mobile telephone operators) place a floor on local calling prices, thereby limiting the degree to which competition can drive prices to cost.

Cofetel is in some ways a well-designed agency. At the top are four commissioners, with requirements to include relevant technical expertise among them. Because Mexico has a large number of well-educated civil servants, the technical competency of the agency does not appear to be a problem. Likewise, in many ways the 1995 Federal Telecommunications Law provides reasonable policy guidance for the regulator. Price regulation properly focuses on monopoly markets, and adopts the policy that regulated prices are to be cost based and free of cross-subsidy. Moreover, granting to the CFC the role of deciding whether a carrier is dominant gives an important function to the competition advocacy agency.

Nevertheless, the new regime has several features that prevent effective regulation.

To begin, Cofetel is not independent. In most cases, Cofetel's decisions must be approved by the SCT before they are adopted, which makes these decisions more

political than is necessary or desirable. In addition, Cofetel's commissioners, though appointed to fixed terms, can be removed at will by the Secretary. The continued involvement of SCT in day-to-day decisions vitiates the more natural function of SCT, which is policy oversight: to assess industry developments, to review the adequacy of policy in light of these developments, and to make proposals for changes in the legislation and decrees that underpin the current system.

Cofetel's procedures are neither transparent nor open. In nearly all cases (and especially with respect to pricing), the agency develops regulations by engaging in secret bilateral negotiations on a case-by-case basis, as opposed to open rule-making proceedings in which all firms in the industry, users, and disinterested experts, such as scholars of communications policy, are allowed to participate. No other parties have the right to participate in these bilateral negotiations, including the CFC, which is naturally concerned with the competitive effect of regulations that affect relations among competitors, such as interconnection rules. Cofetel believes that this procedure is dictated to it by existing law.[12]

The information that is developed in these negotiations and the basis for Cofetel's decisions typically are not made public because Cofetel believes that the information that it receives from the carriers must be treated as confidential. Cofetel lacks the authority to compel information from regulated firms, so has no leverage to resist a demand by a carrier to provide information only on a confidential basis. Because published regulations are neither explained nor supported by evidence, the agency's underlying policies and procedures are unclear.

The Federal Telecommunications Law also retains a system of concessions for all

facilities-based carriers that does not differentiate between competitive and monopolized services. All carriers must have a concession, and to grant one Cofetel is required to review an entrant's detailed business plan and its technical and financial competency to provide the service described in the plan. If a firm decides to alter the configuration or capacity of any component of the network while building it, the firm must seek an amendment to its concession.

The premise behind concession review is that public oversight is needed to ensure that a carrier offers adequate service at reasonable prices. Such reviews can have substantial value in a monopolized market or when a licensee uses a public resource that offers limited opportunities for competition. But careful reviews of entrants serve no valid public purpose when a market is competitive. In a competitive market, customers decide whether to patronize a new entrant, and government has no real competency to do a better job than the entrant and its potential customers in assessing the adequacy of the entrant's services. Thus, a concession process is unnecessary for these cases, and forces the agency to use its resources in unproductive ways.

Cofetel also has not been able to react in a timely and predictable way to the tasks that have been given to it. Cofetel's proceedings do not have a time limit, and even though Cofetel usually sets a reasonable goal in terms of the length of the negotiation, frequently these goals are not met and the negotiations are protracted.

Part of Cofetel's problem in implementing effective regulation arises from its inability to convince the courts that its regulations are reasonable and necessary. An important aspect of judicial review in Mexico is the *amparo*. An *amparo* is a form of temporary injunction that can be granted by the courts if a private party believes that a

decision by the government will cause it financial harm. The *amparo* stays implementation of a decision – in this case, a regulation promulgated by Cofetel – pending an evidentiary hearing by the court. Because the courts operate quite slowly, an *amparo* can remain in place for years, by which time the regulation is obsolete because of subsequent developments in the industry. The same problem affects the Competition Commission. CFC's proceeding to declare Telmex a dominant carrier – a necessary step for Cofetel to adopt pro-competitive regulations – was initiated in 1997, but has been stayed by a series of *amparos*, amendments to the finding, and further *amparos*.

Participants in the Mexican telecommunications industry hold very different views about the *amparo* process. Some believe that an *amparo* is too easy to obtain, while others believe that obtaining an *amparo* should be easy if the government fails to offer a reasonable justification for its decisions. But regardless of the general validity of *amparos*, the system as currently practiced makes effective regulation unworkable.

Because the results of Cofetel's regulatory negotiations are secret, proposed regulations are not supported by evidence and arguments, which makes the agency vulnerable to *amparos* as long as the court requires some justification for a decision. Just about every regulation that has been promulgated by Cofetel has been stayed successfully by either Telmex or its competitors. Hundreds of *amparos* concerning telecommunications are pending resolution. The result of all of these successful *amparos* is confusion and disruption with respect to exactly what is required of each carrier in terms of its legal obligations regarding prices and service.

To solve this problem requires creating a statutory regulator – one with well defined and transparent procedures and the authority to carry out its mandate. Regulated

firms should be permitted to challenge the agency, but an agency decision should not be enjoined if the agency has followed its procedures and written a transparent, comprehensive justification in evidence and law for its decision. Of course, subsequent litigation may reveal an error in the agency's decision, but the most efficient solution to this problem is to enable the firm that experienced an unjustified cost to recover the cost, either through subsequent price increases or from the government.

The 1995 Telecommunications Act lacks clarity regarding several important issues. Because the Act is silent about Cofetel, it fails to define the powers of the agency in gathering information, and it places the agency in a weak position to enforce its regulations. In addition, the Act is not clear about policy objectives with regard to telephone penetration, price rules, interconnection arrangements or universal service. For example, the prohibition against cross-subsidies, which implicitly requires that no price should be below long-run incremental cost, is interpreted as applying to the entire bundle of basic services, rather than to each separately. As a result, interconnection prices contain a "contribution" to cover local access costs, thereby subsidizing access through usage charges despite the prohibition against cross-subsidies.

RECOMMENDATIONS FOR REFORM

The preceding review of the regulatory system suggests several changes that would be likely to improve the performance of the telecommunications sector:

* Grant Cofetel true independence. The Telecommunications Act should be amended to make Cofetel a statutory agency with authority to regulate. Whereas SCT can be granted the right to participate in Cofetel's decisions, its role should be no

different than other participants. SCT should have the right to submit evidence and arguments in an open regulatory process, to propose regulations, and to comment on the submissions of others, but should not have the right to communicate secretly with Cofetel or to overturn Cofetel's decisions. The responsibility for making decisions should belong to Cofetel, and Cofetel's decisions should be reversible only by the courts through judicial review or through new legislation (not by presidential decree or intervention by SCT). In addition, true independence requires that Cofetel be able to compel information from regulated carriers and that its Commissioners be appointed to a secure fixed term of several years, removable only for malfeasance (corruption or failure to perform duties).

* Require open decision-making processes for regulatory proceedings. The Act should authorize Cofetel to conduct open rule-making proceedings and case-by-case decisions. These proceedings should be open to participation by anyone who is affected by them, and all participants should have access to the evidence that is submitted for the purpose of evaluating it.

* Require that Cofetel explain the legal and information basis for its decisions. If proceedings are open and Cofetel can compel the production of information, Cofetel will be able to explain the basis for its decisions, including why it rejected alternative proposals.

* Focus judicial review on whether decisions have a reasonable basis. Clear standards for judicial review are useful in shaping how the agency explains and justifies its decisions. The appropriate standard is that Cofetel has a reasonable basis in law and fact for its decisions. That is, a decision should be upheld if a reasonable person can believe that the agency's underlying statutes give it the authority to act, and that the

evidence and analysis justify the regulation.

* Grant standing to CFC on matters related to the competitive effects of Cofetel's decisions. The Competition Commission is the expert on competition policy, and ought to have the responsibility to assist Cofetel in understanding the competitive implications of its regulations. Because the Act envisions a competitive industry, among the issues to be resolved in judicial review is whether Cofetel reasonably took into account the effects of its regulations on competition and dealt adequately with the views of CFC.

* Make concession requirements simpler for competitive entrants. In a competitive environment, agency's need not be responsible for dictating the specific investments and business plans of a carrier. The legal requirements for a concession derive from a belief that both competition and regulation are either not present or weak. A license need only require that the carrier subject itself to reporting requirements and agree to operate under Cofetel's regulations. In most parts of the industry, licensing should be virtually automatic, and can be implemented by creating a standard form application that includes an agreement by the firm to be bound by regulations and to submit information when requested by Cofetel.

* Assign to SCT the responsibility for periodic assessments of the performance of the telecommunications sector. SCT ought to be the entity responsible for overseeing the performance of the sector, and offering a separate voice about the adequacy of existing policies and laws. But a ministerial agency should not have direct responsibility for making decisions about prices, interconnection arrangements, and entry.

* Clarify the national policy on universal service, and provide explicit directions to Cofetel about how to implement this policy. Legislation should define universal

service in terms of both the services it entails and the benchmarks that should be used to measure whether progress toward these objectives is adequate. For example, does universal service mean that every residence has a separate, dedicated telephone connection to the public network, or does it mean that shared lines and pay telephones are available in reasonable proximity?

* Once a universal service objective is adopted, it should not interfere with policies to set prices approximately equal to long-run average incremental cost and to eliminate regulatory impediments to investment and competition. If government seeks to increase penetration by more than will occur in an environment in which prices reflect cost, the best approach is direct subsidies that are targeted at low-income households and financed by either general taxes or a competitively neutral tax that falls equally on all telecommunications services and providers. If specific benchmarks are adopted, the Act should specify them and address exactly how these goals are to be adjusted in the future and how Cofetel is to achieve them. Cofetel once proposed a "universal service fund," created by a tax on services, to be used to subsidize residential service in low-income areas. Whereas this approach is better than cross-subsidization of all residential access service by other services, an attractive alternative is simply to make sure that regulation encourages provision of service at prices equal to the cost of an efficient carrier, which means encouraging competition and avoiding unnecessary costs from regulation itself.

CONCLUSIONS

Mexican telecommunications policy and performance has improved since reform began. The state-owned monopoly carrier was successfully privatized, and before

privatization its performance was substantially improved by increasing its rate of investment and by bringing prices more in line with cost. After an initial period of monopoly, competition was introduced in the late 1990s in long distance, then mobile telephony, and then local service, especially fixed wireless service. Meanwhile, penetration and usage of phone service more than doubled.

Nevertheless, the Mexican telecommunications industry has not yet reached its full potential. The incumbent former monopoly is extremely powerful and does not have a particularly impressive record in investment, and competitive entrants have enjoyed limited success. Competition is hampered by slow and ineffective regulation, created by limitations on the authority of the primary regulator, Cofetel, by an opaque, secretive and cumbersome regulatory process, and by an inadequate system of oversight in the courts and the political branches of the government.

No doubt economic growth and Telmex's profit incentive will continue to cause penetration of telecommunications to grow, and rapid technical progress probably will cause some reductions in prices. But this progress is not likely to propel Mexico to leadership within Latin America in terms of the performance of its telecommunications sector, despite Mexico's natural advantages arising from its propinquity to the United States. To achieve its full potential in this industry, further reforms of telecommunications regulation – to make it simpler and more focused on promoting competition while controlling remaining pockets of market power, are necessary.

Table 1: Telephone Penetration among Peer Nations, 2005

Nation	Per Capita GDP (US$ PPP 000)	Population (Millions)	Penetration of Selected Services per 100			
			Fixed	Wireless	Total	Internet
MEXICO	10.0	106.4	18.3	44.6	62.9	17.5
Argentina	13.9	39.3	22.4	56.2	78.6	25.4
Brazil	8.2	186.1	22.8	46.3	69.1	13.9
Bulgaria	8.6	7.5	33.3	82.7	116.0	29.3
Chile	11.5	16.0	21.3	66.3	87.6	41.9
Columbia	7.4	43.6	17.7	50.2	67.9	10.8
Malaysia	10.3	24.0	18.3	81.3	99.6	45.8
Romania	8.9	22.3	19.7	60.1	79.8	22.0
Russia	10.6	143.4	28.0	83.7	111.6	16.5
South Africa	12.1	44.3	10.6	76.7	87.4	11.5
Tunisia	7.9	10.1	12.9	56.4	69.3	9.4
Turkey	8.4	69.7	27.3	62.6	89.8	23.0
Venezuela	6.4	25.4	14.2	49.2	63.4	12.0

Sources: World Development Indicators database, World Bank, July 1, 2006, and The World Factbook, U. S. Central Intelligence Agency, accessed December 27, 2006, at https://www.cia.gov/cia/publications/factbook/index.html.

Table 2: Teledensity by District/State, 1998

District/State	Population (000)	Main Lines per 100	Per Capita GDP (1999)	
			$	% Growth
Aguas Calientes	921	10.0	5,607	5.5
Baja California	2,333	16.3	6,235	5.9
Baja California Sur	397	13.7	6,828	5.0
Campeche	696	5.6	9,027	6.7
Coahuila	2,277	11.4	6,462	4.0
Colima	531	11.3	5,006	4.2
Chiapas	3,689	3.1	2,045	3.1
Chihuahua	3,003	11.5	6,502	4.4
Distrito Federal	8,582	27.5	7,334	3.3
Durango	1,463	7.7	4,276	3.7
Estado de México	12,635	9.4	7,334	3.3
Guanajuato	4,559	7.2	3,508	4.9
Guerrero	3,064	5.6	2,523	2.2
Hidalgo	2,225	5.1	3,071	3.4
Jalisco	6,284	13.3	4,777	4.7
Michoacán	3,978	6.9	2,635	1.8
Morelos	1,562	10.9	3,797	1.1
Nayarit	912	7.4	3,008	2.0
Nuevo León	3,778	17.8	8,420	5.6
Oaxaca	3,306	3.4	2,029	1.8
Puebla	4,894	6.7	3,346	6.2
Querétaro	1,344	9.0	5,803	6.1
Quintana Roo	831	9.2	8,944	9.0
San Luis Potosí	2,289	6.4	3,311	1.6
Sinaloa	2,553	8.4	3,733	0.6
Sonora	2,270	10.5	5,658	3.3
Tabasco	1,878	4.7	3,178	2.7
Tamaulipas	2,703	11.4	5,138	3.5
Tlaxcala	938	5.5	2,894	6.1
Veracruz	6,974	5.8	2,740	1.0
Yucatán	1,679	8.2	3,807	4.4
Zacatecas	1,339	4.9	2,711	2.0

Sources: Telmex, Inegi, www.banamex.com/banamex/esem/c_indexesem_eng.htm, May 2000.

Table 3: 1998 Financial Performance of Selected Telecommunications Firms
($ millions)

Item	Telmex	Ameritech	Bell Atlantic	GTE	British Telecom
Total Revenue	8,187	17,154	31,566	25,473	25,138
Operating Income	3,111	4,193	6,627	5,336	5,151
(% of Revenue)	38	24	21	21	20
Capital Expend.	1,235	2,954	8,675	4,940	4,775
(% of Revenue)	15	17	27	19	19

Sources: http: //yahoo.marketguide.com/mgi/MG.asp?rt=aincomstd&m=A0484, 0444N, 1082N, 3642N, and 1306N, May 2000.

FOOTNOTES

---

1. Professor of Economics *Emeritus*, Department of Economics, Stanford University.

2. 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.

3. 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.

4. The meaning of an "independent corporation" and 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 decisions 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.

5. For a detailed history of the reform, see Judith Mariscal, *Unfinished Business: Telecommunications Reform in Mexico,* Praeger, 2002.

6. The author was on the losing side of this debate. See Roger G. Noll and Fernando Salas, “Restructuración y Privatizatión de Telefonos de Mexico,” unpublished report to Secretarla de Comerclo y Fomento Industrial, Government of Mexico, 1990.

7. Scott Wallsten, “Privatizing Monopolies in Developing Countries: The Real Effects of Exclusivity Periods in Telecommunications,” *Journal of Regulatory Economics* 26 (November 2004), pp. 303-20.

8. Since 1998, Telmex’s operating income as a fraction of revenues has fallen below 30 percent, but it remains among the highest in the world.

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, “The Limits of Delegation: Veto Players, Central Bank Independence, and the Credibility of Monetary Policy,” *American Political Science Review* 97 (August 2003), pp. 407-23. 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.

12. Cofetel's press release announcing a procedure to develop regulations in response to CFC's finding that Telmex is a dominant carrier states that federal law requires that the proceedings be closed. See Federal Telecommunications Commission, "The Procedure to Establish Specific Obligations to Telmex Due to Its Substantial Market Power Begins," press release, March 27, 2000 (English translation).