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Investment-Oriented Regulation in Telecommunications

Introduction—Rethinking Regulatory Governance

Telecommunications operators throughout the world are facing an extraordinarily adverse climate for generating the financing necessary to maintain and expand their services. In the aftermath of the internet bubble and in the face of substantial excess capacity in the advanced industrial economies, the valuations of traditional operators have collapsed. The very financial viability of the converging telecommunications, media and internet sectors is now being seriously questioned because of the harsh reassessment of the prospects of the internet combined with the difficulties of third generations (3G) mobile services and the breakdown in investor confidence due to accounting and other corporate scandals. A fresh look at traditional approaches to regulation is both urgent and appropriate in view of the extremely adverse investment climate now facing the telecommunications sector (Bruce and Macmillan 2002). In particular, the standard command-and-control regulatory mechanisms are likely to prove increasingly ill suited in the current frigid telecommunications investment climate. More flexibility and imagination are needed and greater attention should be placed on developing effective consultative processes that engage regulatory officials and industry players in an open dialogue on important matters of policy.

Highly indebted telecommunications companies in advanced industrial countries are facing enormous pressures to restructure their activities and are likely to shed some of their assets holdings in transition countries which can be marginal in the context of their overall operations. Thus, the primary policy challenge is not just to attract increased foreign investment, but also in some cases to retain existing foreign participation.

The orthodox advice to policy makers in the developing and transition economies (DTEs) has emphasized the importance of carrying out the regulatory functions with independence, transparency, and insulation from political influence. Thus, much of the discussion of telecommunications reform in the DTEs has properly focused on the institutional foundations of regulatory effectiveness and non-discretionary governance. Clearly, the establishment of institutional mechanisms that impose procedural restraints on arbitrary administrative intervention provides an important signal to potential investors that their value will not be subjected to political expropriation. This type of commitment that flows from features of the country's legal and regulatory systems effectively reduces investment risk and consequently the discount rate applied to net present value and cash flow calculations.

However, while regulatory independence is useful, it is by no means a panacea. For any business investment plan to be viable, the fundamental sector economics must be right. After all, a pricing policy that is not consistent with revenue adequacy, even if implemented by an independent regulator in a transparent fashion, it will still repel investors. Similarly, a regulatory regime that does not permit firms to compete with flexibility of prices and terms or violates competitive neutrality by imposing social service obligations that are not shared by all competitors, will not promote efficient investment even when institutional mechanisms provide a credible commitment to policy stability. Thus, the mantra delivered by international advisors stressing the critical role of institution building and regulatory independence while important is far from sufficient. Especially in the face of an extraordinarily adverse financing climate, it is imperative that in this second stage of telecommunications reform, policy makers in the DTEs focus less on statist or institutional regulatory mechanisms and more on developing effective consultative processes and defining the substantive content of the sector's regulatory governance in order to create an economically attractive investment environment.

Perhaps the single most important element of an investment-oriented policy is pricing reform. A key priority in attracting private investment is to devise a regulatory regime which facilitates the move to cost-reflective tariffs and hence permits the

privatized operators to attain revenue adequacy (i.e. the revenue level necessary to compete equally with firms elsewhere in the economy for available financing in order to maintain, replace, modernize, and, where appropriate, expand their facilities and services). The total interests of users and the economy would be better served if the privatized telecommunications entities are not unduly constrained by price controls that no longer reflect the competitive realities in the market—i.e. if they are accorded pricing flexibility within the boundaries determined by the avoidance of cross-subsidization and monopolistic pricing. Increased pricing flexibility will enable the operators to achieve revenue adequacy—generate increased cash flows and more effectively raise financing from external sources.

The traditional pricing constraints on fixed line retail prices must be reconsidered both in view of the increased competition from mobile and the need to facilitate entry by new providers of local infrastructure, especially in rural areas. Policymakers should permit the rapid installation of new access lines, wired or wireless, based on pricing that reflects differences in the value of service and is designed to clear backlogs. Also, consumers who place relatively high value on a service should contribute relatively large net revenues to the coverage of unattributable, fixed and common costs. To the extent that such differentiated pricing schemes facilitate revenue adequacy, they reduce the need for heavy-handed tariff rebalancing and can ease the transition to cost-reflective prices. Moreover, when a telecommunications public utility uses access prices to recover the costs of the local loop, it may induce bypass, which would ultimately force it to raise the prices that it must charge to captive customers.

Elements of An Investment-Oriented Regulatory Framework

- Process rather than institution-oriented approach to regulatory governance (consultative rather than command-and-control regulation)
- Competitive pricing flexibility
- Competitive neutrality

By offering discounts with non-linear prices to non-captive customers, the utility will be able to recover the costs of the local loop with marginal access prices much closer to incremental cost and keep all customers in the network, to the benefit of all.

An investment-oriented regulatory framework might also entail moving away from the traditional top-down command-and-control regulatory mechanism to “bottom-up” consultative one that gives investors a larger role in the process—a process that increasingly relies on consultative for a whereby interested market participants provide market-led initiatives that ultimately increase investment and competition in the sector.

Finally, to attract private investment through new entry the regulatory regime must allow access to bottleneck telecommunications facilities on terms that reflect competitive parity—the incumbent and its rivals should compete on a level playing field. Moreover, the sector’s social goals (universal service, promoting access to the poor and other disadvantaged groups) should be pursued efficiently and without distorting competition.

Bottom-up Regulation through Information and Negotiation

The primary objective of the traditional command-and-control regulatory system is to protect consumers from monopoly abuse, while respecting the property rights of firms. However, as competition enters telecommunications markets, consumers should no longer be considered helpless pawns of incumbent telecommunications monopolies. With the irresistible spread of competition, consumers will be better able to protect themselves against monopolistic exploitation, and the public interest will be well served by informed negotiations or public debates between the suppliers of telecommunications services and consumers. The regulatory body could play a constructive role in such deal-making by empowering consumers with information, in lieu of limiting the power of incumbent telecom operators. Indeed, if properly constituted, the provision of information may create an effective system of self-regulation.

Table 0. Situation in telecommunications (2000)			
	Poland	EU-AC-7 ¹	EU-15 ²
Mainlines per 1000 people	282	348	556
Speed and cost of internet access (1=slow and expensive; 7=fast and cheap)	3	4	5
Internet hosts per 10,000 people	67	115	406
1/ EU-AC-& stands for the other 7 Central and Eastern European countries acceding to the EU, but excluding Poland.			
2/ EU-15 stands for current EU members states			
Source: World Development Indicators 2001			

The continuing substantial financing needs of most telecommunications sectors in the DTEs, and the extraordinarily adverse climate for generating such financing at the present time, urgently call for a new creative partnership between private enterprise and the public. However, when state-owned utilities are transferred to private ownership, they often find themselves suspect. Their goals are generally taken to be the exploitation of the public and the subversion of competition, and they are widely judged to have the power to attain those goals. Thus, the regulators frequently have an adversarial relationship with the privatized utilities. As well, the traditional regulatory culture has often viewed utility policy as a zero-sum game, and this regulatory culture is unsuitable for most DTEs, in view of their unique investment requirements. The current status of Poland's telecommunication sector seem to indicate a large need for investments (see Table 0) and therefore also of a regulatory framework that takes this need appropriately into account.

Need to develop consultative mechanisms. Foreign private investors weigh a wide range of generic and regulatory-specific risks in assessing telecommunications investment opportunities in the DTEs. Regulatory-specific risks include lack of clarity on end-user and access pricing policy, uncertainties about the timing and scope of market liberalization, and burdens related to universal service goals. The lack of historical precedents and policy experience in the DTEs, owing to their legacies of state ownership, exacerbates investors' anxiety. There is a need for a process that

- encourages participation, debate, and open discussion
- facilitates exchange of information and benchmarking experiences
- develops long-term relations with stakeholders, based on mutual trust and commitment to public policy outcomes
- makes it easier for regulators to consult with industry participants
- builds operators and investors into the regulatory process itself.

The privatization of telecommunications in the DTEs creates consumer expectations for improved services and fair prices. This naturally leads to disputes between consumers and operators, as well as between the incumbent operators, new

Regulatory entities must adapt to market developments. Effective regulatory institutions will take a leading role in promoting horizontal, industry-oriented consultative processes to deal with emerging telecom sector issues. They will rely less on outmoded command-and-control regulatory directives and sector regulation, price controls, and heavy-handed oversight of industry practices.

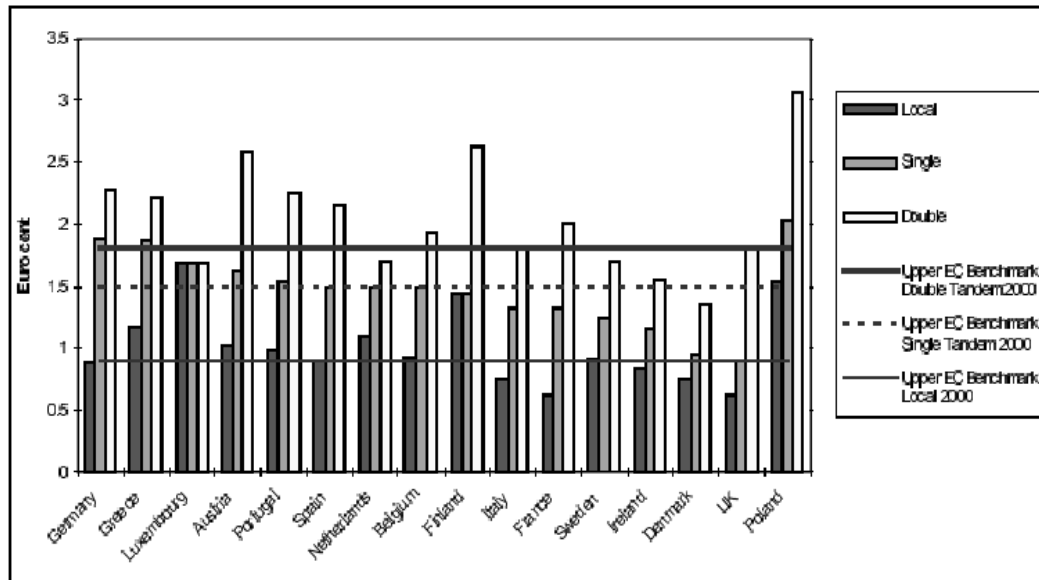
entrants, and other service providers. Such conflicts between competitors are inevitable and healthy. However, excessive litigiousness and prolonged delays in resolving disputes can seriously impair commercial markets. The regulatory body could help the parties reach negotiated settlements and could resolve such disputes in a timely manner. When the regulatory body regulates by negotiation, however, it must ensure that the public interest is protected in these negotiations. Unless the process includes the public interest, there is a risk that in acting as a platform for negotiations among competing suppliers the regulatory body might become a venue for chilling competition (Willig 1999). Still, by allowing contesting parties to reach voluntary, uncoerced agreements, these consultative mechanisms could generate creative, win-win outcomes and overturn unduly combative relationships between telecommunications stakeholders in the regulatory environment (Wirick 1999). Some of the DTEs are hostile to international arbitration, though not to consensual methods of dispute resolution; and corruption is endemic to their official administrative mechanisms. In these countries there might be considerable scope for private dispute-resolution mechanisms (Bruce and Marriott 2002).

Empowering regulatory entities with information databases. External resources can be effectively applied to afford emerging regulatory entities access to the best international experience, especially in building the requisite credibility for attracting private investment through sustained commitment to a clear set of rules and principles. In most DTEs, regulatory entities face constraints in resources, information, and technical expertise. Rather than reinventing the wheel, these regulatory bodies would benefit greatly by being able to draw on the knowledge and experience of regulators elsewhere.

These regulatory bodies should, therefore, be provided practical access to the work product, decisions, studies, and accumulated experience of national regulatory agencies within the EU and early reformers from other developing countries. Already, national regulatory bodies are developing websites reflecting their various policy determinations relating to pricing, licensing, and interconnection issues; the information could be assembled, organized and formatted in a structured way. Special attention should be given to national experience with the price rebalancing process, pricing benchmarks for local exchange service, and the implementation of rules governing access to bottleneck

telecommunications facilities. Benchmarks relating to interconnection pricing are already being published by the EU and are proving highly useful (Figure 1).

Figure 1. Comparison of EU peak interconnection rates with Poland's



Note: The figures are compiled from the EC's "Sixth Report on the Implementation of the Telecommunications Regulatory Packages," December 2000 and the data on interconnection charges by the Ministry of Posts and Telecommunications (currently the Ministry of Infrastructure) of Poland (2001).

Getting the Economics Right

Much of the discussion of telecommunications reform in the DTEs has properly focused on the institutional foundations of regulatory effectiveness and nondiscretionary governance. Clearly, the establishment of institutional mechanisms that impose restraints on arbitrary administrative intervention would signal to potential investors that the value they add to telecommunications infrastructure will not be expropriated. This type of commitment, which flows from the country's legal and regulatory systems, reduces investment risk and consequently the discount rate applied to net present value and cash flow calculations.

Even more importantly, however, the fundamental sector economics must be right for any business investment plan to be feasible. After all, a pricing policy that does not

allow adequate revenue, even if transparently implemented by an independent regulator, will still repel investors. For example, until recently in many DTEs prices for local exchange services were below long-run marginal costs, while prices for long-distance (especially international) service were above underlying long-run costs. It would be difficult to imagine that even a truly independent and transparent regulatory regime would be able to facilitate private investment in telecommunications infrastructure for local exchange service under those pricing conditions.

Similarly, a regulatory regime that interferes with competitiveness by disallowing flexible prices and terms or by imposing social service obligations on only some of the competitors will not promote efficient investment, even when institutional mechanisms provide a credible commitment to policy stability. Thus, the mantra of international advisers that stresses the importance of institution building and regulatory independence is far from sufficient. Especially given the extraordinarily adverse financing climate, in this second stage of the reform process it is imperative that policymakers in the DTEs focus on the substantive content of regulation, to create an economically attractive investment environment for investors.

Perhaps the single most important element of an investment-oriented policy is pricing reform. A key priority in attracting private investment is moving to cost-reflective tariffs, which would permit the privatized operators to earn enough revenue to compete equally with firms elsewhere in the economy for available financing to maintain, replace, modernize, and, where appropriate, expand their facilities and services. The interests of users and the economy can be better served if the privatized operators are not unduly constrained by price controls that no longer reflect the current competitive realities in the telecommunications market. Telecommunications operators should be accorded pricing flexibility without leaving the way open to either cross-subsidization or monopolistic pricing.

Issues of Telecommunications Pricing in the DTEs

The pricing issues facing policy makers in the DTEs are unique in several respects.

Revenue inadequacy. Inefficient pricing policies have been one of the most important causes for the secular deterioration in the performance of the telecommunications sector in the DTEs prior to the reform era. These countries, unfortunately, were in even less of a position to afford the costs of resource misallocation and inefficiency in production than their developed counterparts. Price controls were imposed without regard to their performance implications, subjecting the operating entities to considerable financial distress and substantially impairing their ability to maintain and expand service, especially in poor and rural areas. The failure of many governments to prescribe adequate rate increases, especially during periods of high inflation, effectively decapitalized their telecommunications systems. As a result, quality of service suffered. Moreover, the inability of financially impaired infrastructure industries to respond sufficiently to the increasing demands of modernized economies for better and more telecommunications services constrained domestic growth and hampered international competitiveness.

The need for tariff rebalancing. Past policies in the telecommunications sector have led to prices with systematic cross-subsidization [Kahn 1984, World Bank(WDR)]. The publicly articulated rationale is that such policies foster desirable social goals (helping certain classes of customers who would otherwise be disadvantaged) and positive economic externalities associated with universal service. In practice, however, a substantial portion of the benefits frequently flowed to those outside of the intended target group.¹ The lack of policy attention to tight targeting led to significant distortions in usage and investment decisions.

¹ As documented by the World Bank's 1994 World Development Report: Infrastructure for Development, major beneficiaries of these subsidy programs are the higher income groups since they are the large consumers of infrastructure services. Moreover, the resulting revenue inadequacy inhibits the extension of services to poorer groups of consumers, for example those in rural areas. This is particularly true in the water and electricity sectors.

Both economic theory and regulatory experience suggest that it is impossible to maintain significant cross-subsidies in the structure of prices for long, with open entry and no remedial policies, whether or not that would seem to be desirable (Box 1).

Policymakers in the DTEs therefore suffer from an apparently irreconcilable dilemma. Social development goals and political pressures have led them to design telecommunications pricing with significant cross-subsidies. At the same in recent years, these policymakers have sought to competitively restructure, liberalize and privatize their telecommunications sectors. These two goals are ordinarily incompatible (Baumol, 1999). Competitive entry will destroy the cross-subsidy.

Box 1. Picking apart cross-subsidies

To use this term rigorously, a customer service that is priced above its *stand-alone* cost provides a cross-subsidy to another customer service that is priced below its *incremental cost*.² Economic logic teaches that prices with cross-subsidies are unsustainable in an environment of open entry, and that such competition predictably leads to inefficiencies. The reason is simple—entrants will be impelled by the profit motive to divert the overpriced business, regardless of these entrants' efficiency, while entrants are unlikely to relieve the incumbent service provider from the financial burden of serving customers whose prices do not compensate the costs required to serve them. Thus, even suppliers with inefficiently high costs may find entry profitable in reaction to pricing that has the mandate of providing a flow of cross subsidies. Entry of this kind not only raises industry costs, but it also erodes the very ability to finance the subsidies that motivate the policy.

² The stand-alone cost of service is defined as the cost (including a competitive return to capital) that would be incurred by an efficient entrant if it were to undertake to provide that service alone, or if it were instead to provide that service in combination with some other services of the enterprise whose regulation

The other side of the cross-subsidization coin is the set of prices that lie below their services' incremental costs. While these prices convey the subsidies that motivate the policy, they also discourage the competitive entry of alternative suppliers who would contribute to industry efficiency. An entrant might have incremental costs of providing services that are lower than the incremental costs of the incumbent service provider, but are greater than the level of the cross-subsidized prices. Such a supplier might enter and enhance consumer welfare in an undistorted competitive environment, and yet find it financially unrewarding to enter in the face of cross subsidies.

Source: Willig (1994).

Since the telecommunications industry plays such a critical role in the economy it is imperative that the removal of telecommunications pricing distortions be a key component of any economic reform program in the DTEs. According to Table1, TPSA began to significantly rebalance its tariffs in 1998.

However, there are good reasons to avoid too abrupt price changes, which can cause large and unnecessary adjustment costs to consumers and firms alike. Even optimal prices, if instituted extremely rapidly and without sufficient notice, can lead to a transition process that is damaging and costly, and hence far from optimal (Baumol 1995). This is a point that has been unfortunately ignored in some privatization and restructuring programs, thereby creating public disenchantment with the reform process and a real danger of policy reversal. This does not, of course, argue for mere postponement but rather for a deliberate transition.

The real challenge facing the DTEs is not merely their ability to adopt liberalization timetables and establish independent regulatory institutions. The real challenge, rather, centers around their ability to put the issues of price reform and rebalancing on the larger political agenda in the face of legislative elections, political sensitivities, and overall concern about macroeconomic and growth conditions.

is at issue. The incremental cost of a service or a collection of services is the added cost to the system of providing them, given all other system activities.

Potential Solutions: Competitive Pricing Flexibility. With the progressive introduction of competition and privatization, rebalancing of prices (change in both levels and structure of tariff schemes) for different basic telecommunications services becomes necessary—both for the operating entities’ sake, and for the public interest. However, radical, across-the-board realignment of prices with underlying costs may impose serious hardship for the poor. The question is how to achieve the important objective of revenue adequacy while affording adequate protection to certain disadvantaged groups. To resolve issues and questions of this kind, economics offers pertinent and well-established principles and insights that flow from both theory and regulatory experience around the world.

Table 1. Local and Domestic Long-distance rates of TPSA until September 2001

Service type	Price	1993	1994	1995	1996	1997	1998	1999	2000	May 2001
Monthly subscription fee	PLN	9	10	10	10	10	11	15	25	35
Local calls and the calls within one numbering zone	PLN / 3 minutes	0.08	0.12	0.14	0.16	0.18	0.19	0.24	0.29	0.29
Long-distance calls	PLN / minute	0.96	0.72	0.84	0.80	0.90	0.76	0.64	0.56	0.44

Note: VAT is excluded from the tariffs. Long-distance call rates for over-100Km are provided here.

Source: OECD (2002).

Constraints of price uniformity or regulatory mandates that disallow price differentiation can seriously undermine revenue adequacy, by limiting the ability of telecommunications operators to efficiently exploit the characteristics of demand and extract more revenue from high valuation customers. As an alternative, using nonlinear prices can be particularly useful by alleviating the need for radical tariff rebalancing. The infrastructure entities must be permitted to compete with flexibility of prices and terms, in order for the economy to receive the benefits of market liberalization that motivate pro-competitive policy in the first instance. In order to cover their fixed costs, sunk costs, costs of various obligations, and the revenue requirements promised by the privatization agreements, prices will best serve the public interests if they are permitted by regulation

to vary among classes of users in accordance with value of service, as well as in response to the marginal costs of service. The need to set some prices aggressively low in order to retain the business means that other prices should be permitted to take up the slack in order to efficiently secure adequate revenues.

Thus, policymakers should permit the rapid installation of new access lines, wired or wireless, based on pricing that reflects differences in the value of service and is designed to clear backlogs. Also, consumers who place relatively high value on a service should contribute relatively large net revenues to the coverage of unattributable, fixed and common costs. By offering discounts with non-linear prices to non-captive customers, the utility will be able to recover the costs of the local loop with marginal access prices much closer to incremental cost and keep all customers in the network, to the benefit of all.

A Practical Pricing Regime—“Constrained Market Pricing”. The data requirement is the prime regulatory dilemma besetting the pursuit of pricing rules that can elicit economic efficiency. The informational problems are likely to be especially severe in the DTEs, where the auditing technologies are weak and regulatory bodies lack the proper technical expertise (Beato and Laffont 2002). In particular, information on current demand elasticities and other pertinent attributes of the demand relationships are virtually unobtainable in practice.

There is promising solution to this dilemma that has been successfully adopted in some countries (ICC, 1985)—*constrained market pricing*. It divides the setting of final product prices into two stages. The first stage consists of the regulator imposing floor-ceiling constraints upon the setting of prices by the regulated firm. Such constraints can fortunately be expressed in the required quantitative terms with the aid of cost information alone. The second part of the price-determination process is then left to the firm, whose self-interest will lead it to take demand conditions into account. The regulated firm is prohibited from selecting any prices that violate the cost-based constraints adopted by the regulator; but within those limits the firm is granted the freedom to select the prices that best promote its interest.

The regulated price ceiling and floor for each product are derived from the competitive-market model. Thus, the firm is never permitted to adopt a price that exceeds the amount at which an efficient entrant-rival could afford to supply the product in a competitive market in which inputs are available on competitive terms--this price ceiling is called the "stand-alone cost" of the product or service in question. A price constrained not to exceed the stand-alone cost ensures that purchasers will pay no more for this item than they would have if it were sold in an effectively competitive (contestable) market. The price floors reflect the product's marginal or average incremental cost. This approach, in essence, seeks to enforce competitive behavior in arenas where such behavior is not the automatic result of market conditions (Baumol and Willig, 1988).

The primary purpose of the stand-alone cost ceiling, aside from its role in eliciting economic efficiency, is to protect consumers from monopolistic exploitation through the imposition of excessive prices by the regulated firm. Similarly, the primary purpose of the price floors, economic efficiency aside, is to protect actual or prospective rivals of the regulated firm from predatory pricing and related practices that can seriously handicap these competitors or drive them from the field altogether.

The application of differentiated pricing rules in the DTEs, when it has been considered at all, has often been dismissed as too difficult to implement and contrary to social equity. However, it is possible, and indeed imperative, that such pricing approaches be made practicable in the context of infrastructure sectors, including telecommunications, that have been facing chronic problems of revenue inadequacy, underinvestment, and low coverage ratios. These rules should be viewed as a source of qualitative guidance rather than as generators of precise and definitive prescriptions for pricing. In many instances, price differentiation may have much more profound implications for revenue adequacy than the orthodox uniform price rebalancing schemes (e.g., across-the board price rises), and provide greater potential for social equity than the unsustainable internal cross-subsidies under price uniformity.

Facilitating Access to Bottleneck Facilities

Telecommunications liberalization requires policy makers in the DTEs to address a difficult new issue. As a part of restructuring, potential competitors will often require access to essential (bottleneck) network facilities—mainly the local loop. Thus, the removal of legal barriers to competitive entry is not sufficient by itself to install a regime of effectively functioning competition and facilitate new investment through new entry. Competitors must have access to these bottleneck facilities on non-discriminatory terms if they are to have a reasonable opportunity to compete. If competition is to flourish, it may require explicit regulatory intervention to ensure such access, particularly in situations where those essential facilities are themselves controlled by the incumbent telecommunications operators, who will in many settings have ordinary business incentives to deny rivals fair access.

The issue. The emerging experience from several countries reveals that the allocation of bottleneck infrastructure facilities and the broad issues of access and interconnection are of critical importance in the deregulation and competitive restructuring of the telecommunications sector. Regulators face the enormously important task of identifying the appropriate terms and scope of compelled sharing of such essential facilities. The benefits of telecommunications liberalization will not obtain unless a proper access and interconnection framework is put in place (Armstrong and Doyle 1995, Kessides et al 1999).

One of the primary challenges facing regulators in the DTEs is to ensure access of competitors to bottleneck facilities on terms that are consistent with efficient competition--i.e., to set a level and structure of access prices which promote dynamic efficiency through entry and investment decisions, while enabling the owner of the respective network to remain

The design of appropriate access and interconnection pricing rules has become one of the central and perhaps most complex and controversial regulatory tasks in the network utilities. This task is even more daunting in the DTEs because of severe measurement problems with respect to the relevant economic variables and the lack of the requisite technical expertise.

financially solvent. Thus, prices should be sufficiently high to be compensatory (at least cover the long-run incremental cost of the use of the network by the entrant), yet not so high as to preclude efficient operations by the entrant.

The access problem is especially vexing in situations where competitors require a bottleneck input controlled by one of their rivals. Monopoly control of bottleneck facilities can create irresistible incentives to behave anticompetitively and cross-subsidize unregulated competitive activities from regulated monopoly ones. Without regulatory constraint, the holder of the bottleneck monopoly could repress competition by creating artificial handicaps for its rivals in the market for the final products sold to consumers. The monopolist can impose costs on its competitors by impeding their access to the bottleneck, thereby raising the prices that they must charge to cover their elevated costs, and thus weakening their ability to compete.

Bibliography

1. Armstrong, M., and C. Doyle. "The Economics of Access Pricing." Paris: Organization for Economic Co-operation and Development. Processed.
2. Baumol, W. J. 1995. "Modified Regulation of Telecommunications and the Public-Interest Standard." In M. Bishop, J. Kay and C. Mayer, eds., *The Regulatory Challenge*. Oxford, Great Britain: Oxford University Press.
3. Baumol, W. J., and R. D. Willig. 1988. "Competitive Rail Regulations Rules." *Journal of Transport Economics and Policy* 33(1): 43-54.
4. Baumol, W. J. 1999. "Having Your Cake: How to Preserve Universal-Service Cross Subsidies While Facilitating Competitive Entry." *Yale Journal on Regulation* 16(1): 1-17.
5. Beato, P., and J. J. Laffont. 2002. "Competition in Public Utilities in Developing Countries." Report No. IFM-127, Inter-American Development Bank, Washington, D.C.
6. Bruce, R. R., and A. Marriott. 2002. "Use of Alternative Dispute Resolution Techniques in the Telecom Sector." Debevoise & Plimpton, London, Great Britain. Processed.
7. Bruce, R. R., and R. Macmillan. 2002. "Telecommunications in Crisis: Perspectives of the Financial Sector on Regulatory Impediments to Sustainable Investment." Debevoise & Plimpton, London, Great Britain. Processed.
8. Kahn, A. E. 1984. "The Road to More Intelligent Telephone Pricing." *Yale Journal on Regulation* 1(2): 139-57.
9. Kessides, I. N., J. J. Laffont, J. Ordovery, and R. Willig. 1999. "The Access Pricing Problem: Some Practical Rules in Telecommunications." Mimeo, World Bank, Washington, D.C.
10. OECD. 2002. *Regulatory Reform in Poland*. Paris, France.
11. Willig, R. D. 1994a. *Before the (New York) Public Service Commission*. PSC Case No. 94-E-0136.

12. Willig, R. D. 1999. "Economic Principles to Guide Post-Privatization Governance. In F. Besanes, E. M. Uribe, and R. Willig, eds., *Can Privatization Deliver? Infrastructure for Latin America*. Washington, D.C.: Inter-American Development Bank; and Baltimore, MD: Johns Hopkins University Press.
13. Wirick, D. W. 1999. "New Models of Regulatory Commission Performance: The Diversity Imperative." NRRI 99-15, National Regulatory Research Institute, Ohio State University, Columbus, OH.
14. World Bank. 1994. *Infrastructure for Development: World Development Report 1994*.