Policy Research Report

INFRASTRUCTURE REGULATION

Promises, Perils and Principles
Main Messages

1. Poor regulatory design can have dire consequences: undermining the benefits of restructuring and privatization.

With the progressive introduction of competition into the traditional public utilities, the scope for direct economic regulation has narrowed considerably. However, the performance of systems that combine structurally competitive and monopoly elements has become very sensitive to the design and effective implementation of regulation.[U.S. railroad regulation until the late 1980s; U.S. electricity sector, especially the recent experience in California; Argentine and Romanian telecommunications privatization.]

2. Nevertheless, deregulation and privatization are well worth the risk since the gains from successful reforms have been substantial. Even flawed reforms have usually improved performance over the status quo in developing and transition economies.

Successful structural and regulatory reforms have enhanced productivity and cost-effectiveness, improved output quality, engendered greater responsiveness to consumer and business needs, increased investment and improved the allocation of investment by substituting market incentives for bureaucratic preference. [After the deregulation of entry into long-distance telephone market in Chile, rates declined by over 50%; in Argentina, the privatization and deregulation of railroads led to quadrupling of labor productivity, while ports liberalization led to an 80% reduction of fees; truck deregulation in Mexico led to a 50% reduction of effective fees and 30% reduction of delivery times; capital productivity in the road haulage industries of the U.S. and U.K. increased by about 50% after the relaxation of operational controls; airlines fares in the U.S. declined by one-third between 1976 and 1993; Australia assesses its gains from regulatory reform to be around 5.5% of GDP.]

3. The abolition of command and control regulation is by no means synonymous with laissez faire. In the new reform era, government intervention is of critical importance, but of fundamentally different character and intent.

Redefining government’s role is key. For reform to succeed interventions must focus on setting up an appropriate framework for competition to work effectively, and establishing a stable, transparent and rational regulatory process. The sole purpose of economic regulation should be to encourage effective competition where that is feasible and to provide an effective substitute where and when competition is not possible.

4. The efficiency gains from regulatory reform require realignment of utility prices with costs and the elimination of inefficient cross subsidies.

The social costs of inflexible pricing and inefficient cross-subsidies may not have been as burdensome when infrastructure industries operated as monopolies in a static environment. In today’s fast-paced open marketplace and era of rapid technological change, however, price distortions can quickly lead to costly misallocations of resources.
Moreover, the complex system of cross-subsidies, which were ostensibly instituted to support the poor and other disadvantaged groups, in practice have typically provided much greater benefits to wealthier and more powerful groups. Policymakers in developing and transition economies need to plan early on during the restructuring process for a smooth transition to tariff rebalancing and competitive pricing flexibility to avoid serious dislocations for the network utilities and their customers. [The inequitable cross-subsidy from long-distance to local service in the Brazilian telecommunications sector in the early 1990s; numerous country examples of unbalanced tariffs and prices below long-run costs in the different infrastructure sectors; in Mexico, telecommunications tariffs were significantly adjusted prior to privatization while most other Latin American privatization agreements included a schedule for gradual rebalancing of such tariffs.]

5. **Developing and transition economies have little experience with economic regulation.** There is no need for these countries to repeat the mistakes of regulation in the U.S. and other OECD countries, mistakes that took several decades to reverse.

   The developing and transition economies face difficult challenges: creating effective institutions that are necessary to support a market economy and execute regulatory policy; insulating the regulatory bodies from political interference, fulfilling the requirements of due process, and mitigating the influence of powerful interest groups; limiting the discretionary powers of government over privatized enterprises; and achieving a proper balance between economic efficiency and social equity. But they also have the benefit of lessons learned the hard way in developed countries. A wider understanding of the experience of the front runners can help avoid repeating the mistakes of the past. [Numerous examples from the Former Soviet Union, Eastern and Central Europe, Latin America, and Africa; the difficulties encountered in Argentina with setting up an effective regulatory agency in telecommunications.]

6. **Radical competitive restructuring and aggressive market liberalization are a pragmatic way to substantially reduce the need for scarce technical expertise and limited regulatory capacity in developing and transitional economies.**

   Constrained administrative and regulatory capacity raises the risk of regulatory failure in the transition and developing economies. This calls for the design of elegantly simple regulatory mechanisms. Streamlined regulatory regimes that employ the most basic, even if not the most efficient, instruments of intervention are more likely to succeed. [Successful examples from Chile, Peru, New Zealand; difficulties encountered in Russia, Central and Easter Europe, and Africa.]

7. **Only governments that are politically ready to reform will be able to design a sufficiently transparent and coherent privatization and regulatory process to reassure consumers and investors that their interests are protected.**

   Infrastructure regulation is politically sensitive and not all governments will be politically prepared to initiate reform, or be credible to investors. Unready countries would be better served by laying the groundwork for reform, than trying to introduce changes that are politically untenable. Reform can be hard to sustain since prices often increase after privatization and deregulation in developing and transition economies,
while service does not immediately improve and may even decline for some time. This is not because of privatization or deregulation, but the result of years of distorted pricing and neglect of maintenance and investment. If, however, consumers are poorly informed and believe that they are being victimized by powerful economic interests, the resulting backlash could jeopardize reform. Governments can improve the political chances of reforms by designing accountable and open regulatory institutions, anticipating potential problems, and informing consumers; it may also be necessary to smooth large price changes with declining subsidies in order to avoid political backlash. [Contrasting examples from Chile and Russia.]

8. Regulatory policy must be especially sensitive to affordability concerns in poorer countries.

Most countries—rich and poor alike—espouse common objectives for their infrastructure sectors. These include universal access to affordable, efficient, safe and reliable services produced and delivered in an environmentally responsible way. At least at one level, therefore, the regulatory principles developed from experience in the industrialized countries should be compatible with the aspirations of developing and transition economies. However, major price revisions and across-the-board tariff rebalancing schemes are likely to be more disruptive and, in many instances, truly burdensome in poorer countries. While the poor often have high willingness to pay, access itself needs to be affordable. The inclusion of consumers, and particularly disadvantaged groups, in the regulatory dialogue can help assure that regulators are sensitive to the need for accessible, affordable services.

9. Domestic regulatory policy is becoming a major issue in international negotiations on trade and investment policies. Those countries that fail to adjust their domestic regulatory policies to meet the challenges of globalization will rapidly find themselves at a substantial competitive disadvantage.

With the progressive reduction of direct trade barriers, inefficient regulation is becoming an increasingly important source of distortions in international trade. International agreements that require multilateral coordination of regulatory policy create unique opportunities for the developing and transition countries to overcome domestic political obstacles for a substantial program of deregulation and regulatory reform. [In January 2001, the US Trade Representative filed a request to the WTO to look into anti-competitive practices in Mexico’s telecommunications market]
I. PUBLIC REGULATION—SOME INTRODUCTORY PERSPECTIVES

Standard Rationales for Regulation
The Empirical Assessment of Regulatory Intervention
Price Controls and Industry Performance
Regulation and Protectionism
Deregulation, Competition and Market Liberalization
Reading the Record: The Merits of Regulatory Reform and Deregulation
Regulation in Developing and Transition Economies

- The empirical assessment of regulatory intervention reveals quite clearly that in a variety of circumstances (especially in industries that are structurally contestable or are undergoing rapid technological change) the costs of regulation, however well intentioned, easily exceed its benefits—the regulatory cure is worse than the disease—and that the public would be better off relying upon unfettered market forces as a regulator despite their acknowledged imperfections.

- Government intrusion into pricing, investment, and other such business decisions adversely impacts industry performance—it discourages investment in innovation, shelters inefficiency, promotes misallocation of resources, causes incentive breakdowns, and reduces the price and quality options that the public would be offered under free market allocation. [In the U.S., the delay in licensing cellular telecommunications cost the economy approximately $25 billion per year (1983 dollars) while the regulation of rail and motor carrier rates caused an annual welfare loss due to allocative inefficiency between $1 and $4 billion (1977 dollars).]

- The experience from both the industrialized and developing countries, reveals quite clearly that regulatory policy is often in practice characterized by protectionism, conservatism, and a strong inherent tendency to suppress competition.

- The growing awareness of the costs of regulation has prompted a substantive reexamination of its rationale, as well as a search for an alternative arrangement in which competition and deregulation would be assigned an appropriate place, consistent with the promotion of the general welfare. Indeed, in recent years, the removal of statutory restrictions on competition has been a major theme of public policy toward industry in many countries.

- The experience from countries that implemented substantive regulatory reforms (initially the United States and the United Kingdom and subsequently several other industrial and developing economies) confirms what theory predicts: decentralized market-oriented decision-making that is freed from unnecessary regulatory control and that is energized by market incentives is the surest means of finding and
implementing efficient and innovative solutions to problems posed in the infrastructure sectors.

- In the past, most developing and transition countries have chosen nationalization over regulation as the instrument for control of monopoly power in their infrastructure sectors. Thus, these countries are the ones least prepared by experience to institute and carry out a rational regulatory regime. Yet, their policy makers are being very rapidly confronted with complex “second generation” regulatory issues that arise after privatization, particularly when combined with unbundling, without having had any experience with the traditional “first generation” issues of regulating private franchised monopolies. In fact, in many cases they are simply repeating the mistakes of U.S. regulation that it has taken decades to ameliorate.

II. NEW PERSPECTIVES IN THE REGULATION OF UTILITIES

Changing Technological and Economic Characteristics of Network Utilities
Testing Whether Public Utility-Style Regulation is Needed
The Regulatory Challenge in the New Environment
Distortions and Tensions of Partial Deregulation
Recipes for Misguided Regulation
Regulatory Innovation
Policies Harmonizing Regulation with Competition
Toward More-Promising Mechanisms for Regulation

- Because of technological and other fundamental economic changes, the network utilities are no longer monolithic but rather encompass a number of distinct activities with unique economic characteristics. While the infrastructure networks continue to exhibit natural monopoly characteristics, most of the remaining activities are structurally competitive or contestable.

- Public utility style regulation is necessary to control market power if, and only if, the fundamental economic characteristics of the relevant market are inconsistent with the workings of competition and contestability. More precisely, the test for whether public utility style regulation is needed to shape market outcomes as a replacement for competition should be based on there being three conditions in the relevant market: a natural monopoly; high barriers to entry; and sufficient demand to sustain significant monopoly profit.

- The central regulatory problem arising in the network utilities today is the mixture of competition and monopoly elements in supply.

- There is no question today that substantial competition could emerge in the utilities if they were properly reorganized. Still, competition is not feasible throughout these industries and entry under traditional regulation can introduce distortions so severe as to make the mixed system the worst of both possible worlds. For example, regulation-induced inefficiencies in pricing (e.g. cross-subsidization) that were more-
or-less tolerable in the traditional monopoly setting can create instability and serious social costs in the new market context.

- The most frequently encountered inappropriate regulatory rules and actions include: (i) prevention or limitation of effective competition; (ii) ossification of cross subsidy; (iii) use of inefficient restrictions to protect competitors at the expense of competition; (iv) injection of costly and avoidable regulatory risk; (v) restriction of freedom of decision-making by management even within limits competitive conditions would permit; (vi) use of discredited criteria, such as accounting or fully-distributed cost allocations, for regulation of prices.

- Recent policy developments and experience call for a major reorientation of the traditional regulatory rules and procedures, and offer two types of guidance to regulators. First, they provide an improved set of criteria distinguishing between those cases in which intervention by the public sector is warranted and those in which it is not. Second, they offer more effective tools to the regulators that increase the public welfare effects of intervention.

- Regulators need to adopt policy measures that seek to harmonize competition with regulation and create a "level playing field". Such policies should ensure that regulatory obligations (e.g. universal service goals, lifeline services to the elderly and poor, etc.) are pursued in a manner that is competitively neutral—i.e. that avoids interference with the ability and incentives of any entity to compete for business on the basis of its efficiency.

- During the past two decades, there has emerged a new set of principles for the guidance of economic regulation. These principles are designed to minimize interference with economic efficiency and to expand the role of the market as far as seems advisable in areas of the economy where the strength of competitive forces is suspected to be inadequate. These principles have already been used in the United States in regulation of railroad freight rates and of telecommunications pricing, and they are under discussion elsewhere. At least so far, the new regulatory principles have lived up to their promise of significantly reducing the burden of regulation while contributing to efficiency.

### III. REGULATORY AND STRUCTURAL ISSUES FOR INFRASTRUCTURE PRIVATIZATION

- Optimal Restructuring Prior to Privatization
- The First Trap: Exclusivity Without Regulation
- The Second Trap: Weak Regulatory Institutions
- The Importance of Regulatory Commitment
- Overcoming Bad Reputation
- Ways of Limiting the Government’s Discretionary Powers
- Regulation Without Commitment
• There are generally several options for restructuring the network utilities. Which of these options is the best choice in a specific country and industry context is a complex policy decision with many dimensions to consider. The choice of industry structure has important implications for the design, complexity, and scope of regulatory governance.

• When the appropriate framework and fundamental structural conditions are in place to make post-privatization competition reasonably feasible, it would harm the public interest to privatize a monopoly via some form of exclusivity arrangements (the cross-country privatization experience in the telecommunications sector provides strong support to this claim). The added fiscal benefit that might be forthcoming to the treasury from privatizing a protected monopoly is not worth the added costs to consumers from having to deal with a monopoly, to say nothing of the subsequent losses to the economy from foregone industry vitality and progressivity.

• Achieving the public interest goals of privatization requires a commitment to planning the structure of post-privatization governance ahead of time—such ex-ante planning must include both the institutional architecture of regulatory governance, as well as guideposts for the substantive content of that governance.

• Entry into the infrastructure sectors requires very large investments that are mostly sunk. The owners of private capital will be unwilling to invest in the sunk assets needed to supply infrastructure services unless there is a credible commitment that the government will not explicitly or implicitly expropriate the resulting private value.

• Many developing and transition economies have a long history of fluctuating political interference and arbitrary administrative intervention in the operations and finances of their network utilities. In many cases, regulation has simply been another form of state control like the one that preceded privatization. Without deliberate steps to overcome bad reputation, it would be exceedingly difficult for these countries to credibly commit to a stable, rational, and transparent regulatory process. [During its failed attempt to privatize Svyazinvest in 1995, the Russian Government announced a specific plan for rebalancing telecommunications tariffs. However, at that time, none of the potential investors took the government’s promise seriously.]

• A socially desirable way to limit the government’s discretionary exercise of regulatory power over privatized enterprises is to publicly articulate a set of principles, before the initial commercial investment is made, to serve as a transparent basis for future regulatory and other policy decisions by the body that performs the regulatory function. It is worth noting that very few, if any, of the regulatory bodies in developing and transition economies have articulated such principles.

• In many developing and transition economies where there is no strong tradition of judicial restraint of administrative intervention, US style regulation is unlikely to be effective. The UK system which relies on the granting of licenses provides a way out.
VI. ORGANIZATION, STRUCTURE, AND PROCEDURES OF REGULATORY AGENCIES

- Characteristics of Effective Regulation
- Importance of Due Process
- Structure of Regulatory Agencies
- The Independence Debate
- Commitment vs. Flexibility in Regulatory Architecture
- Guiding Principles for Public Utility Regulation
- Unique Challenges in Developing and Transition Economies

- Effective regulation requires coherency, independence, autonomy, accountability, transparency, and capacity. In many developing and transition economies, it may take a substantial amount of time before these important characteristics of an effective regulatory system are fully in place.

- So long as regulation is necessary, if only to effect a transition to an essentially unregulated competitive market, regulatory procedures may be capable of performing that function efficiently or rendering achievement of the substantive goal impossible. The regulatory agencies must be subject to a variety of substantive constraints and procedural requirements to ensure the integrity of the regulatory process.

- Decisions regarding the structure of the regulatory framework that will govern each utility sector—industry-specific versus multisectoral regulatory agencies, single commissioner versus multicommissioner structure, and regulatory appointment procedures—have important implications for the effectiveness of the regulatory process. A mismatch between the structure of regulatory governance and a country’s institutional and economic characteristics can be an important source of regulatory failure. There are important tradeoffs between the different design options that need to be carefully evaluated in individual country contexts.

- Effective regulation requires some independence of the regulators from political influences, especially on a day-to-day or decision-by-decision basis. The posture of a regulatory agency must be that of an impartial, objective, non-political enforcement of policies set forth in the controlling statutes, free of transitory political influences. Clearly absolute independence of the regulatory agencies is neither possible nor desirable. Still, if the regulators have no insulation from political intervention, the regulatory process will itself be politicized and its decisions discredited.

- The structure of public utility style regulatory organizations must reconcile between two conflicting goals. Well-functioning regulation must be creative and responsive to new problems, changed circumstances, and new information concerning the workings of the regulated sectors—goals that argue for regulatory discretion. Yet, that same discretion may be seen as a mortal threat by the owners of sunk infrastructure assets.
under regulatory control, whose value can be destroyed by excessively aggressive regulation. Too much flexibility leaves inordinate scope for administrative expropriation. Thus, striking a proper balance between regulatory flexibility and commitment is an indispensable precondition for the effectiveness of every regulatory mechanism.

- The following are some of the guiding principles that would generate efficient solutions to a wide range of disputes and issues in the regulated public utilities: (i) preserve promised investor value; (ii) allow competition to function where it can without distortion; (iii) weigh the costs of rules against the benefits; (iv) assure service quality and price levels that offer consumers no less than the competitive standard of comparison; (v) assure that prices provide signals and incentives for efficient actions by consumers, suppliers of complementary and substitute services, suppliers of inputs, and investors; (vi) allow open access to bottleneck infrastructural facilities on terms that reflect competitive parity; and (vii) pay efficient and competitively neutral attention to social goals.

- The advanced industrial economies have decades or more of experience with the legal institutions to support a market economy. Moreover, their educational systems have well-developed curricula in accounting, economics, and finance that teach the analytical methods essential for effectively regulating large private monopolies and for establishing and enforcing competitively neutral regulations that facilitate entry and promote competition. Still, the efficacy of their regulatory systems has proven highly controversial. These background conditions are much less prevalent in nearly all developing and transition economies. These countries, therefore, face an even more difficult task of creating effective regulatory institutions.

V. CURRENT ISSUES OF PRICING POLICY

- The Cost Allocation Problem
- Economically Efficient Pricing Policies/Competitive Pricing Flexibility
- Rate-of-Return Regulation
- Dynamic Efficiency, Price Caps, and Market-Based Pricing
- The Need for a Practical Compromise
- Price Structure Issues

- The presence of substantial fixed and common costs in the network utilities creates a number of problems for government regulation. Perhaps the most troubling is the fact that it is impossible to allocate, in any non-arbitrary way, a share of these costs to any one of the utility’s activities and services. Fully distributed cost and other rigid accounting allocation rules suffer from several disabilities. [e.g. in the privatized and unbundled Argentine electricity system, the pricing of transmission was a version of accounting allocations based on “energy benefits” rather than economic or market benefits]

- Rational determination of utility prices must be based on both cost and demand conditions—demand considerations as well as cost data must enter into decision
making in order to permit adequacy of revenues and achieve efficiency. In order for the economy to receive the benefits of competition, the network utilities must be permitted to compete with flexibility of prices and terms. Within the boundaries determined by the avoidance of cross-subsidization, 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 secure adequate revenues efficiently. [We should strike a note of caution about the practical application of these principles in the developing and transition economies. Data constraints and lack of technical expertise are likely to render the estimation of supply and demand elasticities and other relevant economic parameters very difficult. As a consequence, the “classic” characterization of the optimal utility pricing problem needs to be reconsidered. Both public policy and standard theory will require modification.]

- Even when executed correctly, rate-of-return suffers from several disadvantages. It does not give firms strong incentives for cost minimization since their costs are recovered in their rates; nor do firms have incentives to be more efficient and innovative since this form of regulation fails to distinguish increased earnings attributable to efficiency from increased earnings due to the exercise of market power. On the other hand, this form of regulation does give firms incentives to shift costs from services in which they face competition to services in which they enjoy market power (and hence to improperly cross-subsidize); and to inflate their rate base. Moreover, the framework needed to support this mode of regulation is elaborate and often cumbersome. [Most developing and transition economies have not put in place the basic elements of accounting regulation. This would render the effective implementation of rate-of-return regulation very difficult.]

- Price caps are designed to constrain the pricing that a firm with some degree of market power can adopt, thereby protecting the interests of consumers. At the same time they offer management wide freedom of decision making, permitting the firm to adopt any prices that fully-effective competition would not preclude. Price caps are often also designed to extend freedom of decisions on the prices of individual products of the firm by setting a ceiling only on the average prices of groups of related products rather than constraining the price of each product individually.

- Many developing and transition economies face substantial investment requirements in infrastructure. A basic difference between price-cap and rate-of-return regulation is that the former shifts most of the risk to investors while under the latter such risk is mainly absorbed by the consumers. In the face of substantial investment requirements, it might be necessary, at least for some initial period, to choose a rate-of-return regime, despite its well-known adverse consequences for economic efficiency.

- In most countries, traditional regulation of the utilities has led to prices with systematic elements of cross-subsidization. Therefore, utility pricing has historically conflicted significantly with the dictates of economic efficiency. However, prices with cross-subsidies are unsustainable in an environment of open competitive entry, and without remedial policies such competition leads to inefficiencies. Policy makers need to plan early on during the reform process for a smooth transition to competitive
VI. ACCESS TO BOTTLENECK INFRASTRUCTURAL FACILITIES

Importance of Access Policy

The Goals of Access Policy

Why the Issue is Difficult

Access Pricing Models

Should Access Policy be Used to Promote Competition?

The Use of International Benchmarks

- The emerging experience from several countries reveals that the allocation of bottleneck input resources and the broad issues of access and interconnection policy are of critical importance in the deregulation and competitive restructuring of the infrastructure sectors. The benefits of liberalizing the potentially competitive or contestable segments of these industries will not obtain unless a proper access and interconnection framework is put in place.

- The terms of access should not distort the process by which prices are adapted to consumer preferences and demands for services. Prices should be sufficiently high to be compensatory (at least to 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. Regulation should, therefore, ensure that there is sufficient pressure on the owner of the infrastructure to operate in an efficient manner, but that no unnecessary duplication of network construction takes place.

- The access problem is especially vexing in situation where several firms compete in the sale of a final product, but one of these firms is the monopoly owner of an input that is indispensable in the supply of that product. Monopoly control of bottleneck facilities can create irresistible incentives to behave anticompetitively and cross-subsidize unregulated competitive activities from regulated monopoly ones.

- The economic literature offers two major approaches to the efficient pricing of essential input facilities: the Efficient Components Pricing Rule (ECPR) or Parity Pricing, and the Global Price Cap or Ramsey Pricing Rule. Because of their restrictive assumptions and severe informational requirements, the translation of either approach into workable rules and actual access pricing schedules for the guidance of regulators in developing and transition economies is likely to prove extremely difficult. There is an urgent need for a simpler rule.

- There are serious reasons to resist the use of access pricing as an instrument for the promotion of competition and other worthy social goals (e.g. access by the poor to infrastructural services). The fee for bottleneck services is not a tool generally well-suited for the achievement of policy objectives other than economic efficiency in the supply of final products.
In most developing and transition economies, it is very difficult to estimate the forward-looking costs that are essential for determining access prices. In the face of such measurement problems, regulators may utilize world cost benchmarks, appropriately modified to reflect specific domestic conditions.

VII. ALTERNATIVE REGULATORY APPROACHES TO THE PROMOTION OF UNIVERSAL SERVICE

- Concepts of Universal Service
- Motivations Underlying Universal Service Policies
- Evaluating the Costs and Benefits of Universal Service
- Economic Principles of Public Finance and Cost Recovery
- Pursuit of Universal Service in a Monopoly System
- Pursuit of Universal Service in a Liberalized Sector
- The Distortions of Cross-Subsidization
- Importance of Competitive Neutrality
- Auctions as a Mechanism to Impose Universal Service Obligations

The meaning of universal service is of public dimension and refers to the policy that fundamental infrastructural services should be available to every citizen on fair terms, even if some customers must be served below cost. However, the precise definition of universal service is country and sector specific. Moreover, universal service is not a single concept, but rather a multi-faceted one encompassing nationwide geographic coverage, non-discriminatory access and affordability. The simultaneous pursuit of these different goals may require conflicting policies.

The most frequently articulated arguments in support of universal service policies focus on positive network externalities (mainly in telecommunications and postal services), distributional equity, and national cohesion. The argument based on network externalities, though quite prominent in the policy debate, seems to provide only limited support. However, universal service mandates can be effectively used to achieve redistribution towards high-cost customers (e.g. rural households) and low-income customers.

There has been considerable controversy surrounding the definition and measurement of the cost of universal service, which in any case depends on the overall regulatory structure. The welfare benefits of universal service are even more difficult to estimate—they clearly depend on the weights which the policy makers attach to the different groups of customers and these weights are, in general, not observable.

Targeted subsidies paid from general tax revenues are often the most efficient way to fund specific activities. The administrative costs from increasing general taxation may also be lower, because the necessary bureaucracy to execute the tax already exists. In most countries, however, the general tax revenues have not been used to
fund universal service mandates. Instead, these mandates have been traditionally funded through cross-subsidies among the regulated services.

- Under a monopolistic industry structure there are essentially two ways of financing universal service: cross-subsidies and transfers from the regulator to the firm. The optimal financing mechanism is likely to be based on both instruments and strikes a balance between their respective efficiency costs (marginal deadweight loss associated with surcharges vs. marginal cost of public funds).

- Within a competitive sector there are several alternative ways to organize and finance universal service. However, the financing mechanism in the face of competitive entry can induce several additional distortions in that it may interfere with the very nature of the market structure which can be sustained in the sector.

- If revenues are to be collected to support universal service, the surcharges or taxes should affect the prices charged by competing suppliers equally, so as to leave the relationship between the competitors’ prices undistorted. If subsidies are to be conferred on particular services earmarked for particular consumers, then the subsidy payments should be offered to any supplier who is able to commit to performing the requisite service. These elements of competitive neutrality are designed to permit achievement of social goals without standing in the way of the forces of competition to select and reward efficiency.