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A Comparison of Deregulation Policies

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Many Pacific Basin countries will have to face issues related to deregulation or privatization even if their governments opt not to adopt such policies. Because technological configurations and demand for telecom services are as diverse as the levels of development found in various countries, it is impossible to draw general conclusions applicable to each specific situation. Rather, by stressing differences among the countries that have already embarked on the process, policy alternatives for countries in intermediate stages can be made clearer. Special emphasis is thus placed on the United States and Japan because of several contrasts between their policy orientations and regulatory schemes. Australia, Canada, and South Korea are also discussed.

Developing countries must face the problems associated with constructing basic telecommunications infrastructure—that is, they need to achieve universal service. This is generally considered to require cross subsidy, in contrast to developed nations where unbundling competition and abolition of cross subsidy are hailed. However, the style of introducing competition is instructive for developing countries because they can contemplate ways of structuring their industry from a long-term perspective. There is a saying, “Learn from other’s mistakes, you don’t have time to make them all yourselves.” By comparing the experiences others have already had with regulation, developing countries can better plot their way.

The first section looks at the patterns of competition triggered by deregulation. It is very important to recognize that competition does not mean the same thing to everyone. Rate rebalancing is the concern of the second section. The third section takes up universal service—again, something that means different things to different people. The focus of the fourth section is the problems of market dominance by incumbents, a situation every country faces soon after the emergence of competition. Policy implications, particularly cross subsidies and value added network (VAN) services, are considered in the fifth section. The chapter concludes with implications for policy analysis from a comparative perspective.

2.1 Patterns of Competition

It is important to stress that, from a policy perspective, *competition* has a number of meanings, so one cannot adhere to a strictly uniform definition. Rather, I will make clear what is meant by each group using the term. Competition in an economic sense has two aspects. First, it is a situation where all firms are price takers—the balance of supply and demand determines the price, it is not set by any one seller or buyer, or any group. Second, in a business context the term often simply means rivalry among firms even though one or more of them may in fact have some pricing power. Monopoly has historically been the standard in telecommunications. It is therefore impossible to realize competition in the economic sense all at once; moreover, this is often undesirable because the monopoly situation has been essential to achieve the cross subsidization needed to provide universal service, an overriding public interest.

One can distinguish two practical approaches to introducing competition into a telecommunications market. The first is to accept newcomers without any explicit restriction on the number of firms. The second way is more gradual, admitting competitors in limited numbers. Under each approach one presumes some kind of (money-losing) universal service must be provided through income redistribution within the industry.

In addition to this distinction, one must distinguish local and long-distance markets. The traditional institutional framework has been characterized by distortions of tariffs in local and long-distance services that enabled regulators to subsidize local services by pricing long-distance service well above costs. If a country wishes to have income redistribution from long-distance to local service, certain interventions are inevitable.

For purposes of comparative analysis, I have chosen five Basin countries—Australia, Canada, South Korea, the United States, and Japan—and summarized the pattern of competition being discussed by government or already brought about by deregulation, as shown in Table 2.1.

VAN services are provided in competitive markets in all five countries, reflecting a general policy attitude toward VAN services that favors economic competition. Until the end of the 1980s Australia was more cautious about this than the others. Local networks are monopolies in all but Australia—where a

Table 2.1. Competition in Telecommunications in Five Countries, 1992

Australia	Canada	Japan	South Korea	United States	Market
D ^a	M	U ^b	M	M>L	Local
D ^a	M>D	U	D	U	Long Distance
D	L	D>L	D	D	Mobile Phones
U	U	U	L>U	U	VANs

D: duopoly; L: limited number of competitors; M: monopoly; U: unlimited competitors, > indicates transition from one to another is underway.

second network is to be built in the 1990s—and Japan—where actual competition remains limited.

Government policies toward the telephone network show marked differences; the dichotomy between the local and long-distance markets in the United States is most pronounced. The long-distance market is free to competition and any number of firms can enter and exit. By contrast, local services are provided by regulated companies that still function as monopolists. Of course, the threat of bypass also makes the local market potentially competitive and political forces will no doubt reshape it in this direction.

2.1.1 Country Approaches

The U.S. approach to deregulation is understandable in the sense that the differences in demand characteristics and technology were taken into consideration to demarcate markets. Demand in the interexchange market is more price elastic and diversified, and technology affords many opportunities for new firms to emerge. The local market, on the other hand, generally must meet basic demand and historically has had fewer technological alternatives (see Crandall and Flamm 1989).

When governments put a great weight on the public interest, particularly universal service—securing access to telecommunications networks—they become more cautious about permitting new entrants into their long-distance markets. To preserve this market for funding deficit services, regulators prefer to control the rate of entry and to restrict the number of newcomers. This is the approach adopted by Canada and Australia.

Canada's 1987 and 1988 proposals introduced a new framework for regulation in which Type I (facilities-owning) carriers continue to provide universal service based on cross subsidization. New entrants into Type I business are obliged to prove their entry enhances social welfare. Carriers providing local services are regulated. The situation is almost identical in Australia, where, in a 1988 announcement, the government confirmed that one of its regulatory objectives is to assure universal access to the telephone network, which means cross subsidization will be retained, albeit (as later announced) in the context of a duopoly.

In Canada and Australia, the importance of economies of scale and scope in telecommunications networks is referred to more often than they are in U.S. deregulation arguments. At the same time, structured cross subsidization in telephone pricing is still, in the early 1990s, taken for granted. Of course, these governments fully recognize that the trend of international restructuring in telecommunications has, and will continue to have, a big influence on their domestic telecom sector, and that some policy measures are required to cope with technological innovation. This cautious attitude is worth noting because each country has different conditions—such as market size, level of technological development, business and residential needs, geographical conditions, and so on.

The particular feature of deregulation in Japan is that competition has been

introduced to both local and long-distance markets. The Telecommunications Business Law of 1985 divided carriers into Type I and Type II. Type I carriers are defined as businesses, large or small, that own telecommunications facilities. They require authorization for entry from the Ministry of Post and Telecommunications (MPT). The number of Type I carriers in each market is not predetermined, although MPT can regulate entry through the act's demand and supply adjustment clause. Nippon Telegraph and Telephone Corporation (NTT) provides both local and long-distance services. It also continues to provide "universal and equitable" service, as it did when it was a monopoly.

Economists find it difficult to rationalize the Japanese regulatory framework. Because local as well as long-distance markets face competition from newcomers, NTT must at some point encounter difficulties in funding universal service. Newcomers necessarily concentrate on the most profitable areas, so the old cross subsidization structure will eventually collapse. If one assumes MPT is clever enough to effectively regulate the rate of entry and to manipulate the number and geographical dispersion of entrants, what does "competition" mean? It could be that in Japan it is simply a restructuring of the old public monopoly and the substance of economic competition is not desired. It is not clear that MPT is so omnipotent as to deal successfully with changes in the telecommunications industry that will result from continuing technological advances—including changes in the very definition of universal service.

South Korea's science and technology policies are based on "The Long-Term Science and Technology Development Plan Toward 2000" which was released in 1986. Information sectors were also promoted under the Sixth Economic and Social Development Five-Year Plan (1987–1991). South Korea seems to be taking a unique approach to reshaping its telecom sector. In its long-term plan, the government announced that it will adopt nationwide flat-rate pricing for telephony while deregulating the industry. The approach is very ambitious because new information technology will be made available to the general public at very low prices. It is not certain, however, that competition can coexist if economies of scale and scope are large. This question has been raised in countries like Canada and Australia, and doubts have been expressed.

2.2 Rate Rebalancing

In every country, telecommunications regulation historically has been structured to establish a system of cross subsidization among services provided by a monopoly. The reasons have included: (1) external economies associated with communications, (2) income redistribution, (3) economies of scale, and (4) economies of scope (including vertical integration). Measures to affect cross subsidization usually consist of rate discrimination between local and long-distance calls and between business and residential customers. As a result, great discrepancies between rates and costs have existed in each service, especially between local and long distance.

Rate rebalancing is inevitable after the emergence of competition. This is

because when there is competition—that is, there are no entry barriers and prices are determined by the market—companies have an incentive to increase their level of business by cutting prices—which means reducing the margin between rates and cost. Overall revenue loss is not a foregone conclusion—demand for services inevitably increases when prices are lowered for services that had been overpriced.

In the United States rebalancing took place quickly; long-distance rates fell and local rates generally rose—although comparisons regarding effective local rates are complicated by extensive unbundling, particularly the ability to own rather than lease equipment. In addition, an “FCC subscriber line charge” accruing to the local telco was added to the cost of each access line as a way of making the contribution long-distance service made to the cost of maintaining the local network more explicit. One cannot opt out of paying the fee by foregoing use of long distance, so it is technically not an access charge, although that is what it was called when it was imposed in 1984 after extensive, often angry, debate and delay.

The charge is based on the premise that there is essentially no measurable marginal cost to making a call on the local loop—and it is immaterial whether the call is local or long distance. While all long-distance callers, however, historically had paid for use of the local loop by the minute, most local calls paid nothing per minute. Even where there were local per-minute charges, they were generally (substantially) less than what was paid for a long-distance call. This is, of course, the explanation of how long distance subsidizes local service. In opting for a line charge, federal regulators recognized that although the marginal cost of using the local network is negligible, the fixed costs involved in having the network at all are large, and chose to use a fixed charge to contribute to covering these costs. No other country has adopted this drastic approach to rebalancing.

Per call and per minute charges for local calls—called measured service or message units—are used in the United States, particularly in major cities. Increased use of such a method is certainly a logical part of rebalancing, but there has been opposition. Thus, in 1986 voters in the state of Oregon passed a prohibition against mandatory measured service. During the campaign measured service as such was painted as generally bad. Ironically, most organized support for passage came from self-styled consumer advocacy groups whose claimed constituents would benefit most from measured service. Only in 1991 did Oregon telcos begin actively tariffing and promoting measured-service options to unlimited calling.

In the United Kingdom, where competition is now duopolist, rebalancing has also been occurring. Local rates rose and long-distance rates fell sharply after deregulation. In Canada, rebalancing is regarded as a precondition for introducing competition. During 1987 and 1988, long-distance rates fell about 30 percent in Canada.

By contrast, the Japanese experience is very peculiar. Since privatization of the public monopoly, Japan has had minimal rebalancing. Rebalancing, in the usual sense, seems “impossible” for two reasons. First, the benefits of rebal-

ancing are not seen as being equally distributed. Thus, changing the status quo by raising local rates meets strong political and social resistance. There is a naïve sentiment that there should be no price increases as long as NTT remains profitable. Second, and more importantly, in the long run MPT intends to let entrants—called new common carriers (NCCs)—grow by protecting them from price competition.

Differences between rates and costs in the long-distance market serve as a kind of subsidy to the NCCs. The difference also provides an investment incentive for the NCCs. MPT wishes to avoid discouraging the new competitors until they are big enough, although nobody knows just how big that is. Differences between rates and costs in the long-distance market are still remarkable when compared with rates in other countries. Table 2.2 shows the disparity between rates in Japan and in the United States, the United Kingdom, West Germany, and France.

It is striking that the ratio of closest to farthest band in Japan is 12.0 to 1 compared to 1.23 to 1 in the United States for the same distances. Germany, France, and the United Kingdom all have much larger ratios than the United States, but not as large as Japan's. It should be noted that the low U.S. ratio is partly the result of near-band calls that are relatively expensive compared to the four other countries, plus far-band calls that are much less than in Japan, Germany and France, and about the same as in the United Kingdom. In short, calls in the United States are only somewhat distance-sensitive. (In fact, where

Table 2.2. Comparison of Long-Distance Rates, 1991*

Band (km)	Japan	United States	United Kingdom	West Germany	France
– 20	20	70	34	20	16
20 –	50	74	79	61	48
30 –	60				
40 –	90	78	113	182	64
60 –	120				
80 –	140				
100 –	180	86		202	177
160 –	240				
320 –	330				
469 –		95			
1,482		100			
3,058 – ^a		101			
exchange rate		137	257	87.7	26.2

*Rates are given in yen. They are for three-minute dialed calls during weekday business hours (peak). Japanese rates are NTT; U.S. rates are ATT&T. Japanese bands are used through 320+ km, then U.S. bands. Actual break points for other countries differ somewhat.

^aTo 4,800 km. There are two additional bands (which cover Alaska and Hawaii from the mainland) with the highest rate being 132 yen.

^bYen per unit of local currency.

Source: Unpublished NTT study and ATT&T published rates.

The first part of the article discusses the historical context of international law, tracing its roots back to the early days of civilization.

It then moves on to explore the evolution of international law over time, highlighting key milestones and developments.

The author also examines the role of international law in the modern world, particularly in the context of globalization and international relations.

Finally, the article concludes with a discussion on the challenges facing international law today and offers some perspectives on its future.

The second part of the article focuses on the legal aspects of international law, including the sources of law and the principles of interpretation.

It also discusses the role of international courts and tribunals in the resolution of international disputes.

The author then examines the relationship between international law and domestic law, particularly in the context of human rights and international humanitarian law.

Finally, the article discusses the role of international law in the development of international relations and the promotion of international cooperation.

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as population density and terrain. In rural areas "party lines" (two or more subscribers sharing a line) were common into the 1980s, and they still exist in some areas as a way to keep costs, and thus rates, down.

Quite simply, in the United States there is no assumption that *universal* means *uniform* service. Mark S. Fowler, chair of the U.S. Federal Communications Commission in the early 1980s, ambiguously defined universal service as "service for all at reasonable prices" in an editorial page piece for the *Wall Street Journal* (Oct 4, 1983).

2.3.2 Japan

In Japan, the concept of universal service generally implies rates that are uniform for subscribers throughout the country. It also implied the goal of catching up with demand for residential and business lines until into the late 1970s. While this backlog was being worked off, the cost of pay phones was kept quite low and small businesses (retail shops and eating places in particular) were encouraged to have pay phones.

In the days of public monopoly, NTT used profits from long distance, especially between Tokyo and Osaka, to fund universal service. As the NCCs increase market share, NTT will face problems in financing universal service. The NCCs have been paying the local rate (10 yen) at each end of a long-distance call for the use of NTT's local network. There is a controversy over whether this is enough to cover local network costs. NTT of course asserts that it is not, and that the NCCs should be paying more. Unfortunately, the data needed to discuss this issue objectively are not available and disclosure of such information, including well-defined costs and revenues, is necessary to reach any meaningful conclusions. If the local network is found to be in deficit, a natural and conventional remedy is to levy access charges on the NCCs on a per line basis.

Some have suggested NTT should continue to provide universal service without a change in tariff structure as long as the company is profitable. This is a very dangerous suggestion from a national standpoint. As long as the difference between rates and costs is very large, new investment by the NCCs will be profitable. The difference, however, is an artificial creation, not a reliable criterion for efficient investment or dynamic economic efficiency. Moreover, it may lead to overinvestment because of the unrealistically high profitability it engenders.

At the same time, increased usage of NCC service may bring about income redistribution by making NTT customers into NCC customers, primarily ones that frequently use long distance. If NTT is correct that NCCs have not paid the costs of the local network, then NTT customers are subsidizing NCC customers. More specifically, because businesses are generally bigger users of long distance than are individuals, the subsidy would be flowing from individuals to corporations. This is a situation that cannot be justified.

Even after privatization of telecommunication markets, NTT remains the dominant firm in part because it maintains a nationwide network. This leads to

the argument that the NCCs must be protected from NTT. To attain a competitive structure in the industry, it seems obvious that new entrants need to grow to an "appropriate" size. MPT is trying to protect the NCCs by setting their tariffs about 20 percent below NTT's and restricting NTT price reductions.

Of course it is impossible for MPT to keep the present divergence between rates and costs in the face of competition; timing of the cessation of protection for the NCCs thus becomes an essential issue. In this regard, the situation in the U.S. interstate market is a good reference point. By 1990 AT&T's two major competitors, MCI and US Sprint, had gained substantial shares and both were considered strong competitors. That year AT&T received 65 percent of total toll service revenues from the interLATA market, MCI got 14 percent, and Sprint, 10 percent. (Including intraLATA toll calls, AT&T's share was 51 percent, LECs had 37 percent, MCI, 11 percent, and Sprint, 8 percent.) In this context, NCCs could effectively compete with NTT if their collective share reached 20–30 percent on the more profitable routes. Their shares in the long distance market were estimated at about 9 percent in 1986 and 40 percent in 1990.

2.4 Market Dominance and New Competition

The dominant carriers in the United States and Japan have faced a difficult problem directly related to their dominance. Provision of networks poses an entry barrier to competitors providing long-distance and other services. (Since divestiture AT&T is no longer the local network provider for its competitors in long distance, but the Baby Bells face the dominance issue in their geographical areas.)

It is generally agreed that to introduce competition successfully, dominant carriers should provide newcomers equal access to the local network; however, this is not a simple matter. Perhaps the ultimate problem is determining reasonable rates for the new entrants to access the local network. Entrants naturally argue that there should be no discrimination toward them and that they should not pay any extra tariff. However, it is generally understood there is no rational rule by which to economically divide common costs into separate items. Discussions always occur over the fairness of cost allocation among services.

In the United States, the Computer III decision introduced the concept of open network architecture (ONA). In Japan no definite rules have yet been established, but this kind of discussion is anticipated. ONA seems reasonable from the perspective of entrants. There is another view, however, that is frequently taken by incumbents—usually the dominant carriers that are in advantageous positions because of their ownership of the local network. The argument is that a local network is a huge capital investment that cannot be built by newcomers. This makes economic sense only if one additionally assumes duplicating the network is a waste of resources. In the process of competition, such duplication is not necessarily an economic loss; determination depends on the growth rate of demand created by competition. It may justify duplication.

Conversely, one should note that new entrants are not confined to the existing local network. Newcomers can choose to construct or configure alternative networks. Doing so includes a complex game between the incumbent and new entrants; the former is in a superior position in the short run, but the opposite may be the case in the long run. Since ultimate purpose of telecommunications policy is to foster competition, it is important to make balanced judgments in attempting to resolve the arguments concerning access.

Here one faces another problem—monopolization of customer information by the incumbent. This is closely related to the problem of privacy, where a policy to foster competition can only go so far. Disclosure of customer information can be achieved with the consent of customers. It is not at all clear whether partial information is or can be useful to competitors. In Japan the situation is more complicated because new entrants in the local network are often subsidiaries of electric utility companies that, as local monopolies, have exclusive information about their customers for electrical services.

The difficulties encountered in the United States and Japan might suggest several challenges that should be resolved before other countries attempt to introduce competition. Into the early 1990s local networks have been, ultimately, the source of most of the policy problems encountered in deregulation. Technologically speaking, however, bypass of the local network is possible, especially where competition is profitable. One needs to compare the short- and long-run consequences. If newcomers are protected too much and given all the conveniences they require, it may inhibit incentives to realize technological innovation. Moreover, the dependence of entrants on the incumbent might be the richest opportunity for collaboration or peaceful coexistence between them.

Another problem between an incumbent and new entrants occurs in customer-premises equipment (CPE) and electronics industries in general. In the United States, AT&T used to be integrated with equipment manufacturing through Western Electric. Since divestiture, this sector has faced fierce competition from outside the United States.

By contrast, the manufacturing sector was never fully integrated with telecom carriers through ownership in Japan and other Pacific Basin countries. In Japan, NTT maintained a very close relationship with a select group of domestic manufacturers. NTT was both the biggest buyer of CPE and other electronic devices as well as a collaborator with these companies in R&D activities. In this way, NTT subsidized Japanese electronics producers, helping them to become giants in the world market. The so-called *denden* family consists of NEC, Hitachi, Toshiba, Fujitsu, Oki, and Mitsubishi Denki. They no longer depend as much on NTT, but they still collaborate in R&D efforts.

NTT has been criticized for exerting its purchasing power in the equipment market because it is practically a domestic monopsonist for these products. Cost-effective, comparable if not superior, foreign (i.e., mostly German, Canadian, and American) equipment was routinely frozen out by narrow specifications that had little if anything to do with actual performance—such as the color of housings. The other side of the argument is that NTT seems to have used its power primarily to force its domestic suppliers to become very cost-

efficient producers of high-quality equipment, which at least in the longer run has led to marketwide cost savings captured by NTT. In any case, NTT's domestic buying helped make Japan's electronics industry extremely competitive in the world market, and Japanese companies and policymakers feel no need to apologize for having achieved this result.

2.5 Policy Implications

Two types of competition are found in telecommunications. The United States and Japan have adopted policies basically aimed at creating a competitive market structure. Canada and Australia prefer very gradual entry by a limited number of entrants. A number of reasons account for the two policies. Some are economic, but others are political and technological. One economic reason is very simple: Market size determines the degree of competition that is possible, especially when economics of scale and scope are present. In the United States and Japan, business demands for telecom services are great and will grow rapidly. This enables firms to enter markets with bullish expectations. If expectations play a positive role, the significance of sunk cost will diminish because firms will be more confident about selling off their facilities if they are required to exit the market at some point in the future.

Another reason, partially connected to the first, corresponds to the stage of development of technology in telecommunications and computers. Again, the United States and Japan have been experiencing a merger and coevolution of the two fields for some time. Lack of an internationally competitive electronics industry can be considered an obstacle to development of a telecom equipment industry.

A third economic reason relates to the behavior of business customers and technological alternatives in telecommunications. It is evident in the United States that large business users are ready to bypass traditional carriers when bypass prices are competitive. A similar phenomena exists in Japan, where the major stockholders of the NCCs are large financial and industrial firms. China also is experiencing bypass by some of its biggest users—government agencies motivated as much by a desire to control their own communications network as by any special needs the public network could not offer given the chance (and the investment going into the private networks).

For these reasons, NDCs may prefer gradual approaches to introducing competition. Generally speaking, economies of scale and scope are important, and the extent to which they are available depends on the level of demand. Domestic demand will be a determinant of an appropriate pattern for the introduction of competition. In telecommunications, attainment of scale economies may be domestically possible with fewer fears about foreign competition since telecom services are usually nontradeable goods.

2.5.1 *Cross Subsidization*

The stress placed on universal service shows the difference between the United States and other countries. In Japan and other countries universal service is

generally perceived as some level of basic service provided nationwide with uniform quality and rates. By contrast, in the United States, the cost and quality of service differs geographically because of a regulatory structure that allows state public utility commissions to be policy makers. However, it must be noted that if access to universal service is taken simply as a phone line passing (almost) every household, it has been a fact in the US since at least the 1950s—with installation available within days most of the time in most places.

Using the U.S. approach, an interpretation is possible that the vertical integration of the network is no more efficient than a decentralized system. But there is, of course, little empirical background for this belief. In fact, it is conceivable that among less developed countries the telecommunications network will show economies of scope achieved through vertical integration. It remains true that a vertically integrated monopolistic network can provide services efficiently.

In the United States, a mechanism to adjust the nonuniform provision of universal service exists, although this is usually not a priority of state or national policies. In part this reflects a commitment to cost-based pricing. In any case, each regulatory jurisdiction has implemented some form of “lifeline” (subsidized) rate, in some cases using a specific line item charge on regular subscriber’s phone bills to fund it.

The U.S. situation stands in great contrast to Japan or other countries where uniformly priced universal service is a first priority behind development of the local network. These differences must be taken into consideration before drawing conclusions from comparative analyses.

2.5.2 VAN Services

In each country, a consensus on liberalization of VAN services has been achieved. In most countries a competitive structure has already been established. This is a natural result of cost and demand conditions in this segment of the industry. A possible threat to local providers (but not their customers) in developing countries might be the comparative advantage of developed countries in this area. Because VAN services can be traded, unlike a telecommunications network, pioneers who have accumulated knowledge and experience have a tremendous advantage over latecomers to the international market. The most advanced VAN services will be geared to the most sophisticated networks. In this case, pioneers can easily override latecomers and consequently international trade friction will arise in this area, creating and fueling both domestic and international pressures for policy reforms that allow competition. (An account of one of the earliest and so far most successful international VANs—Vitel—is in the *Far Eastern Economic Review*, Aug 2, 1990, p. 41.)

The Computer III decision freed AT&T from the requirement of structurally separating its R&D activities for enhanced services and network provision, whereas in Japan a division of NTT was spun off as NTT Data Communications Systems Corp. The new company is a wholly owned subsidiary of NTT, but it will eventually become fully independent. These contrasting policies suggest that Japan has no concrete idea about R&D activities in telecommunica-

tions on a national policy basis. In the early stages of telecommunications development, cross subsidization of R&D in enhanced services by network services can usually be justified under monopoly conditions. Such subsidization, however, may be harmful for the development of enhanced services in a more competitive marketplace. Japan will eventually come to a crossroads necessitating R&D policy choices.

2.6 Implications for Pacific Basin Countries

Telecommunications historically has been provided by a public monopoly, with the United States and Canada being exceptions. When one talks about deregulation or privatization, initial differences in supply structure do matter. Countries other than the United States can hardly adopt the approach of dividing the long distance and local market because universal service is deemed essential and cross subsidy is inevitably required. Among countries where the network is underdeveloped, realizing economies of scale and reaching minimum efficient scale are of primary importance. In this respect, monopolistic supply will be preferred, but one must note that this need not mean public monopoly.

However, because technological innovations in telecommunications networks are so frequent, area-specific monopoly and the old multilayer network may no longer be a requisite for developing nationwide networks. This is a great advantage to latecomers, who can make the best use of advances in electronics. For purposes of developing efficient telecommunications networks, flexible institutional settings might be the key to exploiting the situation we find in the 1990s.

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