Korean Telecommunications Policies into the 1990s

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Program on Information Resources Policy

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Executive Summary

- The Korean telecommunications sector until the late 1970s had problems typical of developing countries. During the early 1980s, however, the Korean government made major investments in telecommunications, and by 1987 the waiting list for telephone installation had disappeared and a nationwide subscriber dialing system had been implemented. Furthermore, the Ministry of Communications has proposed new policies for future telecommunications development.

- These policies include postalization of telephone rates and implementation of a universal information service, of which the French Teletel is an example. In a sense, these are the ultimate form of universal service. Postalization of telephone rates basically means that telephone rates do not depend on distance; under this arrangement, all of Korea would be treated as one local area.

- In addition to these policy targets, other major factors have emerged with potentially strong impacts on Korean telecommunications: strong demand from domestic users, domestic and foreign (especially from the U.S.) and a privatization plan for public corporations including the Korea Telecommunications Authority (KTA).

- Given these circumstances, we may ask:

  Is postalization of telephone rates sustainable in a competitive environment?

  What issues are involved in the provision of universal information service?

- There may appear to be no room for competition if postalization comes first and if competitors pay the same rates as ordinary customers for use of the monopoly's existing network. However, pricing and costing do not necessarily go hand in hand, as has been seen in the U.S. That is, pricing and costing can be separated, and postalization can accommodate competition. Specifically, competitors' prices could equal those of the monopoly, with competitors and the monopoly agreeing on a revenue allocation mechanism. They would begin with the total revenue requirement and then determine the portion which competitors would bear for use of the network. To the end users, all prices and services would be transparent.

- Some may argue against this approach. If competitors in effect pay less than ordinary customers for use of the public network, then customers could be seen as subsidizing some companies through an arbitrary arrangement. If this pricing method is considered politically unacceptable, then competition would not be compatible with postalization.

- As of mid-1989, specific schedules have not been set for establishing a universal information service. MOC has not announced whether the terminals will be distributed free of charge as in France, and, if so, what kind of terminals will be chosen, and how they will be financed. But the general impression is that the terminals will be free of charge and that they will be as intelligent as PCs.

- Free distribution of easy-to-use terminals would equip customers without burdening them financially, and would provide a potentially wide base of demand for information providers and advertisers. Widespread distribution of terminals may also help develop de facto national technical standards. On the other hand, standardization can cause rigidity in the industry, discouraging creativity and technological innovation. Moreover, if technological development renders these terminals outdated, continuing investment requirements could become prohibitive.

- Feasible candidates for information services over telecommunication networks in Korea include electronic directories, business applications, and educational services.

The information base for this paper

ends September 1989.

CHAPTER ONE

INTRODUCTION

1.1 Emerging Need for Policy Change

The Korean telecommunications sector until the late 1970s had problems typical of developing countries. A backlog of unfilled orders was persistent, and financial resources were allocated insufficiently. But entering the '80s, the Korean government made major investments in telecommunications, financed mainly through price increases and foreign borrowing. By 1987, the waiting list for telephone installation had disappeared, and a nationwide subscriber dialing system had been implemented. As massive provision of telecommunications facilities stabilized, the Ministry of Communications (MOC) proposed a qualitative policy which includes postalization of telephone rates (that is, distance-insensitive rates) and implementation of a universal information service. In a sense, these are the ultimate form of universal service.

However, other forces were working as well. By the late 1980s, users of telecommunications networks were mounting pressure for liberalization. Overall, the economy had become more sizable and complex, and the Korean government invited more private sector initiative by privatizing public corporations. At the same time, foreign interests, including the U.S., pressured for more liberalization indirectly through joint ventures in Korea and directly through U.S. government demands to open the domestic Korean telecommunications market.

These developments raise at least several questions:

- What issues are involved in uniform pricing and universal information service policies?
- What effect would privatization have on these policies?

1.2 Scope of Telecommunications

The telecommunications sector can be defined very broadly, but this study focuses primarily on telecommunications services, including telephone service and information service over telecommunications networks. Although telecommunications equipment, technical standards, and equipment approval procedures are important, liberalization of the service area is more controversial today. In fact, telecommunications equipment and technical standards in Korea are mostly American and thus are less controversial than the service area in the conflict with foreign interests.

CHAPTER TWO

OVERVIEW OF KOREAN TELECOMMUNICATIONS

2.1 History of Korean Telecommunications before the 1980s

Modern telecommunications was first introduced in Korea in 1885 in the form of telegraph service between Seoul and Inchon, a harbor about 30 miles west of Seoul. In 1902, the first telephone service was also provided to the royal palace and to the governmental bodies between and around Seoul and Inchon.[1] But most of these services were introduced by foreigners including Japanese, Americans, Germans, Chinese, and Russians, not for commercial use by the general public, but for their own diplomatic and military uses. Indeed, even the British came to seize by force an island south of the Korean peninsula in 1885 and tried to install telecommunications facilities between the island and Shanghai, China.[2] Although there have been national telegraph and telephone networks in Korea, most of the facilities were provided and used by the major foreign powers. A similar situation continued until 1945 when Japan, the dominant foreign power, surrendered to the allied forces during World War II. After the Japanese moved out of Korea, some telecommunications facilities remained, but most of them were destroyed during the Korean War. Thus until 1962, when the first five-year economic development plan was launched, Koreans had not made major investments in telecommunications.

Systematic investment in telecommunications began with a series of economic development plans. Although telephony is not the only component of telecommunications, it is a key element and is even more important during early stages of telecommunications development. Thus, we will focus on telephone service for the time being. As can be seen in Table 2-1, the number of telephone facilities increased at a moderate

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[1] "On the 7th Anniversary of Korea Telecommunication Authority: Rapid Growth ... Contribution to the Enhancement of Telecommunications," The Korea Economic Daily, Korea, Dec. 10, 1988, p. 10.

[2] Korea, Ministry of Communications, 100 Years of Korean Telecommunications, Vol. 2, 1985, p. 130.

Table 2-1

Korean Telephone Statistics

Year	Number of Lines (thousands)	Utilization Rate (percent)	Number of Unfilled Orders (thousands)
1956	64	59.9%	N/A
1957	72	67.8	N/A
1958	81	73.0	N/A
1959	95	75.6	N/A
1960	108	N/A	N/A
1961	123	N/A	N/A
1962	169	74.9	N/A
1963	191	81.7	N/A
1964	221	86.7	N/A
1965	247	88.4	N/A
1966	313	87.8	N/A
1967	388	86.6	N/A
1968	452	84.2	N/A
1969	512	85.6	N/A
1970	543	87.6	N/A
1971	624	89.0	N/A
1972	720	89.6	N/A
1973	846	90.2	N/A
1974	959	91.4	N/A
1975	1171	90.3	111
1976	1389	91.5	144
1977	1666	92.0	197
1978	1997	94.0	418
1979	2426	94.5	619
1980	2835	95.3	605
1981	3491	93.4	498
1982	4493	90.8	427
1983	5337	90.1	464
1984	6290	88.9	498
1985	7539	86.3	280
1986	8905	84.5	160
1987	10,222	84.3	0

Sources: KTA, *Statistical Yearbook of Telecommunications*, 1986, 1987; MOC, *100 Years of Telecommunications*, Vol. 2, 1985.

but steady rate from 1962 on. The rate continued to increase as the second and third economic plans were launched, and by 1982 when the sixth plan began, about 1 million new lines were added each year, which was almost the same as the total number of lines accumulated up to 1975.

More interesting is the ratio of total subscribers to total capacity. Beginning in 1970, this percentage began to increase, starting at 85.6% and reaching 95.3% by 1980. Note, however, that approximately 10% of the capacity is usually reserved to accommodate subscribers who are moving from one place to another and to meet unexpected demand. Because no lines are retained to inform originating callers that the receiver has moved in Korea, this ratio can be used as a measure of supply shortage. Indeed, the level of unsatisfied demand began increasing during the '70s as the Korean economy sped into a high growth rate. The number of applicants on the official waiting list reached 619,000 in 1980 (see Table 2-1). If we include potential demand, the number would easily exceed 1 million. Reflecting these facts, a black market emerged in which the premium for telephone installation was more than $3000 compared to an official installation charge of $700.[3] People had to wait at least a year or two, and delayed installation became a serious social issue. This situation has been typical in developing countries.

2.2 Major Telecommunications Development during the 1980s

2.2.1 Heavy Investment and Financing in Telecommunications

As the 1980s began, the Korean government launched an ambitious telecommunications investment plan. The primary motive was to solve the persistent backlog of demand for telephone facilities, but there were also other goals, such as supporting development of the electronics industry and preparing for the anticipated information society. During the late 1970s, the Korean government was redirecting its industrial

[3] Current dollars: exchange rate was approximately 600 Won (Korean currency) per dollar.

policy focus[4] from heavy industry to electronics, with telecommunications as a closely related concern. The government also supported the launching of color television broadcasting in 1980 and liberalized -- that is, encouraged private provision of -- telephone sets in 1981, even for the first telephone set in a household.[5]

These policies had their share of problems, however. As has been typical in other developing countries, Korea had financial problems. Foreign currency, which is desperately needed to purchase foreign switching and transmission facilities, was in short supply. In 1980, Korea suffered from very bad crops, the slowdown of world demand from the second oil crisis, and an unstable domestic political climate. Under these circumstances, the Korean government relied on foreign resources to continue investment for economic restructuring; as a result, external debt accumulated at a very fast rate.[6] It was notable that the Korean government decided to expand telecommunications facilities rapidly, unlike the low priority given to telecommunications in most developing countries.[7]

Internal financing also had problems. To finance construction and equipment procurement, the government had to consider price increases or some form of inflationary measure such as issuing bonds or printing money if Korea was to avoid more foreign borrowing. The inflation rate was approximately 30% in 1980,[8] and telephone rates are an important component in calculating the consumer price index. In this situation,

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[4] Collins, Susan M. and Park, Won Am, External Debt and Macroeconomic Performance in South Korea, National Bureau of Economic Research, Working Paper No. 2596, May 1988, p. 24.

[5] In most European countries, if a subscriber wants to have more than two telephone sets in a house for one telephone line, he has to lease at least one telephone set (the first telephone set) from the telephone company. He may then purchase other sets from the market as he chooses.

[6] Collins and Park, p. 12.

[7] Saunders, Robert J., Warford, Jeremy J., and Wellenius, Bjorn, Telecommunications and Economic Development. Baltimore, MD: The Johns Hopkins Univ. Press, July 1988, pp. 12-18.

[8] Collins and Park, p. 11.

the Korean government decided that users should pay for the cost of expansion and chose to raise telephone rates, which it thought had been kept artificially low. Thus, the government abolished free calling, which had been available up to a certain amount, raised local call prices from 8 to 20 Won (Korean currency), and required purchase of a special bond at the time of installation. A 25% "Special Luxury Consumption Tax" was also added to the total telephone charge.[9] Although collected together with telephone charges, this revenue went directly to the Ministry of Finance (MOF) and was not necessarily used for telecommunications. In normal situations, this kind of rapid price increase would have met strong resistance from users, but the government pushed it through so deftly that many people today are surprised to learn that there was such a dramatic price increase. It is not clear whether people neglected to recognize the increase or wanted telephone service at any price.

At any rate, investment in telecommunications entered a new stage in the 1980s. Telecommunications' share of gross fixed capital formation was increased from less than 3% during the '70s to 7.5% during the sixth economic plan (1982-1986).[10] This 7.5% is an extraordinarily high rate compared to that in OECD countries (Table 2-2).

As a result, the total number of telephone lines exceeded 10 million in September 1987, and more than 1 million lines a year are expected in the future.[11]

2.2.2 Toward Diversification: Changes in the Legal Environment

Major legal and institutional changes affected the telecommunications environment during the '80s. From 1982 through 1985, a new set of telecommunications laws was enacted: the Telecommunication

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[9] 100 Years of Korean Telecommunications, Vol. 2, p. 736.

[10] 100 Years of Korean Telecommunications, Vol. 2, pp. 1094-1094.

[11] "On the 7th Anniversary of Korea Telecommunication Authority: Rapid Growth ... Contribution to the Enhancement of Telecommunications," The Korea Economic Daily, Korea, Dec. 10, 1988, p. 10; and 100 Years of Korean Telecommunications, Vol. 2, p. 1164.

Table 2-2

Telecommunications Investment as a Share of Gross Fixed Capital Formation

Country	1980 (percent)	1985 (percent)
Canada	3.5	2.8
France	3.6	3.1
Germany	2.8	4.1
Greece	2.1	3.4
Ireland	3.8	3.8
Italy	3.6	4.3
Japan	1.9	1.8
Portugal	1.7	3.4
Spain	3.4	3.4
Sweden	1.7	2.9
U.K.	—	2.9
U.S.	3.7	2.9
Korea *	3.0	7.5

* Average figures during the fifth and sixth five-year development plans.

Source: OECD, *The Telecommunications Industry: The Challenges of Structural Change*, Paris, 1988, p. 95; and MOC, *100 Years of Telecommunications*, Vol. 2, 1985.

Basic Law, the Public Telecommunications Business Law, and the Law on the Establishment of Korea Telecommunications Authority (KTA). These laws provide that all telecommunications business would basically be carried out by the common carriers to be designated by the Ministry of Communications (MOC).[12] MOC designated several common carriers, but their business areas did not overlap significantly (see Table 2-3). If

[12] There are exceptions for database and data processing services, which will be explained below.

disputes arise when areas do overlap, the MOC can coordinate a resolution.[13]

Table 2-3

Common Carriers in Korea

Company	Ownership	Business Area	Date of Designation
KTA	100% government	Voice, telex, basic network	1/82
DACOM	33% KTA, 67% private	Data communications, leased lines	9/84
Mobile Telephone	68% KTA 32% private	Car phones	4/88
Marine Telephone	49% KTA 51% private	Marine communications	1/88
KOTIS	DACOM and private	Tourism information	2/88

Sources: Lee, p. 100; Bang, Suk Ho, "A Study on the Liberalization of VAN Business," Korean Information Society Development Institute, Seoul, Dec. 1987, p. 43.

In 1982, KTA, a 100% government-owned public corporation, was established and given responsibility for telecommunications management and operation previously the responsibility of the MOC. Such separation of policy and management functions helped provide massive facilities through fast decision making and less restrictive supervision. But in a country where being a governmental employee is a long-honored tradition, such a transition was not easy. The separation, however, raised the salaries of employees transferred to KTA and also created job opportunities. In the same year, the Data Communications Corp. of Korea (DACOM) was also established as a private company.[14] It was given the status of a common carrier and mainly provides new telecommunications

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[13] Telecommunication Basic Law of Korea, Articles 7 and 8.

[14] See Table 2-3. KTA was established by a special law passed for this purpose, but DACOM was established under the general commercial law.

services such as videotext, a packet-switched network, and electronic mail. As of 1988, two more common carriers assumed the business for port and mobile communications (see Table 2-3).

In 1985, restrictions on the use of the telecommunications network including leased lines were relaxed, and private companies were able to provide database and data processing services. As of December 1988, 85 companies were in operation, but most of these companies had sales below 100 million Won. Lack of domestic databases, customers' lack of understanding of the services, and the remaining restrictions on the telephone networks were likely the major reasons for the low sales volume.[15] In 1987 and 1988, there were further relaxations on the use of the public network and of leased lines, and presently, closed user groups[16] can construct private networks using leased lines, with no restrictions on the services that can be provided over private networks.

2.2.3 Technological Advancement

Massive provision of telephone facilities was facilitated by the introduction of new technology. During the late 1970s, the Korean government decided to introduce electronic switches[17] instead of electro-magnetic or Strowger switches. During the early '80s, digital switches were added, including No. 4 and 5 ESS (AT&T), S-1240 (BTM), and AXE-10 (Ericsson). In addition to the new technologies, the Korean government encouraged local production of equipment and R&D activities to develop Korea's own digital switches and optical fiber transmission. This localization effort significantly reduced the burden of foreign borrowing, and in 1987, direct import of switches financed by foreign loans had disappeared (see Table 2-4).

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[15] Lee, Dong Wook, The Challenges for Value-Added Services in Korea. Cambridge, MA: Program on Information Resources Policy, Harvard Univ., May 1989, P-89-3, pp. 98-100.

[16] Many countries differ in their definition of closed user groups. While there is no legal definition for closed user group in Korea, Korean law does define close business relationships. Therefore this paper takes closed user group to mean companies that satisfy the definition for having close business relationships.

[17] Examples include M10CN and No. 1A.

Table 2-4

Financial Resources: Internal vs. External

	Share of Financial Resources (percentage)							
	1980	1981	1982	1983	1984	1985	1986	1987
Internal Financing								
Reserved Funds	48.4	44.9	44.1	54.7	66.1	72.1	73.4	75.9
External Financing								
Foreign Loans	21.9	20.1	23.0	15.8	7.9	3.7	1.2	—
Bonds	13.4	15.8	11.0	12.9	11.4	11.9	12.7	11.2
Installation Charges	16.3	19.2	13.4	16.6	14.3	12.1	12.5	12.1

Source: Song, Yong P., "Elimination of Unfilled Orders and Completion of Subscriber Dialing System," unpublished draft. Reprinted by permission.

More significant has been the successful development, in 1984, of Korea's own digital switches, called TDX (Time Division Exchange), and of 565 Mbps optical fiber transmission in 1986. The Electronics and Telecommunications Research Institute (ETRI), a government-supported research institute, developed both technologies in collaboration with private businesses. Both technologies were actually employed in the installation of Korean telecommunications facilities. The TDXs are installed primarily in rural areas where large-capacity switches are not necessarily needed. Presently employed are TDX 1As, which have 10,0000-line capacity and TDX 1Bs with 23,000-line capacity. A large-capacity TDX, called TDX 10, is under development and, if successful, will be ISDN capable. Because Korea thus had domestically developed digital switches, although of small capacity, foreign suppliers cut prices for large-capacity switches,[18] and Korea became less dependent on foreign technology.

[18] "Self Sufficiency of Digital Switches for Small to Medium Sized Cities," The Korea Economic Daily, Korea, Jan. 11, 1989, p. 8.

2.2.4 Other Related Measures

The MOC's policies were not limited to traditional telecommunications but also extended to other related areas, including electronics and computers. For example, the Korean MOC, together with KTA, DACOM, and ETRI, actively participated in the 4 MDRAM and super-mini computer development projects.[19] Computer technologies obtained during the development of digital switches also helped in the development of computer networks for the Asian Games in 1986 and the Summer Olympic Games in 1988.

In the area of telecommunications, some liberalization measures have been instituted. For example, provision of many types of customer premises equipment (CPE), including telephone sets, modems, and facsimile machines, have been liberalized. This CPE has to undergo simple approval procedures, can be sold freely at the market after approval, and can be attached to the network without restrictions. In addition, networks for television, telephone and telex, military, and public security have been integrated wherever possible to improve efficiency.

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[19] "On the 7th Anniversary...," The Korea Economic Daily, Korea, Dec. 10, 1988; and "Korea Surges as PC Manufacturing Plant of the World," The Korea Economic Daily, Korea, Dec. 17, 1988, p. 12.

CHAPTER THREE

CURRENT AND FUTURE CHALLENGES

3.1 New MOC Policy Targets

During the rapid expansion of the '80s, the MOC proposed as policy targets, among other things, a nationwide subscriber dialing system and elimination of delayed installation. The second target was sometimes rephrased as one telephone per household. In 1987, both targets were successfully reached. Any subscriber in Korea became able to dial directly without operator assistance to any other subscriber and, indeed, to almost any other country in the world. Order backlogs or waiting lists disappeared in the same year, and the total number of telephone lines exceeded 10 million. With approximately 10 million households in Korea, this means roughly one telephone per household, which is consistent with MOC claims.

Having fulfilled the proclaimed targets, the MOC turned to a new policy agenda. In 1983 the ministry began a study of long-term policy targets aimed toward the year 2000 and in 1985 concluded the study, continuing to refine it afterward. Numerous new proposals included the development of new technologies and active participation in international organizations. But most interesting were two particular targets under the heading "popular use of information"[20]: the postalization of telephone rates and the provision of universal information service, which can be considered an ultimate form of universal service in telecommunications. Although these targets are discussed in later chapters, a brief explanation may be in order. Postalization of telephone rates basically means that the telephone rates do not depend on distance; that is, wherever you call, the rate is the same. The whole country is treated as one local area. As for universal information service, the famous French Teletel would be a model.

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[20] Korea, Ministry of Communications, 100 Years of Korean Telecommunications, Vol. 2, 1985, pp. 1163-1165.

These targets also indicate a policy change from quantitative expansion to quality improvement, and MOC is taking interim measures to carry out these policies. The number of local rate zones has been continuously reduced in recent years and several discussions have been held on how to provide universal information service. But there have been no tangible measures toward the latter target as of mid-1989.

In addition to these policy targets, at least three other major factors have emerged, with potentially strong impacts on Korean telecommunications: strong demand from users, domestic and foreign (especially from the U.S.), and a privatization plan for public corporations including KTA, mainly initiated by the Economic Planning Board (EPB).[21]

3.2 User Demand[22]

To date, user demand for telephone service has not been explicit or organized, although there might have been complaints about delayed installation and overcharging. However, the first organized user demand for data communications came in December 1987. Eighty-five companies that provide database and data processing services established the Computer and Communication Promotion Association (CCPA) and asked the MOC to relax restrictions on the use of leased lines. Its main request centered around the free attachment of multiplexers and computers to the leased lines, and a broader definition of closed user groups.

But the MOC maintained a policy that encourages use of the public network, although closed user groups were allowed to construct private networks over leased lines. Accordingly some restrictions remain on the attachment of multiplexers and computers to the leased lines in order to control the growth of the private networks. The MOC contended that unrestricted development of private networks would allow business conglomerates ("chaebols"), which have enough technology and money, to become information giants. Chaebols are often criticized in Korea for

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[21] "Firm Determination of the Government to privatize Public Corporations," Chosun Ilbo, Korea, Apr. 3, 1987, p. 1.

[22] Largely excerpted from Lee, Dong W., pp. 37-39.

using their dominance to prey on small and medium-sized companies. The MOC was concerned that information dominance could add to their armory. Also pointed out were concerns about security and economies of scale. DACOM took essentially the same stance, concerned about erosion of its business opportunities.

As a response to user requests, the MOC announced relaxation measures in December 1988; users can now attach multiplexers, and closed user groups now include a wider range of companies. This event suggests that in the future not only government policy but also user demand will affect the telecommunications sector in Korea. As the Korean economy grows[23] and becomes even more complex, private sector initiative -- in telecommunications, among other areas -- will play a more important role in the economy. Indeed, there has been pressure from within the government to privatize KTA in order to benefit from private sector initiative.

3.3 EPB Privatization Plan for Public Corporations

The Economic Planning Board is a ministry that prepares economic development plans, coordinates economic activities, and submits governmental budgets. This ministry has been at the center of economic development planning during the last 30 years or so. In 1987, EPB announced a privatization plan for public corporations owned by the government, primarily to invite private sector participation, but also to boost the stock market, absorb money supply, and ease the governmental budgetary burden.[24] Beginning in 1986, Korea began to have a favorable trade balance, and the economy was booming. These factors, together with the large campaign spending during the presidential and general elections in 1987 and 1988, could significantly disrupt the stable inflation rate, which has been kept at below 3% since 1984.[25] Selling stocks of public corporations can help absorb money supply and

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[23] Total GNP of 1987 was $140 billion.

[24] "Firm Determination of the Government...," Chosun Ilbo.

[25] Collins and Park, p. 11.

thus contribute to stabilizing inflation. Under the current schedule, KTA stock will be sold from 1989 through 1992, and the government will hold only 51% of KTA stock by the end of 1992. In 1989, 15% of KTA stock will be sold to the public.[26]

Although prior consultations probably took place between EPB and MOC regarding the selling of KTA stocks, the initiative seems to have come from EPB. This, in turn, means that MOC and KTA were not prepared for and may not have considered privatization. Thus the program may just amount to the selling of government-owned stock to the public, without entailing any liberalization measures. However, if the players involved were to agree, such a sale could provide a timely opportunity for liberalization. In fact, there have been discussions about reforms for KTA, including separation of its international business and the division of KTA into regional companies.[27] KTA's labor union has strongly opposed such ideas, contending that KTA should remain as it is and suggesting that introduction of competition would be preferable to divestiture.[28] No liberalization measures were finalized as of mid-1989. It is at this time of uncertainty that the U.S. mounted pressure for the opening of the Korean telecommunications market, under the Omnibus Trade Act of 1988. This pressure may strongly influence the new structure of Korean telecommunications.

3.4 Pressure from Foreign Interests

Foreign interests have played a big role in demands for liberalization. In fact, the major members of CCPA include STM and Samsung Data Systems (SDS), which are joint ventures of Electronic Data System (EDS) of the U.S. and Lucky Goldstar, and IBM of the U.S. and Samsung, respectively. Other foreign businesses also want more market

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[26] "Sale to the Public of Government Owned Stock Worth 875 Billion Won," The Korea Economic Daily, Korea, Mar. 21, 1989, p. 2.

[27] "Disputes over Separation of International Business from KTA," The Korea Economic Daily, Korea, Jan. 7, 1989, p. 8.

[28] "We Demand MOC Immediately Retreat Plans to Split Up KTA," special advertisement by labor union of KTA, Dong-a Ilbo, Korea, June 29, 1988, p. 1.

access, such as Reuters, the Associated Press, and Citicorp. Although MOC claims that the Korean telecommunications sector is being liberalized at a fast rate, not all foreign interests have been satisfied.

In January 1987, the U.S. started Market Access Fact Finding (MAFF) talks with Korea regarding telecommunications. These talks continued until the middle of 1988, with the U.S. indirectly requesting the opening of Korean markets in this forum. But when the U.S. Congress passed the controversial Omnibus Trade Act of 1988, the telecommunications consultation between the two countries entered a new stage. Telecommunications is in fact the only sector singled out in the Act. A telecommunications law was first proposed in the U.S. Congress in 1983 and was reintroduced every year since but was not passed by the Congress until 1988, at which time it was incorporated into the trade act.

Telecommunications-related provisions in the trade act of 1988 basically state that the U.S. government will seek a telecommunications market worldwide that is as open as possible. The law is very specific regarding how to choose countries for negotiation, what are the negotiating objectives, and what kind of retaliatory measures to take if negotiation fails. It also specifies the date by which certain actions have to be taken.[29] In accordance with this mandate, the U.S. Trade Representative (USTR) designated in February 1989 the European Community (EC) and Korea as priority foreign countries for negotiation.[30] Negotiation has a time limit of one year but it can be extended by two more years, depending on the progress of the negotiation. In February 1989, the Korean and the U.S. governments held a consultation for the purpose of leaving Korea off the list, but they could not reach an agreement. It is not possible at the moment to predict the course of negotiation between the two countries, but in one form or another, liberalization is likely to occur as a result.

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[29] "Omnibus Trade and Competitiveness Act of 1988," 100th Congress of U.S., H.R. 4848, July 26, 1988, Part 4.

[30] Auerbach, Stuart, "U.S. Cites South Korea, EC On Telecommunications," Washington Post, Feb. 22, 1989, D1.

3.5 Issues

As discussed above, universal service is central to the new policy targets proposed by MOC, and the stakes of the major players generally lean toward liberalization. Are these respective interests compatible? More specifically, we may ask:

- What telephone rate issues will be involved if competition is introduced to telephone service in Korea?
- Is postalization of telephone rates sustainable in a competitive environment?
- What issues are involved in the provision of universal information service?
- How do postalized telephone rates affect the pricing of information services provided over the telephone network?

We deal with these issues in chapters 4 and 5. Preliminarily, though, a look at current trends in developed countries where telecommunications reform is being considered and/or implemented could shed light on the questions raised above. Actually the introduction of competition for plain old telephone service (POTS) is, at the moment, an exception rather than the rule in developed countries. In most cases, competition is introduced to non-voice telecommunications services. Moreover, among the countries where competition has been introduced to POTS, the U.S. has the longest history and most available data. For these reasons, the discussion of postalization in chapter 4 focuses on U.S. trends. Chapter 5, however, discusses the development of universal information service in other advanced countries.

CHAPTER FOUR

POSTALIZATION OF TELEPHONE RATES AND PRIVATIZATION

4.1 Postalization of Telephone Rates

The mixed metaphor "postalization of telephone rates" refers to the introduction of distance-insensitive postal rates by Sir Rowland Hill, a British Postmaster General in the mid-19th century. Postal rates in Britain before Sir Rowland were differentiated by weight and distance.[31] But he observed that the cost of delivering a piece of mail does not increase significantly as distance increases. From this observation, he concluded that if a lower uniform distance-insensitive postal rate were imposed, profit for the post office would not decrease: Lower rates would increase traffic volume significantly while the cost for increased volume would not increase proportionately.[32] From the point of view of modern economics, he in effect recognized the price elasticity of demand and economies of scale. In addition to these economic considerations, uniform rates could extend the concept of community to the whole country and greatly simplify administration. Although Sir Rowland's argument was accepted and put into force, his plan was not realized as easily as he dreamed. Indeed, it took more than 15 years before his predictions came true.[33]

Although postalization of telephone rates basically means establishment of distance-insensitive telephone rates, it can also accommodate peak-load and off-peak-load pricing. In this framework, the amount of connection time is considered to represent the amount of information transmitted. Under the current telephone rate structure, postalization necessarily means reducing long-distance rates and increasing short-distance rates. Such adjustment of rates constitutes an international trend, but postalization would push this trend to a

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[31] Daunton, Martin J., Royal Mail. London: Athlone Press, 1985, pp. 5-8.

[32] Ibid., pp. 9-10.

[33] Ibid., pp. 22-25.

limit whereby every call is charged at the same rate. To examine the forces behind postalization and the issues involved, we first need to understand the cost and price structure of the telephone industry. Although we are dealing with the Korean telephone industry, we will use American data in many instances because of its availability and because of the breadth provided by the long history of costing and pricing changes in the U.S. Although detailed Korean data are difficult to obtain at the moment, they will be used wherever possible. Readers who are familiar with the costing and pricing practices of the U.S. telephone industry may skip the next two sections.

4.2 Cost Structure of the Telephone Network

Any analysis of the telephone industry should carefully distinguish between cost and price, which do not necessarily go hand in hand.[34] The main reason is that the industry has been a regulated monopoly, and the regulatory procedure does not necessarily relate cost to price. Thus we start with the basic cost structure and then look at costing and pricing practices in the next section.

Although the U.S. telephone network may not be universally representative, the U.S. telephone network costs can suggest the flavor of the industry's structure. Interpretations of cost data in the telephone industry are subject to several caveats, however. First, the cost data are not for telephone service alone but incorporate a series of differentiated services. Since each service is provided using whole or part of the telephone network, exact calculation of costs for the service is difficult and sometimes impossible.[35] Second, the accounting method for cost may contain some leeway in assigning accounts, an arbitrariness of which the traditionally regulated monopoly could take advantage. That is, the same item can be assigned to different

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[34] Oettinger, Anthony G., The Formula is Everything: Costing and Pricing in the Telecommunications Industry. Cambridge, MA: Program on Information Resources Policy, Harvard Univ., Oct. 1988, P-88-2, pp. 3-4.

[35] Weinhaus, Carol L. and Anthony G. Oettinger, Behind the Telephone Debates. Norwood, NJ: Ablex Publishing Corp., 1988, p. 52.

categories depending on one's point of view.[36] Yet even with these shortcomings, the following data are enough to give a rough idea of the cost structure.

Telephone network costs can be broken down in many ways according to the purposes of the analysis. Since we are interested in the pricing disparity in distance in the context of distance-insensitive pricing, we will look at non-plant related expenses, hookup cost, and remaining network cost. As an example, in the U.S. in 1980, hookup costs included all the costs from the customer to the first central office, and remaining network included interexchange facilities. They accounted for 21.9% (non-plant-related expenses), 52.1% (hookup costs), and 26.0% (remaining network costs) as of 1980, before the AT&T breakup (Figure 4-1). More than half of the total cost was attributed to maintaining the hookup or local loop; in fact, the recovery of this cost has been at the core of pricing issues in the U.S. for the last century.

What makes the situation complicated is the dynamic structure of local loop costs. As Figure 4-2 shows, subscriber plant investment per loop, which corresponds to hookup, doubled during 1960-1978, while interexchange transmission investment halved during the same period. The major force for this structural change was of course technological development, but the benefit of such development was not equally distributed to local loop and interexchange facilities. The labor-intensive character of local loop costs may help explain this unequal distribution. According to one estimate,[37] 33% of hookup costs were for maintenance and repair, 17% for assignment of the loop connections at the central office switches, and the remaining 50% for engineering and construction. But rate-of-return regulation, which provided more incentive for capital investment, could also have contributed to the inequality.

Also important in the cost structure is the large disparity among local loop costs of different customers. In 1980, for an urban, low-cost business customer, the cost per loop may well have been less than $200 a year, but it was over $1500 a year for a rural high-cost

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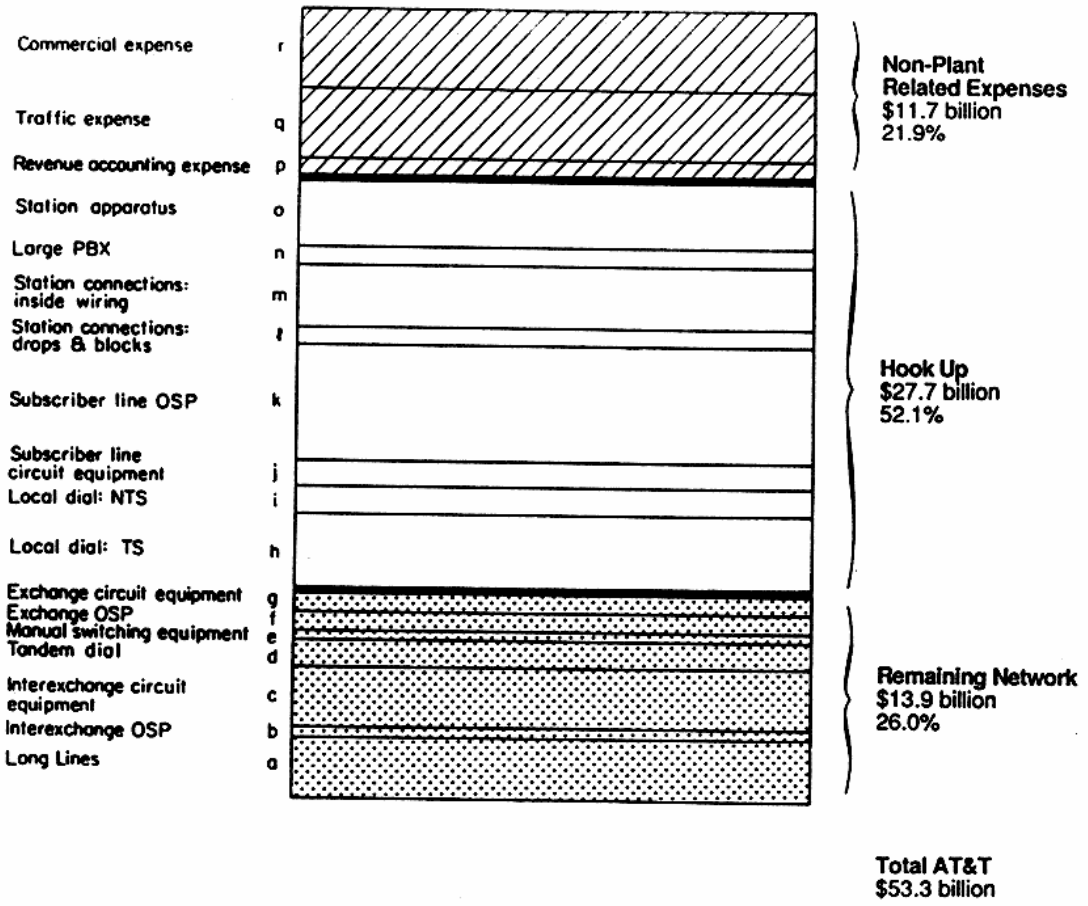
[36] As an example, see ibid., p. 37.

[37] Ibid., p. 43.



Source: Weinhaus, Carol L. and Anthony G. Oettinger, *Behind the Telephone Debates*. Norwood, NJ: Ablex Publishing Corp., 1988, Figure 6.2. © 1988 President and Fellows of Harvard College. Program on Information Resources Policy.

Figure 4-1

1980 Pre-Divestiture Cost Categories: Hooking Up to the Rest of the Network

resident.[38] For the year 1988, the average cost per loop per state varied from $151.45 to $462.69.[39]

The costs discussed here are mostly of a fixed nature; that is, they are incurred irrespective of traffic volume. In economics jargon, the marginal cost of a telephone call is thus not significantly

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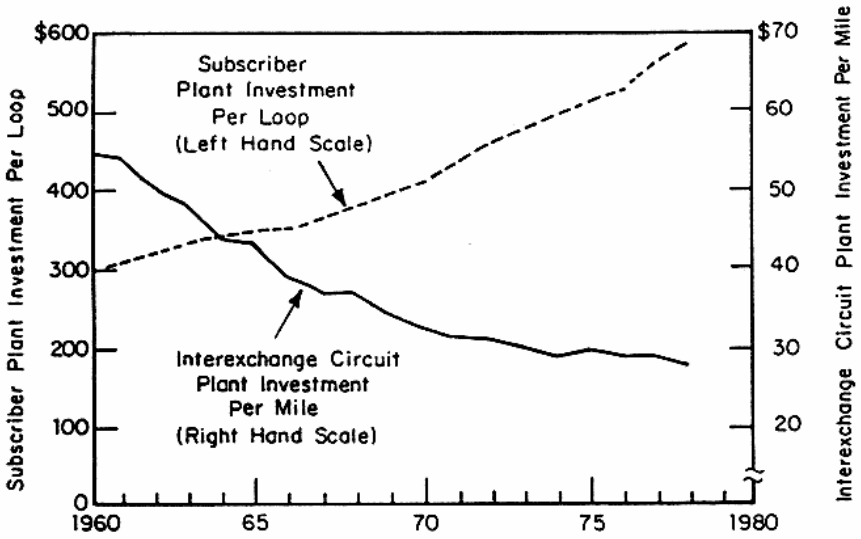
[38] Ibid., pp. 117-118.

[39] "Monitoring Report," CC Docket No. 87-339, Dec. 1988, Prepared by the Staff of the Federal-State Joint Board in CC Docket 80-286, Table 3.2.



Source: Weinhaus, Carol L. and Anthony G. Oettinger, *Behind the Telephone Debates*. Norwood, NJ: Ablex Publishing Corp., 1988, Figure 6.3. © 1988 President and Fellows of Harvard College. Program on Information Resources Policy.

Figure 4-2

Bell System Telephone Plant Average Embedded Investment: Local Loop versus Interexchange Transmission, 1960-1978

different from zero. An additional call could incur an additional electricity cost, a cost for recording for billing purposes, and possibly costs for additional repair and maintenance and for faster depreciation, which are unlikely. But depending upon the traffic volume, such marginal cost may vary because additional facilities and software may be needed to handle larger traffic volume. In any case, traffic-sensitive costs are significantly smaller than traffic-insensitive costs. This cost structure gives rise to the difficulty in pricing, since economic efficiency is lost or at least is not maximized whenever price departs from marginal cost.

Although this sort of data is not readily available for Korea at this time, one source[40] has estimated that Korea showed the lowest investment requirement per loop among developing countries, or approximately $1600 during 1975-1979. But this figure for the investment requirement does not reflect annualized cost nor yearly

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[40] ITU, The Missing Link. Dec. 1984, Appendix VII, pp. 117-119.

expenses. Thus direct comparison is not possible. However, if we consider that labor costs are lower in Korea, and that the size of Korea is about that of the state of Indiana,[41] then the cost disparity between hookup and interexchange facilities, and among customers, may be less dramatic than in the U.S. However, we should also consider that Korea has more than 3000[42] islands, and most new telecommunication facilities were concentrated in urban areas.[43]

4.3 Costing and Pricing Structure: History of Averaging and Deaveraging

4.3.1 Externalities

Economic theory says that social welfare is maximized when price equals marginal cost, if there are no externalities. There are two types of externalities, one for production and the other for consumption. Production externalities occur, for example, to a laundry cleaner whose neighbor is an air-polluting steel mill; the cleaner incurs the extra cost of cleaning out dust that comes from the mill. This kind of externality does not occur in the telephone industry, but consumption externalities do. If a resident erects a pole for street light in front of his house, all the pedestrians as well as his family benefit from the light; my consumption of light does not preclude consumption by others. When a customer subscribes to the network, the other subscribers benefit from that subscription as they can make calls to a larger number of people, although they did not do anything to receive that benefit. This kind of externality, called network externalities in the economic literature, occurs in other cases including automobiles, VCRs, and automatic teller machines (ATM), to

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[41] The Encyclopedia Americana. Grolier Inc., 1983, Vol. 27, p. 474 and Vol. 16, p. 543.

[42] Ibid., Vol. 16, p. 544.

[43] For example, during 1975-1985, 44% of the new telephone lines were provided to Seoul and Pusan, the two largest cities of Korea. See KTA, Statistical Yearbook of Telecommunications, 1986, pp. 32-33.

name a few.[44] Some economists have attempted to quantify the externalities in the telephone industry, suggesting that they amounted to $160 million in 1982.[45] Compared to the total revenue of the telephone industry, this amount is not significant, and the quantification is made under strict assumptions.[46] Thus, although we may not entirely ignore the externalities, we may reasonably proceed without undue concern about distortion.

4.3.2 Averaging and Deaveraging

Averaging basically means that prices are determined irrespective of the traffic volume and the costs involved in providing the service. As mentioned earlier, exact calculation of cost for a service is almost impossible. What is meant by "irrespective of cost" here is that prices are not directly dependent on cost however it is defined and calculated. However, the cost of providing a local loop to a remote desert resident will be higher than the cost of providing service to a metropolitan business customer, as long as a consistent definition of cost is applied. Averaging in this case thus means that both customers are charged the same, and deaveraging means they are charged differently depending on the cost and traffic volume. However, we should note that averaging and deaveraging here are used in a broad sense. That is, averaging is said to occur if high-volume low-cost customers subsidize low-volume high-cost customers more than before on an overall basis; deaveraging is said to occur if the trend is reversed.[47]

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[44] A body of economic literature has been developed in this area. For recent treatments see: Katz, Michael L. and Shapiro, Carl, "Technology Adoption in the Presence of Network Externalities," Journal of Political Economy, 1986, Vol. 94, No. 4.

[45] Perl, Lewis J., "The Consequences of Cost-based Telephone Pricing," Telecommunications Seminar, the Wigman Litchfield Park, Ariz., Jan. 24-26, 1985, pp. 15-18.

[46] For example, constant elasticity of income for all consumers should be assumed, which is true only under strict assumptions.

[47] As indicated on p. 31, averaging and deaveraging can occur separately according to the levels of specificity. For example, rates are not averaged between the state and interstate operations of interexchange carriers subject to regulation, and not between

4.3.3 History of Costing and Pricing in the U.S. to the 1930s

The pricing structure in the telephone industry did not always relate directly to the cost structure. Figure 4-3 briefly sketches how costing and pricing practices have changed during the last century. Until the 1930s, the trend in pricing was mainly competitive and cost based. When the U.S. telephone industry began in the late 19th century as a private industry, the early telephone companies did not have much difficulty with pricing, since most customers made calls only to those who were connected to the same switch. But as companies began to provide long-distance or interexchange call service, and many independent companies were involved in providing such a service, pricing became problematic. However, pricing largely remained an inter- or intra-company marketing decision as long as the government did not intervene in ratemaking.

Telephone industry competition in the early days brought duplication in network investments, and networks owned by different companies were not easy to connect. Some customers thus had to have several telephone numbers connected to different companies, and complaints followed. According to an historian, the situation in Hawaii reached a point at which competition in the telephone industry was not considered desirable in view of competitive rate-cutting, wasteful duplication, and public inconvenience.[48] Similar sentiments also occurred on the U.S. mainland. In 1894, the year the telephone patent expired, there were 125 telephone companies.[49] By 1897, there were more than 6000 companies, and the largest, Bell, was trying to buy out the independents. Concerned about Bell's rapid acquisition of these companies, the Justice Department filed an antitrust suit against Bell in 1913. This lawsuit, settled by the Kingsbury Commitment and followed, as well, by the Willis-Graham Act, which approved the

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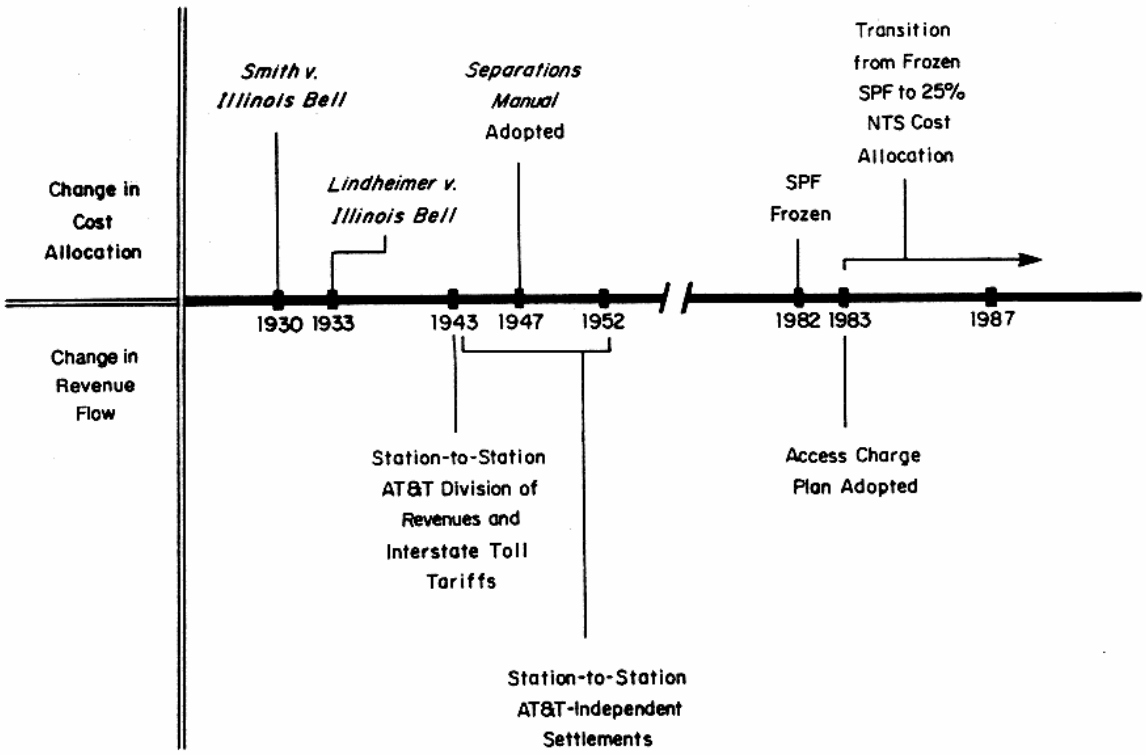
interexchange carriers and exchange carriers. However, we are discussing averaging and deaveraging in a braod sense.

[48] Weinhaus and Oettinger, p. 8.

[49] Ibid., pp. 6-7.



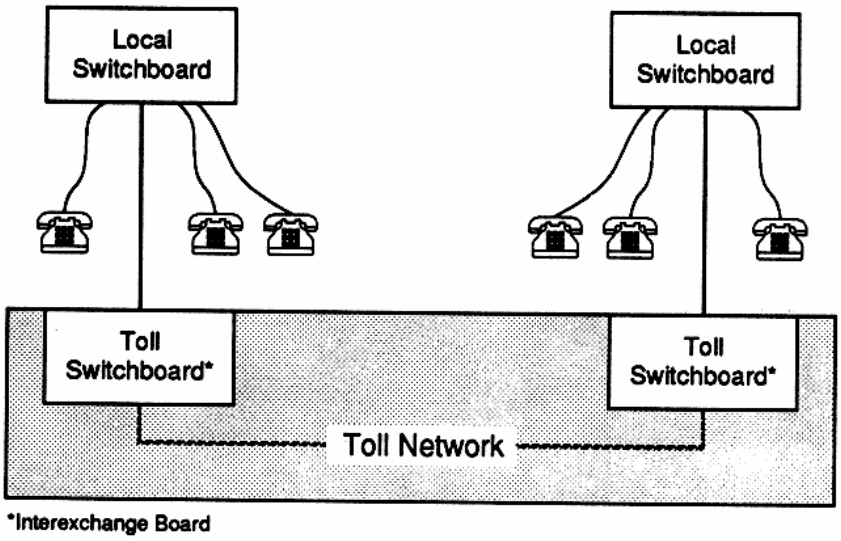
Source: Weinhaus, Carol L. and Anthony G. Oettinger, *Behind the Telephone Debates*. Norwood, NJ: Ablex Publishing Corp., 1988, Figure 8.1. © 1988 President and Fellows of Harvard College. Program on Information Resources Policy.

Figure 4-3

Milestones in Cost/Price Relationships 1930-1987

telephone monopoly, turned the industry from a competitive one to a monopolistic one.

As the industry became monopolistic and the government began to intervene to regulate the monopoly during the 1930s, a different concept for costing was introduced. Until then, the costing concept was called "board-to-board." Under the board-to-board method, the cost of an interexchange call consisted of 1) the cost of hookup from the originating terminal to the switchboard for the interexchange call, 2) the cost from the switchboard to the other switchboard with which the terminating terminal is connected, and 3) the cost of hookup from the other switchboard to the terminating terminal (Figure 4-4). The first



Source: Oettinger, Anthony G., *The Formula is Everything.* Cambridge, MA: Program on Information Resources Policy, Harvard University, 1988, Figure 7.

Figure 4-4

The Board-to-Board View

and third costs were just ordinary local calls, and the second cost was the additional cost for an interexchange call.[50] Pricing was also based on the same concept, and jurisdictional boundaries were simple: the first and third portions were under state jurisdiction; the second, federal, if the call was interstate. This concept or philosophy was simple and relatively easy to implement. It was a perfectly reasonable concept in its own right and did not give rise to any serious problems.

4.3.4 Toward Averaging: until the Early 1980s

But as we mentioned earlier, the evolution of the industry introduced another costing concept called "station-to-station." This concept treats an interexchange call as one integrated service, like a local call, not divided into two local calls and one call between

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[50] This concept is in use in Japan, where competition is allowed in local and interexchange markets.

switchboards. That is, an interexchange call is a call between originating and terminating terminals which do not happen to be connected to the same switch, and a local call is a call in which the two are connected to the same switch. Thus, the station-to-station concept specified that interexchange calls should bear some cost of local plant since interexchange and local calls share the same local loop plant. This concept and its application were eventually justified in terms of the Smith v. Illinois case:[51]

> While difficulty in making an exact apportionment of the property is apparent, and extreme nicety is not required, only reasonable measures being essential, it is quite another matter to ignore altogether the *actual uses* to which the property is put. It is obvious that, unless an apportionment is made, the intrastate service to which the exchange property is allocated will bear an undue burden.

Coupled with Lindheimer v. Illinois[52] three years later, the idea of "actual uses" brought about jurisdictional changes. Under station-to-station costing, interstate calls fall into the federal jurisdiction. An interstate call makes joint use of local plant; thus, at least some portions of local plant cost and revenue recovery should fall under federal jurisdiction. Basically federal authority was extended to what had been under state authority. Still, these cases concerned the interpretation of jurisdictional disputes and did not initially change the costing and pricing practices in the telephone industry. There was a new way of looking at the industry and there were new labels for costs and revenues, but prices for customers and revenues for the telephone companies did not change.

This situation continued until the early 1940s when the stakes of the players changed. For instance, technological development lowered the costs of long-haul transmission more than the those of short-haul transmission. Since the rate of return for interstate calls was higher than that of local calls, telephone companies would not object to a

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[51] Smith v. Illinois Bell Telephone Company, 282 U.S. 150-151 (1930).

[52] Lindheimer v. Illinois Bell Telephone Co., 292 U.S. 151, 1933.

method that would transfer costs from local to interstate calls, avoiding erosion of profits. State regulators would also accept such a method because this transfer could keep local rates lower. Under these circumstances, stakeholders made use of the concept expressed in the earlier court decisions; by focusing on the "actual uses" of local plant, they could transfer costs in a discretionary manner using court decisions as their justification. For some independent companies and for some regional Bell companies, however, the new approach could yield a different amount of revenue. This possibility was partly responsible for the continual adjustment and negotiation in cost allocation and revenue apportionment procedures for the last 40 years or so.[53]

The station-to-station concept is in itself another way of looking at the telephone industry and its costs. But Smith v. Illinois did not specify the exact method of assigning costs, and the stakeholders involved utilized this indefiniteness to work out conflicts. In addition to the technological development mentioned above, from the 1930s to the early 1980s, the idea of ensuring the availability of "universal service" at the lowest possible local rates was prevalent in the U.S. and was pursued as a policy goal.[54] Stakeholders did not have the incentive to disagree with policy goals as an increasing portion of local hookup costs had been transferred to interstate calls. This cost transfer was large enough to keep local rates down. Indeed, at a time when other prices were rising dramatically, local telephone rates were kept so low that they actually fell in terms of actual purchasing power between 1950 and 1980.[55] Table 4-1 indicates these relative prices. At the same time, the engineering costs of long-haul transmission had fallen such that long-distance rates remained low or at least didn't increase (see Figure 4-5).

This transfer of costs accelerated during the '60s and '70s and, in 1982, approximately 25% of total NTS cost was transferred to

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[53] Weinhaus and Oettinger, chapter 10.

[54] Ibid., p. 2.

[55] U.S., Department of Commerce, NTIA Telecom 2000: Charting the Course for a New Century. National Telecommunications and Information Administration (NTIA) 88-21, Oct. 1988, p. 209.

Table 4-1

Indexes for Selected Commodities in the U.S. as of September 1987

Commodity	Index (1967 = 100, unadjusted)
Fuel (Home oil, piped gas, electricity)	471.6
Medical Care	467.8
Housing	375.4
Food and Beverages	326.9
Local Telephone Service	203.7

Source: NTIA, *Telecom 2000*, p. 208.

interstate cost recovery. But note that Subscriber Line Use (SLU), which is a measure of local plant use by interstate interexchange calls, has increased only from 2.5% to 8.1% during the same period (Figure 4-6). Another factor in pricing policy during this period was the toll rate parity principle, which requires that calls covering the same distance be charged the same.[56] Interstate rates essentially became a limit to intrastate interexchange rates under this principle; that is, an intrastate interexchange call could not be priced higher than an interstate call of the same distance. Thus the principle contributed to keeping local or intrastate rates from increasing in spite of increasing costs. Coupled with toll rate parity was nationwide price averaging; regardless of the location and traffic volume, the same service was priced the same. Cost was out of consideration.

Basically the station-to-station concept of costing, toll rate parity, and nationwide rate averaging together brought about a price structure in which low-cost high-volume users paid relatively more for service than high-cost low-volume users. In this sense, cross subsidy occurred, supporting rapid penetration of telephone service into U.S. businesses and residences, and contributing to the realization of

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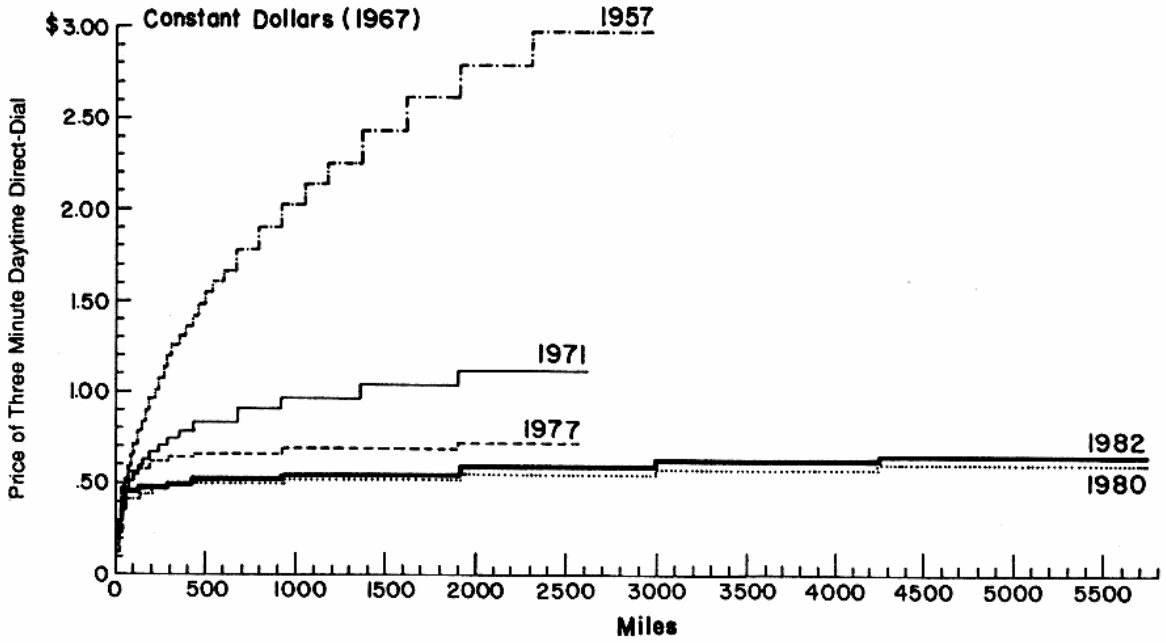
[56] Weinhaus and Oettinger, p. 65.



Source: Weinhaus, Carol L. and Anthony G. Oettinger, *Behind the Telephone Debates*. Norwood, NJ: Ablex Publishing Corp., 1988, Figure 12.3. © 1988 President and Fellows of Harvard College. Program on Information Resources Policy.

Figure 4-5

The Shift Toward Distance-Insensitive Pricing: Interstate Message MTS, 1957-1982

universal service. As of March 1988, 93% of U.S. households had at least one telephone.[57]

4.3.5 Toward Deaveraging: the Present

Low-cost large-volume interstate callers are usually large businesses, and it is no wonder that by the late 1950s they began to complain about huge telephone bills. In 1959, the Federal Communications Commission (FCC) announced its Above 890 policy,[58] which allowed private use of microwave facilities, basically making it

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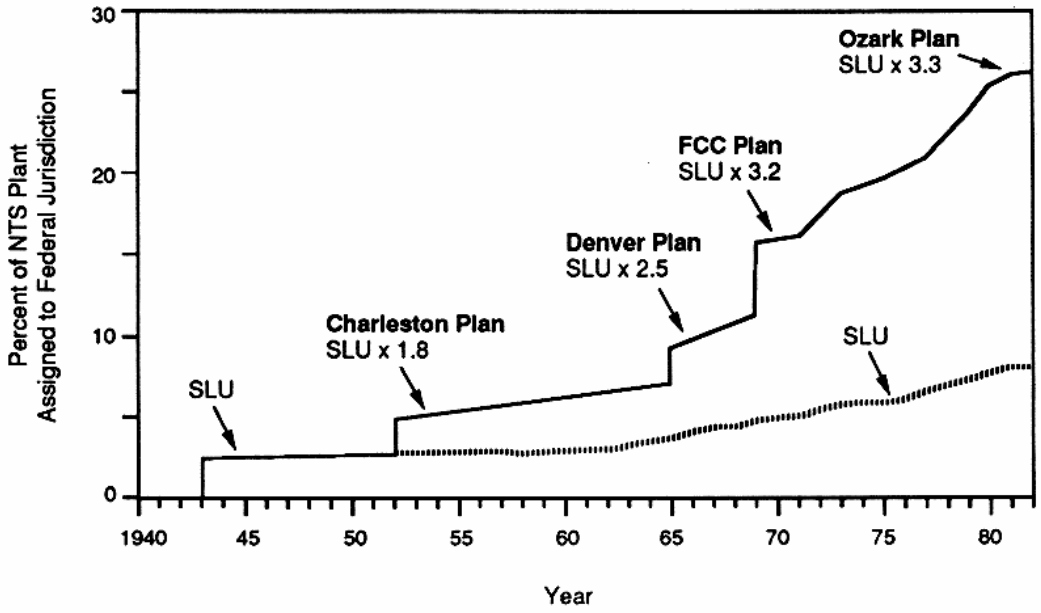
[57] NTIA, p. 205.

[58] Allocation of Frequencies in the Band Above 890 Mc., FCC Docket No. 11866, Report and Order, 27 FCC 359, 1959; Memorandum Opinion and Order, 29 FCC 285, 1960.



Source: Weinhaus, Carol L. and Anthony G. Oettinger, *Behind the Telephone Debates*. Norwood, NJ: Ablex Publishing Corp., 1988, Figure 9.9. © 1988 President and Fellows of Harvard College. Program on Information Resources Policy.

Figure 4-6

Increase in SLU vs. Increase in Percentage of Federal Non-Traffic-Sensitive Cost Allocation

possible for large users to bypass the public network.[59] During the '60s and '70s, this trend strengthened as businesses made more use of telecommunications and as computer and telecommunication technologies merged into "compunications."[60] Commercial carriers also appeared, pursuing market opportunities in long-distance, high-traffic routes --

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[59] Indeed, there many ways to bypass the public network. The simplest is the use of private lines. Satellite and cellular communications and teleports can also provide bypass. One may, however, distinguish between facilities and service bypass. In the case of service bypass, the impact on the financial viability of the common carriers is not clear because of the unknown price elasticity, while it is clearer for the facilities bypass.

[60] Anthony G. Oettinger, "Compunications in the National Decision-Making Process," in Greenberger, Martin, ed. Computers, Communications and the Public Interest, Baltimore: Johns Hopkins Univ. Press, 1971.

opportunities created by the costing and pricing procedures in the telephone industry. MCI, which began operating during the early '70s, is an example.

The most significant event in the U.S. telephone industry during the '80s may have been the Modification of Final Judgment (MFJ)[61] which in 1982 broke up the world's largest corporation, AT&T. To resolve an antitrust suit brought by the Justice Department, AT&T agreed to divestiture of the corporation. In return, the Justice Department dropped the antitrust suit and Judge H. Greene accepted the settlement agreed between AT&T and the Department of Justice that allowed AT&T to expand into the information business, which had been prohibited by the 1956 Consent Decree.[62] As more and more carriers began to compete in the interexchange market and as AT&T joined the competition, the existing pricing method had to be changed because the interexchange carriers were required to give as much as half their revenue to the local operating companies, and they wanted clearer procedures for allocation and separation of costs. The traditional approach related to a largely monopolistic industry, not a competitive one. With the introduction of full competition in the long-distance market,[63] the interexchange carriers did not easily acknowledge the transfer of a large portion of hookup costs to interstate calls.

When the FCC froze the SPF (Subscriber Plant Factor) rate (percentage of hookup cost to be recovered from interstate calls) in 1982, the Commission also announced an access charge plan for cost recovery. Access charges have essentially two components: the Carrier Common Line charge (CCLC) paid by interexchange carriers and the End

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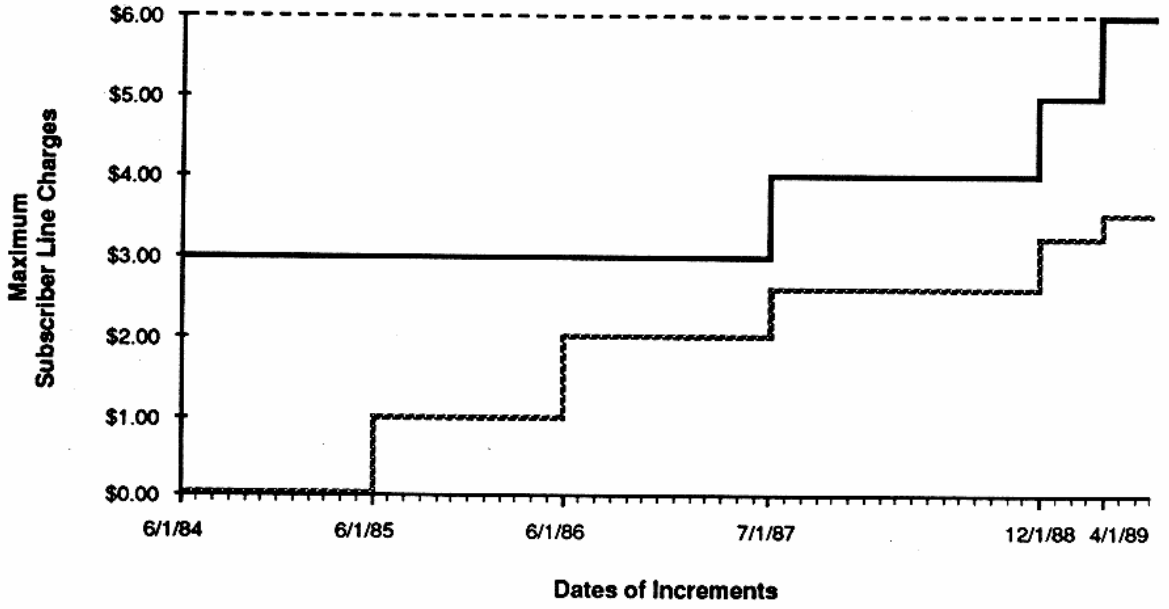
[61] U.S. v. AT&T, Modification of Final Judgment, 552 F. Supp. 131 (D.D.C. 1982), aff'd mem., 103 S. Ct. 1240 (1983).

[62] 1956 Consent Decree. U.S. v. Western Electric Co. and AT&T, Civil Action No. 17-49, 13 RR 2143; 161 USPQ (BNA) 705; 1956 Trade Cas. (CCH) Section 68246, at p. 71134 (D.C.NO.J. 1956).

[63] Long-distance is actually not the correct term. It is rather interLATA (Local Access and Transport Area), as defined by the MFJ.



Source: FCC data. Graph: © 1990 President and Fellows of Harvard College. Program on Information Resources Policy.

Figure 4-7

Phase-In of Subscriber Line Charges

User charge (EUC) paid by customers.[64] But with Congress and the courts expressing displeasure about local rate increases, the FCC postponed imposition of the EUC until 1984. Eventually the EUC was increased from $1.00, to $2.00, and then to $2.60, and finally to $3.50 by April 1, 1989[65] (see Figure 4-7). As of 1986, total access charges received by local exchange companies amounted to $26 billion, of which approximately $3 billion came from EUC.[66] As of mid-1989, deaveraging is occurring

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[64] Weinhaus and Oettinger, p. 116.

[65] Ibid., pp. 117-118, and Oettinger, p. 54.

[66] Oettinger, p. 12.

again, putting the burden of high hookup costs back onto the average customer.

4.4 Postalization and Pricing Structure

The history of costing and pricing practices in the U.S. may suggest the kind of issues that could be involved in postalization in Korea. As we have seen in the previous section, pricing in the U.S. telephone industry has swung between averaging and deaveraging, moving toward deaveraging in mid-1989.

The cost of a call varies with the distance between subscribers and central offices and with the distance between central offices, as well as varying with traffic volume, to name a few of the factors involved. Although price is not directly related to cost, present practice of pricing takes only distance into consideration, leaving out other factors; in most countries, price is not sensitive to traffic volume and hookup costs.[67] Averaging does not typically extend to the distance factor. But postalization does relate to distance and complete averaging occurs as a result. Figure 4-8 presents a highly stylized view of pricing structures in terms of ratios of hookup cost to traffic volume for a call of a given distance. Postalization can be seen as an extreme form of averaging in terms of traffic volume, distance, and hookup costs.

When deaveraging follows competition, in most cases long-distance rates will decrease and local rates will increase -- results that seem very similar to what postalization would bring about. But such a change would not affect all calls uniformly if it were the result of deaveraging, whereby some calls may be priced higher if their costs

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[67] This is a very conceptualized argument. In reality, prices could actually vary with traffic volume, or depend upon the time of day or day of week, and so on. But these represent exceptions or special discounts rather than the rule. Additionally, use of private leased lines can be seen as a form of price discrimination. Indeed, using private leased line provides the simplest form of deaveraging. There may be other reasons for allowing the use of private leased lines. Heavy traffic between specific points may decrease the efficiency of switching for other traffic.

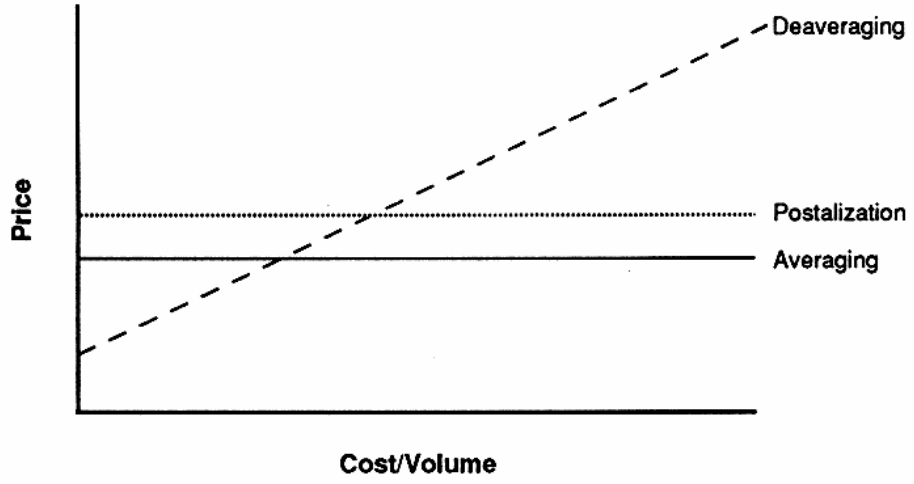

Figure 4-8

Comparison of Pricing Structures

exceed the national average. In contrast, under postalization such a change would be uniform for every call.

For postalization to be implemented, price differentials related to distance must also be averaged. From the point of view of economics, postalization has certain compelling elements. First, the cost of a call does not increase significantly with distance, especially with recent developments in transmission technology.[68] That is, significant economies of scale exist in transmission. Moreover, recent technology routes a call such that longer calls are more likely switched through high-density routes.[69] Second, the cost of providing facilities to record necessary information to calculate the charge of a call, and the cost of the administrative process including billing, may not be

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[68] See Weinhaus and Oettinger, Fig. 15.1, p. 139 and Godbey, Robert C., A Distance Insensitive Uniform National Telephone Rate Structure: A Speculative Exercise in Federalism. Cambridge, MA: Program on Information Resources Policy, Harvard Univ., P-81-4, 1981, pp. 18-21.

[69] Ibid.

insignificant. If such costs exceed the cost of transmission of calls, then postalization is more cost efficient.[70] Lastly, lowered prices for longer-distance calls could induce more telephone use and thus could increase profits because, with economies of scale, costs would increase less than proportionately. Of course, if demand is not price elastic, profit may decrease instead. Empirical studies have not been conclusive.[71] For shorter-distance calls, studies show inelastic demand; thus postalization would bring in more revenue[72] and would not necessarily mean financial difficulty for telephone operating companies.

Other aspects also seem to support postalization. It could encourage commerce with rural areas because businesses may find rural locations less disadvantageous. With distance no longer a factor for communication, postalization may also pull the whole nation more closely together in other ways of particular interest to Korea: For the last 30 years or so, the urbanization rate has increased significantly from 41% to almost 65%,[73] -- and many families in city areas have close relatives, especially their parents, in rural areas. Lower rates for long-distance calling would enable more frequent telephone contact. Distance-insensitive rates may also alleviate tensions between regions, which were manifested during the last general election. Many people still consider alleviation of regional tension one of the top priorities for government policy in Korea.[74]

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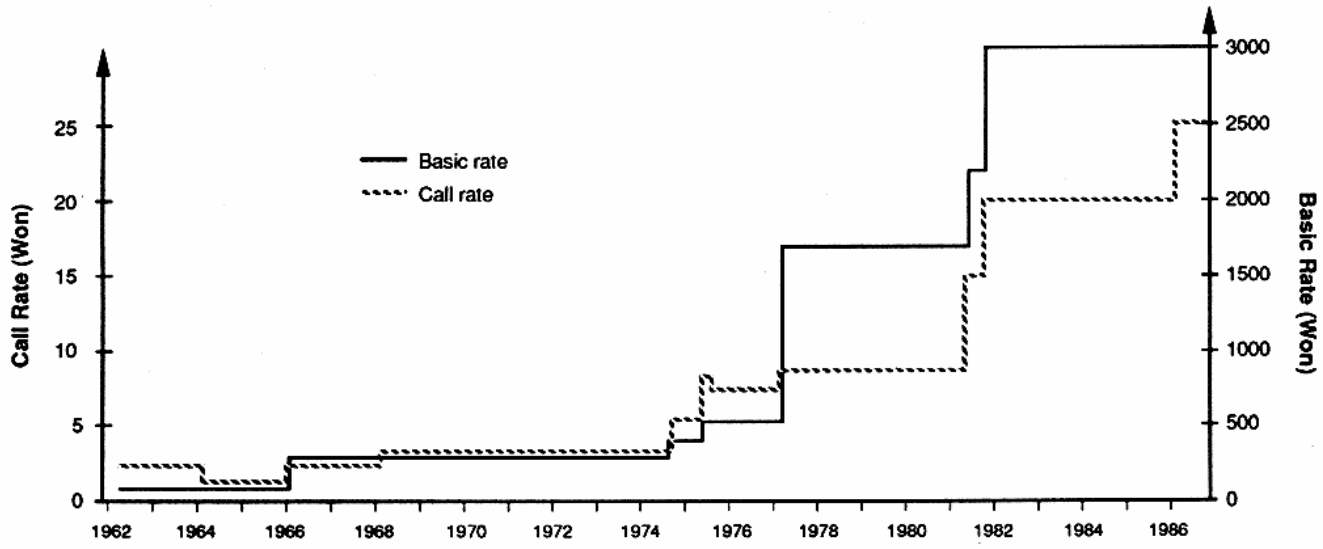
[70] Ibid.

[71] Hausman, Jerry A., "Estimating the Effects of Usage Sensitive Pricing," Telecommunications Seminar, the Wigman Litchfield Park, Ariz., Jan. 24-26, 1985, p. 14.

[72] Wenders, John T., The Economics of Telecommunications: Theory and Policy. Cambridge, MA: Ballinger, 1987, pp. 57-58.

[73] Korea, Economic Planning Board, National Bureau of Statistics, Korea Statistical Handbook, 1988, p. 9.

[74] For example, see "Political Stability Through Compromise Mostly Needed," Dong-a Ilbo, Jun. 1, 1988, p. 1.



Date	6/62	3/64	1/66	1/68	9/74	7/75	8/75	1/77	1/80	6/81	12/81	2/86
Basic Rate	83.3	83	300	300	390	520	520	1740*	1740**	2200	3000	3000
Call Rate	3	2	3	4	6	8.7	8	8	12	15	20	25

* First 100 units are free
** No free units

Source: Adapted from MOC, *100 Years of Korean Telecommunications*, Vol. 2, 1985, p. 1403. © 1990 President and Fellows of Harvard College. Program on Information Resources Policy.

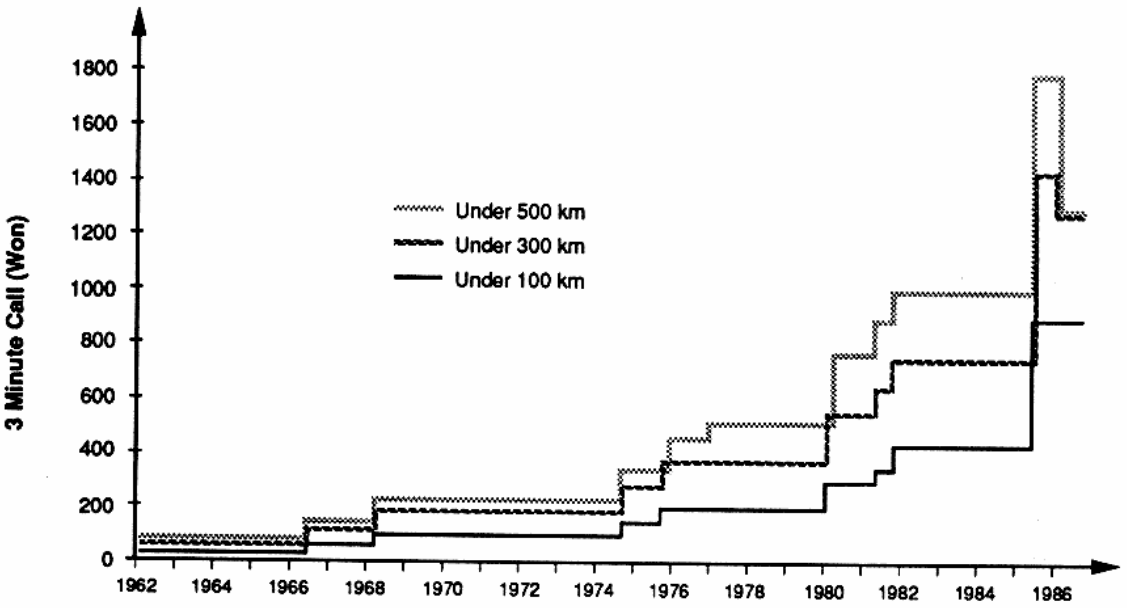
Figure 4-9

Local Rates in Korea

4.5 Pricing Structure in Korea

As mentioned in chapter 2, telecommunications developed dramatically during the late '70s and early '80s, and thus we may well begin with the '60s. Figures 4-9 (above) and 4-10 (below), which show the pricing structure for local and long-distance rates in effect from 1962 through 1986, indicate how the Korean pricing structure has changed during the last 30 years. Of interest is the sharp increase in local rates from 8 to 20 Won in 1981, when inflation was 21%. It remained at 8 Won from 1975 through 1979 during which time inflation was over 18% a

year on the average.[75] Also note that a call covering the longest distance cost 90 times as much as a local call in 1985. This pricing structure was designed mainly to finance the massive provision of facilities.



Date	6/62	1/66	1/68	9/74	7/75	1/77	1/80	6/81	12/81	8/85*	2/86*
Under 500 km	70	140	230	345	460	520	770	900	1000	1800	1286
Under 300 km	60	120	190	285	380	380	560	650	750	1440	1286
Under 100 km	30	60	100	150	200	200	300	350	440	900	900

* Rate zones are changed

Source: Adapted from MOC, *100 Years of Korean Telecommunications*, Vol. 2, 1985, p. 1405.

Figure 4-10

Long-Distance Rates in Korea

[75] Collins and Park, pp. 10-11.

In 1984, MOC announced a long-term pricing schedule which projected postalization by the year 2001 (Table 4-2). Generally following the schedule, long-distance rates were dramatically reduced and as of mid-1989 a call covering the longest distance costs less than 1000 Won. But local rates were increased in 1986 once again to 25 Won[76] and from July 1, 1989, local calls are to be charged according to their duration.[77] Previously, there were no limits on the duration of local calls. The decrease in long-distance call prices and the increase in local call prices are occurring in Korea, not because of competition or deaveraging, but because of interim steps toward postalization.

Table 4-2

Long-Term Pricing Schedule (established 1984): Interim Steps toward Postalization

Year	Local Zone	Categories
1984	County	9 categories (1 local and 8 long-distance)
1986	County	6 categories (1 local, 5 adjacent and long-distance)
1991	Province	3 categories (local, adjacent, long-distance)
1996	Province	2 categories (local and long-distance)
2001	Nation	1 category (all local)

Source: MOC, *100 years of Korean Telecommunications*, p. 1099.

[76] KTA, Statistical Yearbook of Telecommunications. Korea, 1987.

[77] "Promotion of Postal Service between South and North: Annual Ministerial Report to the President by MOC," Chosun Ilbo, Jan. 27, 1989, p. 1.

4.6 Privatization, Competition, and Postalization

As was mentioned in chapter 3, a privatization plan for KTA has been announced, and as of mid-1989 the sale of KTA stock to the public is expected to take place during December 1989. If privatization does not entail liberalization, as is the case in many countries, the proposed policy may be relatively easily implemented if stakeholders' interests can be reconciled. If competition is to be introduced, the situation gets more complex.

Suppose postalization precedes the introduction of competition. Suppose also that competitors would make use of existing local plant, because it would be impossible for them to duplicate it. For the time being, let's assume competition is introduced to long-distance or interexchange markets. When competitors enter the long-distance market, they would face an odd situation. If they serve only large-volume users, the competitors may be able to offer lower prices by concentrating on low-cost, high-density routes. In this scenario, ordinary customers could pay, for example, 50 Won for a call even to a neighborhood, while large-volume users could pay less than 50 Won for a long-distance call. It is questionable whether such a situation would be socially or politically acceptable. If competitors try to connect with the public network to serve ordinary customers, these competitors would have to pay access charges, depending on government policies, for the use of the public network. They certainly couldn't pay the same charges as ordinary customers could, and may ask for special discounts so that they can offer lower prices. If the public network monopoly insists on access charges under the "board-to-board" philosophy, which does not make sense in the postalized world, then competitors simply would not be able to function. Where precedent has control, there seems to be no room for competition.

But as we have seen in the case of the U.S., pricing and costing do not necessarily go in hand in hand. That is, pricing and costing can be separated and postalization can accommodate competition. Such accommodation would proceed in the following way: first, competitors could charge prices equal to or slightly lower than those of the monopoly. To the end users, all the prices and services would be

transparent. Then the competitors and the monopolist would have to agree on some revenue allocation mechanism. They would work, first, on the total revenue requirement, and then on the portion which the competitors would bear for the use of the monopoly's network. This kind of arrangement has been exactly carried out in the U.S. under the station-to-station philosophy. Under this approach, postalization does not necessarily preempt competition.

Some may argue, in the spirit of the board-to-board philosophy, that under such an arrangement competitors would end up paying less for the use of the public network than would ordinary customers. Why should ordinary customers contribute money to some companies through an arbitrary arrangement? If this argument somehow gains political consensus, competition would not be compatible with postalization.

If competitors enter local markets, they may easily capture large-volume users. But if these users want to connect with the public network, access charges again become problematic and the same argument as before applies.

Now suppose, instead, that competition is introduced before postalization. Here the situation would be basically the same. If the board-to-board philosophy is in place when competition is introduced, the transition to postalization would be more difficult than under the station-to-station philosophy because new cost allocation and revenue apportionment methods would have to be painstakingly worked out. Even under the station-to-station philosophy, existing competitors may oppose postalization because of changes they may have to make under the new pricing scheme if other routes become more lucrative. In this sense, precedent again has force.

One may argue that a purpose of postalization is to pursue equality through uniform pricing and economic efficiency through a centralized network, and that thus competition should not be allowed. But questions arise as to whether equality is really achieved if we give the same consideration to large-volume users, such as large companies, as to ordinary users who make infrequent long-distance calls. In addition, the efficiency of the monopoly would be a major concern under postalization without competition. As we have seen, postalization may help guarantee control by the monopoly, which may lack incentives for

efficiency and innovation. In this case, it is not clear whether efficiency lost to duplicated investments from competition outweighs the efficiency lost to inefficient management by the monopoly.

The inefficiency of monopoly has long been a concern for most countries. In Korea, KTA is regulated by a mixture of rate-of-return and performance indexes, as are other public corporations. Recently, a British economist suggested that breaking up the monopoly into regional companies may not be a bad idea.[78] The main argument was that after such a breakup, the regulatory agency would have a yardstick for comparing the efficiencies of telephone companies, a comparison that was not available under a nationwide monopoly. Such a breakup would indirectly create a competitive environment.

4.7 Privatization and Stakeholders

The major stakeholders in postalization are the MOC, KTA, EPB, large users, and the general public. Because the efficiency of KTA is the MOC's biggest concern, it may consider breaking up KTA. KTA has no incentive to oppose postalization since it may still maintain its position, but strongly opposes the idea of a breakup.[79] EPB is worried about an increase in local rates since the increase may help trigger inflation, especially during these years of trade surplus. But a decrease in long-distance rates could compensate for the inflationary pressure; thus the net effect is not clear. Another concern for EPB would be the lack of competition.

As we have seen in the case of the U.S., large users were a major force behind the swing to competition. In Korea at the moment, large users have not, at least formally, complained about high prices for long-distance calls. But large business conglomerates may soon do so as they become more internationalized and dependent on telecommunication networks. The role that these business conglomerates play is worth noting. The top 30 Korean conglomerates produce 15% of Korea's GNP and 108 companies (0.6% of exporting companies) export 63% of total

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[78] "Pricing the Privatized," The Economist, Jul. 30, 1988, p. 65.

[79] "We Demand MOC ...," Dong-a Ilbo, June 29, 1988, p. 1.

exports.[80] Even after postalization, if they see inefficiencies, they could ask for competition. At any rate, large users, who are likely the major users of private leased lines, could seek ways of bypassing the public network for their own use.

It is not clear how the public as a whole may react to postalization. They will surely oppose local rate increases, but the effect of decreased long-distance prices on their bills is not clear. It is interesting to note that in the U.S., lowered prices for long-distance calls and increases from the EUC -- both due to competition -- actually reduced the bills of the average customer.[81] There seem to be no obvious reasons for the public to oppose postalization.

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[80] "Reduction of Credit to 30 Conglomerates," U.S. Chosun Ilbo, Apr. 6, 1989, p. 26 and "55 Companies Exported Over $100 Mil. Each," The Korea Economic Daily, Mar. 4, 1989, p. 6.

[81] National Strategies and Marketing Group, "National Average Residential Consumer Telephone Costs," in Transition in the Long-distance Telephone Industry. Hearings before the Subcommittee on Telecommunications, Consumer Protection, and Finance of the Committee on Energy and Commerce, House of Representatives, Ninety-ninth Congress, Feb. 19-20, 1986, Serial No. 99-145, pp. 76-77.

CHAPTER FIVE

UNIVERSAL INFORMATION SERVICE

5.1 Korea's Universal Information Service Policy

With "popular use of information" as a policy target toward the year 2000, the MOC proposed "one terminal per household" as a specific strategy (see chapter 3, above). In some instances, it was phrased as "realization of equal access to and utilization of information service over telecommunications network through low cost terminals."[82]

As of mid-1989, there have not been specific schedules or plans for reaching those targets. For example, MOC has not announced whether the terminals will be distributed free of charge as in France, or if so, what kind of terminals (intelligent or not) will be chosen, and how they will be financed. But the general impression is that the terminals will be free of charge and that they will be as intelligent as PCs.[83] Also not clear is who would provide network and information service. Nonetheless, we will assume, for the purposes of this discussion, that the Korean government will distribute free terminals.

The term universal information service has come into use only recently, still without a generally accepted definition. Information service is usually defined as a service that provides, processes, stores, and transmits information. This definition, however, is so broad that it can include electronic mail, protocol and code conversion, telephone service, postal service, and book publishing, to name a few options. In this chapter, however, we narrow our scope to those services included in the MOC's universal information service policy -- which are information services carried over telecommunication

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[82] 100 Years of Korean Telecommunications, Vol. 2, pp. 1163-1165.

[83] Statements by Minister of Communications in various occasions. See, for example, "Allowance of VAN Business," The Korea Economic Daily, Aug. 31, 1988, p. 6; "Promotion of Postal Service...," Chosun Ilbo, Jan. 27, 1989; and "Support by MOC to Distribution of PC's to Schools," The Korea Economic Daily, Jan. 10, 1989, p. 8.

networks.[84] This categorization can still include most services described as value-added network (VAN) service or value-added service (VAS).

By excluding information services which do not make use of telecommunications networks, we also exclude some important aspects of information services that may develop in the future, such as information service over cable TV networks.[85] At the moment, most cable TV networks are for one-way communications, but in the future they may be used for two-way communications and could be in direct competition with telecommunication networks if the networks pick up more households and if the regulatory environment permits. Considering the high transmission capability of the cable TV networks and the growing penetration rate, such a consideration deserves careful study. Moreover, dramatic cost reductions in optical fiber cable installation in recent years suggest that the boundaries of the telephone, information service, and video entertainment industries are blurred in principle.[86]

Cable TV networks in Korea, however, generally may carry only regular TV channel signals to areas with poor reception and may not broadcast entertainment programming as in the United States. Indeed, cable TVs are illegal in urban areas where regular TV signals are well received.[87] But many underground cable networks do operate in major urban areas, mainly sending out movies over improperly installed networks. Recently, there has been a dispute over legalizing those cable TVs and allowing CATVs to produce and broadcast their own

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[84] Basically we are considering the what is called telecommunication network-based service (TNS) in trade literature. However, to avoid confusion, we have not used the term TNS here because we are not discussing trade issues.

[85] Also excluded are, of course, paper, CD ROM, cassette tapes, and the like.

[86] Pepper, Robert M., "Through the Looking Glass: Integrated Broadband Networks, Regulatory Policy and Institutional Change," Office of Plans and Policy, FCC, Nov. 1988, Working Paper 24, pp. 5-11.

[87] "Expansion of CATV: Disputes over Law Interpretation," Chosun Ilbo, May 2, 1987, p. 5.

programs. But as of mid-1989, CATVs are only allowed to relay regular TV signals and to broadcast their own programming only to such closed groups as hotels, hospitals, and schools.[88] Thus, we exclude this otherwise interesting area from this study.

By adding the prefix "universal" to information service, we are looking at the information services offered to the general public. Examples may include database and data processing, electronic mail and bulletin board, reservation, home shopping, home banking, and telemetering services. In this sense, we are basically looking at the videotext service. Providing such services requires information providers, network providers to carry the information, and terminals for input and output of the information. Before going on to the issues involved, we will first look at the experiences of developed countries in universal information service.

5.2 Experiences in Developed Countries

In European and other developed countries including Japan, governments and industries have tried to develop successful information services, primarily utilizing public networks. The most prominent examples are Teletel in France and several attempts by U.S. industries.[89] Since governmental intervention tends to be at the center of universal information service controversies, both examples are of interest because the driving force was the government in the French case and private industry in the American case. Moreover, videotext is one of the most flexible and popular information services available today,[90] although it is not the only information service.

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[88] "Conglomerates Eager to Enter CATV," The Korea Economic Daily, Feb. 14, 1989, p. 6.

[89] U.S. Department of Commerce, NTIA Information Services Report. National Telecommunications and Information Administration (NTIA) 88-235, Aug. 1988; and OECD, New Telecommunications Services: Videotex Development Strategies. ICCP, Paris, 1988, No. 16.

[90] NTIA Information Services Report, pp. 8-9.

The French videotext service, called Teletel, is now considered a success by many[91] in the sense that the service attracts large revenues and the industry continues growing at a fast rate. The French telecommunications monopoly DGT first introduced the Teletel service in 1981 as a substitute for printed telephone directories and to promote the information industry. The most critical feature of Teletel is free distribution of dedicated low-cost terminals, called Minitels. Private information providers (IPs) provided services by connecting themselves to the public network through 1300 nodes. As of May 1988, approximately 3.7 million Minitels had been distributed, more than 2 million additional terminals were planned to be distributed by 1990, and IPs numbered more than 7000.[92]

Until early 1985, when the number of Minitels was less than one-half million and IPs numbered 500, the success of Teletel was doubtful and printed directories were still in distribution. But the situation turned around in late 1985 when the number of Minitels reached 2 million and the usage of Teletel 3 increased dramatically. (Teletel 3 was offered for the general public, while Teletel 1 and 2 were mainly for business.) More than 3000 IPs came on board in 1986, and total usage hours more than tripled between January and December of 1985.[93] According to one estimate, one Minitel earned about $70 net a year as of 1987 with each Minitel costing $309, thereby recovering cost in less than five years.[94] The surge in IPs and usage hours seems to indicate that Teletel is a success.

However, several points are to be noted. First, in France, changes in telephone numbers were very frequent during the late 1970s because of large-scale updating of the telephone system, and printed directories were not able to keep up.[95] Thus electronic directories filled a need by making use of the easy updating capability of

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[91] Ibid., p. 78 and OECD, p. 17.

[92] NTIA Information Services Report, p. 77.

[93] OECD, p. 18.

[94] NTIA Information Services Report, p. 83.

[95] OECD p. 45.

electronic presentations. Electronic directories still provide a large portion of traffic volume.[96] Second, bulletin board service accounts for about 70% of Teletel 3 revenue.[97] Or put differently, more than 40% of all Teletel traffic is for recreational use.[98] Bulletin board service is mainly used for chatting and sometimes for dating, which may be socially unacceptable in some cultures. Moreover, less than 10% of Teletel 3 users are creating more than 50% of the Teletel 3 traffic which produces about 70% of all Teletel traffic. Lastly, the development costs for the Teletel system were not taken into consideration in cost recovery calculations, and neither were depreciation costs and interest rates.[99] Thus debates continue over whether Teletel is paying off at the present.

In the United States, in contrast, the major proponents of videotext service were private industries. But the LECs, which are the most important players in universal information service, were not able to engage directly in this area because of the court decisions in the antitrust cases.[100] Although AT&T attempted, in collaboration with Knight-Ridder, to provide commercial consumer videotext, the service was discontinued in 1986 after incurring a $50 million loss over 10 years.[101] The service, named Viewtron, was a more sophisticated graphics-oriented videotext than the French Teletel. Other attempts have also emphasized graphics quality, but they were not successful either.[102] However, there are several successful less graphics-oriented videotext services aimed at the general public, such as CompuServe, Dow Jones, and LEXIS/NEXIS. In the U.S., these services did not rely

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[96] NTIA Information Services Report, p. 80.

[97] Ibid., p. 83.

[98] OECD, p. 18.

[99] NTIA Information Services Report, p. 82.

[100] 1956 Consent Decree, U.S. v. Western Electric Co. and AT&T and U.S. v. AT&T, Modification of Final Judgment.

[101] OECD, p.36.

[102] Ibid.

primarily on dedicated terminals for videotext, and PCs were mainly used as terminals. Moreover, there has been no government support of this service provision; if anything, the government has rather worked against such provision.

Recently the FCC proposed Comparably Efficient Interconnection (CEI) and Open Network Architecture (ONA) in Computer Inquiry III[103] as an effort toward fair competition. CEI is an interim measure preceding ONA and specifies parameters for the provision of ONA. The idea is that the LECs unbundle the basic service they provide. If the service is unbundled, the FCC maintained that the transmission and switching functions of LECs would be transparent to all service providers who then have level ground for fair competition in information services. If these proposals are implemented, information providers may see more business opportunities in which to utilize their versatility, but at the same time, LECs may participate in the information service market without having structurally separate subsidiaries as required by Computer Inquiry II. The Department of Justice may recommend that the court lift restrictions on LECs in the information service market if ONA is implemented, but the details of ONA implementation are controversial and have not yet been worked out. That is, questions of how much information the LECs should disclose to information providers for interconnection and how much information information providers should disclose to LECs for network management are not easily answered because much of this information is proprietary. Moreover, the question of who will bear the additional cost of ONA also has to be settled.

In its 1988 report Telecom 2000, NTIA recommended the removal of restrictions on LECs' provision of information service to promote the idea of universal information service.[104]

Why has videotext service in the U.S. not been as successful as in France?[105] Analyses have suggested several reasons. First, there have been no focused products that consumers find attractive. Most of the

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[103] Lee, pp. 16-17.

[104] NTIA, Telecom 2000, p. 81.

[105] NTIA Information Services Report, pp. 32-39; and OECD, p. 51.

services provided by videotext can be accessed other ways almost as efficiently. For example, white and yellow pages directories are well organized and easy to use, and numerous news services and forms of entertainment are available at affordable rates. Consumers in general did not see great merit in the on-line services. Second is the absence of low-cost dedicated terminals, which is closely related to the first point. Even the cheapest terminal without a monitor could cost $200 in the U.S.,[106] with intelligent terminals easily costing up to $1000. Third is the lack of a mass market. Service developers and advertisers would not be interested in sponsoring this service unless they see a large consumer base. Indeed, this point is the result of the former two; all three points comprise, in a sense, a "chicken and egg" problem.

As we have seen, there have been two basic approaches to the development of information services in the developed countries: interventionist and market-dependent. The basic argument for the interventionist approach is that the benefit from technological progress should be distributed as widely as possible.[107] But implicit in this approach is the preservation of government monopoly and the preservation of telephone revenues, as new competitors begin to erode the area adjacent to telecommunications, utilizing new technologies. The market approach, in contrast, emphasizes competition as a way to cultivate innovation and efficiency and to prevent rigidity in the industry. However, it seems that under either approach, businesses and enthusiasts will make use of information service over telecommunication networks, as long as there are no legal barriers to information providers and users. The impression is that governmental intervention creates only a marginal customer base, neither a significant number of customers nor negligibly few. More evidence over time may suggest a clearer trend.

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[106] NTIA Information Services Report, p. 30.

[107] OECD, pp. 50-54.

5.3 Issues Involved in Information Service

5.3.1 Network Provision

Because the services discussed here are to be offered to the public, connection to end users would be primarily through the public switched telephone network (PSTN). But these services need not exclusively depend upon the PSTN. Private networks, making use of leased lines or satellites, could serve along with the PSTN for provision of information services. In this regard, we will look at the development of private networks and their relationship to public networks.

In those countries where computer technology has come into widespread use for efficient information handling, intra-corporate use has tended to be first, often followed by inter-corporate and intra- and inter-industry use, and finally by ordinary customer usage. That is, this immediate demand comes from the business side first. Businesses can usually justify the acquisition of relatively high-cost hardware and software on the basis of their intensive use. Financial institutions, airlines, and large nationwide manufacturers and distributors are good examples since they have to handle large amounts of information in relatively short periods of time to maintain their efficiency and competitiveness. Because of the volume of information they handle and their specific needs, large businesses tend to depend on private networks based on leased lines rather than on public networks where some kind of universality is required.[108] Moreover, by using leased lines they can reduce their telecommunications bills if the traffic volume is high enough.

Depending upon the legal restrictions, private networks are developed either by outside network providers including telephone companies or by the large users themselves.[109] In any case, as long as

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[108] Lee, pp. 114-115; and Bang, Suk H., A Study on the Liberalization of VAN Business, Korea Information Society Development Institute, Seoul, Korea, Dec. 1988, p. 55.

[109] Actual ownership of networks also depends upon legal restrictions, but such ownership is not open to competition at present in most countries other than the U.S.

these networks are for inside use only, they pose no threat to the public network. They are virtually separate and do not directly compete with the public network. It is as if large-volume users have the service at a discount. However, as these businesses accumulate experience and know-how from network operation, they try to find ways of making full use of their networks. That is, large businesses want to extend the network services to ordinary customers, and continued reduction of hardware and software prices could provide additional motivation. Interconnection of private networks to public networks would give both virtually the same network capabilities. Then, depending upon the services provided by the public networks, both would compete directly for customers.

This trend in many ways resembles that in the telephone industry, although the main motivation for separate networks in the telephone industry was to exploit artificially created price differentials. It is true, however, that these private network providers are basically resellers of leased lines although they usually add some value to the reselling service. In this sense, they are also exploiting the flat-rate tariff structure for leased lines. But from a strictly logical point of view, private and public networks are indistinguishable. Indeed, for example, if the regulatory environment allows full competition in local loops in the U.S., then it is hard to tell the difference between these private networks and traditional telephone networks. The same is also true for cable TV networks. Moreover, as digital technology advances, the distinction between voice and non-voice services is almost meaningless. Technological change can easily render such regulatory distinctions obsolete.

Most developed countries, such as OECD members, allow private businesses to provide to the public some form of telecommunications services (other than voice and database and data processing services). But such services are not offered using leased-line networks, with the exception of Canada, the U.S., the U.K., and Japan.[110] The U.S. allows

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[110] Mansell, Robin E., "Telecom Network-based Services Regulatory Framework," Transnational Data and Communications Report, Jan. 1989, p. 17.

unlimited interconnection of leased lines to public networks,[111] but most countries do not freely allow interconnection of private networks to public networks at present.

In 1987, the European Community (EC) proposed, in its "Green Paper" on telecommunications, the liberalization of the telecommunications market in Europe. Although the Green Paper proposed, among other things, competition in all telecommunications services other than possibly telephone service,[112] implementation has not taken place as of early 1989.[113] Telecommunication administrations hesitate to allow interconnection primarily because they want to protect public networks from cream skimming and to prevent duplication of investments.[114] On the other hand, there are also concerns that customers do not benefit equally from such protection and that diversified and specialized demands cannot all be satisfied adequately by public networks. Accordingly advocates of liberalization have maintained that competition is necessary for the provision of diverse and profitable services and for ordinary customers to share in the benefits.

Another concern has been the lack of interconnection standards.[115] Because the computer industry has developed separately from the telecommunications industry, computer vendors have developed their own communication protocols and standards for computer communication. At

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[111] Ibid., p. 19.

[112] Narjes, Karl-Heinz, "Telecom Policy Reform and International Trade," Transnational Data and Communications Report, Jan. 1988, p. 22.

[113] Mansell, p. 19. See also Commission of the European Community, Press Release Memo 90/6, February 5, 1990, Brussels. At the December 7, 1989, Ministerial meeting a compromise was reached on services and ONP. The subject, nevertheless, remains highly controversial and draft texts of the relevant directives were not available at the time of this writing.

[114] Lee, pp. 46-49; and Shukunami, Tatsushiro, The Race for Value-Added Services: Challenges and Opportunities in the U.S., Japan, and the U.K. Cambridge, MA: Program on Information Resources Policy, Harvard Univ., May 1988, P-88-1, pp. 46-47.

[115] Largely excerpted from Lee, chapter 2, and Shukunami, chapter 3.

present, the major standards are IBM's System Network Architecture (SNA), DEC's DEC Network Architecture (DNA), and ITU's Open Systems Interconnection (OSI). These are not compatible at the moment, although compatibility is continually pursued. Since private networks tend to use their own proprietary protocols, different private and public networks are often not able to communicate without gateways or other means for interconnection. Telecommunications administrations thus concern themselves with possible abuse of market power by dominant private networks and also with development of the industry through standardization. Policy measures prohibiting interconnection or requiring implementation of certain interconnection standards (if interconnection is allowed) could address these concerns. But early mandatory standardization could discourage an industry in which innovation is most desired and diversified demand has to be met. Or if proper gateways or other means of interconnection exist, standardization may not be necessary at all.

In the case of Korea, since 1985 private networks using leased lines have been allowed to provide services to the public so long as they are restricted to database and data processing services. That is, such networks were strictly restricted so as not to mediate or provide third-party communication. Amendments effective in May 1987 allowed private networks to provide information services without restrictions as in the U.S., but users had to be within closed user groups that shared business interests. Moreover, interconnection of such networks to the public networks was prohibited. Another relaxation on the use of leased lines in December 1988 extended the definition of user groups but still did not allow interconnection. For an update as of December 1989, see Appendix A.

Since the early '80s, the Korean government encouraged the use of telecommunications networks for data communications, but it always emphasized use of public networks, including DACOM's public switched packet data network, which was put into operation in 1983. Currently, private industries are requesting further relaxation of restrictions on the use of leased lines.[116]

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[116] Paragraph largely excerpted from Lee, pp. 98-101.

5.3.2 Information Provision

Once the networks are established, questions still remain about what kind of services can be provided over these networks. Although we discussed some examples of such information services in section 5.1, above, to what extent would ordinary customers need these services? This question is closely related to the availability of terminals and to the prices of such services, but in order to concentrate on the service issue, we will assume that customers are equipped with adequate terminals. Moreover, we will also assume that services are provided at reasonable prices. (If a service is provided free of charge, then the consumption pattern will be radically different from that for a reasonably priced service.)

In France, two major components sustained the demand: electronic directories and bulletin boards and games. In Korea, white pages are printed and distributed free of charge, but not many subscribers use them. When they cannot find white page directories, they turn to directory assistance service. Since about 1 million new telephones are installed each year in Korea, a trend expected to continue until the year 2000, massive distribution of telephones may necessitate electronic directories. Thus electronic directories may be a good candidate for the new information services. But there are more concerns about bulletin boards and game services. Chatting and computer games will not likely gain social approval in the Korean culture, and the chance for their introduction is slimmer if the terminals or the services are to be financed by the government.

Another application area could be transaction service. At present, Korea is still a cash economy, although the use of credit cards is spreading quickly.[117] In fact, the use of personal checks is not as widely accepted in Korea as in Japan.[118] The usual pattern for a considerable portion of transactions is still for people to deposit their income into banks and withdraw cash at their convenience and to

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[117] 40% of transactions are still based on cash. They are approximately 25% in Japan and Taiwan. See "Cash Transaction Dropped Below 40%," Chosun Ilbo, Apr. 13, 1988, p. 6.

[118] "Only the Kind that Rustles, Please," The Economist, Nov. 19, 1988, p. 40.

use credit cards when they are out of cash. Utility bills can be paid directly from bank accounts to the utility companies. In this environment, answering balance inquiries could be a good choice of service, and some banks already do so with customers using telephones and personal codes. But transaction service necessarily involves money transfers, and many legal and security problems would have to be cleared up before this service could be offered.

News services may also attract customers but would compete directly with printed materials. A recent study shows that electronic presentations lack competitiveness unless the terminals have the capability for flat-panel high-resolution displays and easy file storage and management. At present, the cost of such a terminal is beyond the range for massive distribution.[119] (Additional discussion of this subject follows in the next section.)

Educational information services may be of considerable interest in Korea. Korean parents are known to be very eager to send their children to prestigious schools for a good education, which usually pays off in postgraduate jobs. The relatively large proportion of students in the population has also contributed to severe competition among students. Private tutoring used to be an option for extracurricular study and was a very prosperous business. Many parents would spend a considerable portion of their income for such tutoring, until the government in the early '80s prohibited private tutoring. (The ban was partially lifted in 1989.[120]) Thus extracurricular study through terminals could be a very popular service to the families of students. Indeed, the public television channel broadcasts educational programs, and students and parents have shown tremendous interest. At one point, all the textbooks for the program were completely sold out, and even

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[119] Martin L. Ernst, Electronic-Print Competition: Determinants of the Potential for Major Change. Cambridge, MA: Program on Information Resources Policy, Harvard Univ., 1989.

[120] Private tutoring by college students is now allowed. See "Tutoring by College Students Allowed," Chosun Ilbo, Feb. 3, 1989, p. 15.

VCRs were suddenly in short supply.[121] But tutoring by TV was too difficult for some and too easy for others,[122] a dilemma not easily resolved in a one-way medium such as TV. Terminals may provide a solution. Two-way communicated and personally tailored programs could be a much more effective mode for extracurricular education.[123]

Of course educational efforts have not been immune to problems familiar to other arenas as well. For example, in 1985 the French education ministry set up a program called "Computers for All."[124] The ministry ordered 120,000 personal computers from Thompson CSF and distributed computers to schools, expecting to boost the computer industry and to educate students. But the computers the ministry chose were based on 8-bit processors and ran only on specially written software. They became outdated very soon, and consumers did not want to purchase the same computers for their homes. Invasion by popular foreign machines with a huge stock of software followed, and Thompson has discontinued PC production.

At the outset of this section, we assumed that information services are reasonably priced. But in the case of news or education services, connection charges could reach a considerable level unless there is some low-cost downloading mechanism. Transmission of information during off-peak hours, such as after midnight, would be a good option, but this places an extra burden of intelligence and cost on the terminals. On the other hand, if the price for transmitting is zero, people could leave their terminals on, which certainly would not be conducive to maintaining an efficient system.

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[121] "Cry for Textbooks: TV Tutoring," Chosun Ilbo, Apr. 25, 1989, p. 15.

[122] "Urgent Need to Change Level of Difficulty," U.S. Chosun Ilbo, Apr. 20, 1989, p. 25.

[123] Application of computers in formal education is well discussed in chapters 4 and 5 of Anthony G. Oettinger's Run, Computer, Run. Harvard Univ. Press, Cambridge, MA, 1970. He basically argues that organizational reform is needed for full advantage to be taken of the potential of computer assisted instruction. See the discussion in the next section of this chapter.

[124] Hunter, Mark, "France's Grand Computer Plan in Shambles," The Washington Post, Mar. 19, 1989, p. H8.

Until now, our focus has been on services for the general public. In the case of business applications, the situation would be different. Businesses will easily make use of such services if these applications can help make or save money. In the French case, business users accounted for most of the traffic and applications at early stages of development.[125] The same is true for the U.K., and in the U.S., business applications flourish, as they probably would among professionals and computer lovers who use computers during their work or leisure. This view is supported by the fact that in France only 10% of Teletel 3 users generate more than 50% of the traffic, and 30% to 40% of terminals distributed are not used at all.[126] In the U.S., the existence of numerous VANs and on-line services also reflects the fact that consumer demand is appropriately satisfied. Business users and enthusiasts are the ones who would voluntarily seek such services even in the absence of outside assistance.

In summary, electronic directories, business applications, and educational service (with reservations as noted) seem to be good candidates for services over telecommunication networks -- if, as we have noted, prices and terminals satisfy certain requirements.

5.3.3 Terminals

The issues involved in information service terminal development involve the level of intelligence and the method of distribution. If a terminal is used for short-time, on-line, and text processing, it may not need much intelligence. That is, as long as it can input and output simple texts, a dumb terminal can perform adequately. The French videotext terminals, called Minitel, are a good example. Moreover, if such terminals are to be distributed free of charge as in France, the distributor's financial burden would be significantly less than for intelligent terminal distribution.

But if the information services offered require extensive reading, then dumb terminals, and even conventional PC-type terminals, may be

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[125] OECD, p. 41.

[126] Ibid., p. 19.

unable to compete with traditional print offerings if equivalent information is available through both media.

A recent study, mentioned in section 5.3.2 above, identified several advances as critical to the success of electronic presentations of information. Foremost is the importance of flat-panel, high-resolution displays. Also needed are easy manipulation of information, improved file management, portability, and greater memory capacity. If current development trends continue, such display panels may be available in five to ten years, but prices may still be high, at least at first. Thus, in the foreseeable future, electronic presentation of information may become "rationally superior" but not necessarily "market superior."[127]

The choice of intelligent terminals, however, seems to be the trend in the videotext industry, as evidenced in France. Because of technological development and reductions in manufacturing costs, the French DGT is considering upgrading Minitel to handle more sophisticated functions.[128] This possibility, of course, suggests another liability -- that the terminals distributed today could be outdated in three to five years.

It appears that the Korean MOC is considering free distribution of intelligent terminals, such as personal computers. Such a distribution of terminals could provide an impetus to hardware and related software industries. It is not easy to develop demand among the general population, who would consider the infrequent need for such a real-time information service as not justifying the relatively high cost of hardware and software, nor the time and effort required for training. Unless such service is inexpensive and easy to use, most people would rather turn to traditional information modes such as books, yellow pages, brochures, telephones, and sometimes consultants. Thus free distribution of easy-to-use terminals provides customers with equipment with no financial burden, and information providers and advertisers with business opportunities. The large base of potential demand is very attractive to businesses with potentially lucrative ideas. Free

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[127] Ernst, p. 9.

[128] OECD, p. 49.

distribution may thus suggest a way out of the "chicken and egg" problem.

As for the hardware industry, Korea has exported millions of PCs to other countries since 1983 and is expected to export more than 2 million units in 1989 alone. Thus production capabilities would not be a serious bottleneck. But most of the PCs produced in Korea go to an unstable export market, with only a limited number sold domestically. One source estimates a ratio of export to total production in 1989 to be over 80%.[129] This in turn creates an insufficient domestic market for software and thus sustains the vicious circle.

Free distribution could also easily contribute to establishing de facto technical standards. Suppose there are 10 million intelligent terminals, as proposed, and all are connected to the public network. National technical standards, including software and communication protocols, could conform to the standards incorporated in the terminals and public network. Lack of technical standards has been a serious concern for many users, for computers often cannot communicate with each other, and if they can, not efficiently. If such standards can be established, software and hardware developers, as well as users, may benefit from larger markets and lower costs. In Korea, standardization of computer Hangul (Korean language) code has been under debate for several years, still without satisfactory results. Difficulties involved in reaching an agreement on those basic standards have raised serious concerns among manufacturers and users.

A terminal distribution policy, however, does have drawbacks, as would any policy. While massive distribution of terminals may establish de facto standards and thereby further stimulate growth in the industry, rigidity resulting from these standards could discourage technological innovations and creativity in this rapidly developing field, where such activities are most encouraged. This phenomenon has been seen in the development of private networks. Moreover if such standards are not compatible with other standards overseas, the export market could suffer and communications with other countries would be problematic and costly.

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[129] "57% Increase of Information Handling Hardware Production," The Korea Economic Daily, Feb. 18, 1989, p. 8.

In order to achieve one terminal per household in Korea, some 10 million terminals would be needed at an estimated[130] cost of $3 to $5 billion, not including development costs. If technological development renders terminals outdated and requires their replacement, continuing investment could become an unbearable burden.

5.4 Stakes of the Players

5.4.1 The MOC

We will start with the stakes of the MOC, which is the major proponent of a universal information service policy. First, MOC claims that the benefit of such a policy would be the elevation of the general public's computer literacy. Most people in Korea are not familiar with computer technology and they tend to fear even touching keyboards as if something could thereby go seriously wrong. This kind of hesitation makes many people fall behind the computer literate in their ability to handle information; and as technological development accelerates, this gap widens. Most of the general population simply has not had the opportunity to handle keyboards.[131] General distribution of terminals, if accompanied by easy-to-use software and applications, could greatly help people to familiarize themselves with computers. Without a sound base of demand from the general population, an industry lacks a solid source of sponsorship and cannot sustain its growth; and, in this situation, the society cannot realize the benefits of the information age.

If free distribution to all customers poses too great a burden to MOC (quite likely to KTA), terminals could be distributed to selected groups such as educational or financial institutions. Distribution of intelligent terminals such as PCs could contribute significantly to the elevation of computer literacy among students. Indeed, in 1983 the Korean government distributed free of charge 5000 PCs to schools, under the auspices of the Ministry of Education. The PCs were 8-bit Apple

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[130] NTIA Information Services Report, p. 97.

[131] "Wide Information Gap," The Korea Economic Daily, Jan. 13, 1989, p. 8.

clone models. Although these were used as stand-alones and were never connected to the telecommunication networks, the experience may be instructive. At the moment, there are different opinions as to the effect of the distribution. Some argue that it had a strong impact on the hardware and software industries and gave rise to the establishment of many small companies. It is true that the Korean computer industry began exporting PCs, mainly IBM compatibles, during the mid-eighties and that some of them carry their own brand names, but it is not clear how great an effect those 8-bit Apple clones had on the development of 16-bit IBM compatibles.[132] However, many students did begin to show interest in computers and actually purchased hardware and software. Many students are found these days in the downtown Seoul bookstores and marketplace called the Korean Silicon Valley. But opposing views hold that the school distribution was a failure in the sense that most of those PCs are now in storage rooms or are only used for school administration and that students use only entertainment software. Because of the lack of well-developed software and well-trained teachers, the distribution did not have the expected results, they say.[133]

Although the MOC policy may have been seen as an effort to promote education by computer in the schools, this was not its direct intention. Nor could the mere distribution of computers go very far toward such an end. As Anthony Oettinger has pointed out, computer education in schools is much more complicated than it first appears.[134] New equipment such as computers and audiovisual aids may help students understand materials not easily understood through books and on blackboards. But complete substitution of traditional educational approaches by new ones would require changes in the attitudes of teachers, students, parents, and boards of education, and changes in the curricula -- a tremendous task. At the moment in Korean schools,

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[132] "Korea Surges as PC Manufacturing ...," The Korea Economic Daily, Korea, Dec. 17, 1989.

[133] "Rumors that Educational PC Production Discontinued," The Management and Computer, Sept. 1985, pp. 74-80.

[134] See Oettinger, Run, Computer, Run.

education on computers is limited to basic use. More careful studies are needed if computer-assisted instruction (CAI) is to be implemented.

Low-interest-rate financing is another option for alleviating the financial burden of computer distribution. A financial commitment without a significant financial burden may actually stimulate usage of services and reduce maintenance costs as people would pay more attention to their own investment.

In addition to supporting the hardware and software industries, this distribution would also help the MOC implement standardization. But the pressures for privatization and for opening the domestic market to foreign interests raise more serious stakes. Concerned that the domestic information industry (except for the hardware side) is still in its infancy and that the domestic telecommunications infrastructure is inadequate, the MOC priority is for Korean industry to become competitive as quickly as possible.

5.4.2 Other Players

Because the MOC policy has not been announced in detail, discussion of other players' stakes is speculative. The general trend in Ministry of Trade and Industry (MTI) and EPB policies has been to favor less government intervention and more private sector initiative, so that these two powerful ministries may oppose MOC policy. But if the trade surplus and the threat of inflation continue, then MOC policy could offer a good opportunity to expand domestic demand.

It is interesting to note that several ministries other than MOC showed interest in the distribution of PCs, although their interest has been confined to computer education for students. For example, the Ministry of Science and Technology has provided three years of support (1987-1990) for a program to develop software for extracurricular tutoring.[135] The Ministry of Education announced in December 1987 a program to promote computer education.[136] That is, computer labs will

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[135] "Educational Software to Students," The Computer Vision, July 1988, pp. 90-96.

[136] "Second Educational PC Boom," The Computer Vision, Jan. 1988, pp. 130-131.

be included in the regular curriculum, and 280,000 educational PCs will be distributed to schools through 1996. Although these programs by other ministries are not directly related to the MOC targets, some believe that all these programs and policies should be coordinated.[137]

The more serious stakes are those of KTA and DACOM, which are the two major common carriers. First, KTA will be in one form or another a financial source for the proposed policy; as long as the burden can be passed on to the subscribers, KTA may not be seriously concerned. If the proposed universal information service policy is to be implemented under the present regulatory system, there is a possibility that KTA and DACOM may both claim jurisdiction as both can be network providers.[138] But if the proposed privatization entails liberalization, then the dispute will likely be resolved in favor of KTA because it owns most of the networks.

The private sector is expected to request that liberalization follow the sale of KTA stock, a request that would be stronger if MOC policy is to be implemented. They would see many business opportunities for networks, terminals, and information provision. But the real stake remains with the subscribers; if the policy succeeds, that is, many new satisfactory services are provided at affordable prices and the hardware costs are lowered through mass production, then the burden of financing such a policy may seem justified. It is the ordinary subscribers who will bear that burden and who will expect to realize the benefits.

Foreign interests would see MOC policy as attractive and discouraging at the same time. If they are given the same kind of opportunities as domestic companies, they would find it attractive as do the domestic companies. But foreign interests would strongly oppose any restrictions on foreign participation or technical standards that may preclude foreigners. During the trade negotiations between Korea and the U.S. in May 1989, both sides agreed that restrictions on foreign

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[137] "Need for One PC per Household," The Korea Economic Daily, Oct. 18, 1988, p. 6.

[138] See section 2.2.2 for a description of this aspect of the Korean regulatory system.

investment should be almost completely lifted.[139] This would greatly facilitate foreign participation in the Korean economy, including in telecommunications. As for the technical standards, the French "Computers for All" project mentioned above may be instructive. Technical independence is important, but at the same time compatibility with foreign machines is also important in today's internationalized world. Similarly, foreign concerns about domestic technical standards could also demand attention among telecommunication trade issues. At any rate, more has to be known of the details of MOC policy before the stakes of foreign players will become clear.

5.5 Postalization and Universal Information Service

If postalization of telephone rates and universal information service are both implemented, there may be pressure to lower interconnection charges. Information providers and the MOC could ask that rates be lowered to increase usage of information services, given that local rates are proportionally higher than the costs involved. If network providers are allowed to compete, they may also request discounts. But as in the case of postalization, a revenue separation scheme could be arranged quite independently of cost separation. The situation is no different from that of telephone service. Competition in networks would make the issue more explicit and invite more players, but the underlying issue is the same.[140]

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[139] "Korea-U.S. Agreed in Trade Talks," The Korea Economic Daily, May 19, 1989, p. 1.

[140] Herbert Marks, personal communications, 1989. Marks suggested alternative ways of implementing competition and universal information services at the same time. They included 1) requiring all competitors to offer postalized rates for certain services, 2) making all competitors contribute to funds intended to reduce charges in high-cost areas, and 3) defining the scope of the competitive sector. However, these are complicated subjects and a detailed study of these alternatives goes beyond the scope of this paper.

CHAPTER SIX

CONCLUDING REMARKS

Korea is changing rapidly in many respects. Sometimes the changes have happened so fast that people have not been ready for them. Politically and economically, the Korea of just two years ago was very different from the Korea of today. People thought that democracy was a story of a faraway land, relationships with communist and socialist countries were impossible, Korea would never be able to enjoy a trade surplus, and Korea might never get out of foreign debt trouble. But the story is turning out well: dramatic democratic measures have been taken and more are likely to come, formal relationships were established with East European countries, the USSR and China agreed to open trade relations with Korea, North Korean products are imported directly, the trade surplus has surpassed $10 billion, the summer Olympiad was successfully carried out, and Korea may be a creditor country in 1989.

In a sense, the same is true of expectations about telephones. Many people still vividly remember having to wait over a year for a telephone. People still think that telephones have to be provided by the government, whatever the reason may be. Indeed, the penetration rate for telephones is about half that of advanced countries, and more facilities are needed. These factors may also help explain why there has not been any explicit domestic movement or force for competition or liberalization. But once such a trend is set in motion, it may accelerate very fast as it has in other sectors.

Postalization of telephone rates and distribution of intelligent terminals to every home are, in a sense, very radical changes. No country has implemented such policies, although France did distribute dumb terminals. So radical would such changes be that people may not believe implementation would ever take place and may just consider any discussions as government propaganda. But looking back, when the MOC announced in the early '80s policies of "one telephone per household" and of a "nationwide automatic dialing system" before 1990, people had the same kind of doubt. Those policies were actually implemented in 1987, and some preliminary measures in response to the new policies are already in effect. The changes can actually happen. Although

implementation of the new policies discussed in this paper would be difficult, Korea may establish an unprecedented model for telecommunications development if they succeed, which they have a good chance of doing.

APPENDIX A

JULY 1989 MEASURE

On July 1, 1989, the MOC announced a public notice that basically liberalized the use of leased lines. Under the current regulatory system, as mentioned in sections 2.2.2 and 5.3.1, use of leased lines was strictly restricted. If a special waiver can be obtained from such restrictions, then there would be no restrictions.

In May 1987, such waivers were given to group companies. That is, if a group of companies has a close relationship in terms of ownership or trading volume, then the group could obtain such a wavier.

In the July 1989 measure, such a relationship requirement has been basically eliminated. That is, any company now can obtain a waiver, as long as it is not providing a pure third-party communications. Under this measure, any company can provide over leased lines electronic mail, electronic data interchange, and message handling services. However, still remaining are restrictions on the interconnection among networks, use of international leased lines, and use of packet switches.

Many people argue that such a measure went too far in light of the philosophy of the current laws. In order to reflect the July measure in the law and avoid such criticism, some revisions have been made to TBL and PTBL in December 1989. When those revised laws become fully effective, which is expected on July 1, 1990, telecommunications policies will become more transparent.