

## IMPACTS OF THE 1985 REFORM OF JAPAN'S TELECOMMUNICATIONS INDUSTRY ON NTT

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### I. Introduction

Japan's telecommunications industry was substantially reformed in 1985. Before that time, NTT (Nippon Telegraph and Telephone Corporation) was the state-owned common carrier operating as monopoly for domestic telecommunication. KDD (Kokusai Denden Corporation, i.e., the International Telephone Corporation), having been privatized in 1952, was the monopoly common carrier for international telecommunication. In April 1985, competition was introduced by privatizing NTT and allowing three new common carriers (NCCs) to operate nationwide for long distance telephony, and other new carriers to operate regionally or with mobile telephones. Local telephone markets, however, were left under NTT's monopoly. International telecommunication in Japan became competitive in October 1989, when two new common carriers were allowed to enter the international telephone market.

The 1985 Telecommunications Business Law of Japan recognizes two categories of carriers: type I and type II. They are distinguished by their facilities, not by their services. Type I carriers are those operating with physical transmission circuits; type II carriers are those without circuits. In effect, a type I carrier can offer every service a type II carrier can, but not vice versa.

Type I carriers are regulated by the Ministry of Posts and Telecommunications (MPT) in entry-exit, service provision, pricing, and other aspects. Foreign owners are allowed to obtain, in total, one-third of the shares of a type I carrier. In 1990, there are 59 domestic type I carriers including NTT, and 3 international type I carriers including KDD. NTT and KDD are established by the NTT Organization Law and the KDD Organization Law, respectively; they are regulated by MPT more heavily than other type I carriers.

Telecommunications business by type II carriers was liberalized in April 1985; in particular, telecommunications service trade by type II carriers, import or export, became free. No restriction is imposed on foreign ownership of a type II carrier. There is free entry to the industry and there is no formal restriction on pricing or operations including straight resale of leased circuits

by type II carriers.

The Telecommunications Business Law defines two subcategories of type II carriers: general type II carriers and special type II carriers. Special type II carriers are those operating internationally or those operating with 500 or more circuits (measured in terms of the unit equivalent to the capacity of 1200 bits/sec). There is a slight difference in regulation of general type II carriers and special type II carriers in entry into the industry. General type II carriers need only to report of their entry to MPT; special type II carriers need to register themselves with MPT. MPT may reject application for registration by a special type II carrier when the applicant is judged not qualified according to a set of criteria stated in the Law. All in all, however, this difference is not significant, and we can consider business by type II carriers is liberalized in Japan at least formally.<sup>1</sup> Since 1985, more than 800 type II carriers have been established, including 28 special type II carriers, in which 16 are operating internationally.

## II. MPT's Policy Since the 1985 Reform

MPT's regulation of Japan's telecommunications industry since the 1985 reform may be summarized in two statements: (i) In order to facilitate competition in long distance and mobile telephony, MPT allowed NCCs to operate in an environment more favorable than that in which NTT and KDD do; (ii) MPT encouraged NTT to improve its internal efficiency and to accelerate "digitization" of its network.

Recently, MPT, having realized that effective competition in the telecommunications industry is difficult to achieve because of the monopoly power of NTT, especially in local markets,

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<sup>1</sup> The Telecommunications Business Law of Japan allows type I carriers to engage in type II business (i.e., to provide enhanced services). As of 1991, both NTT and KDD started, or are planning, to offer various enhanced services (value-added services or VAN services). NCCs, on the other hand, have not attempted to offer enhanced services except those which are directly related to the basic services they currently provide (such as credit-card calls). There is a possibility that "unfair competition" may emerge between NTT or KDD and type II carriers in providing enhanced services, because NTT and KDD own physical transmission circuits but type II carriers do not. In July 1970, on bilateral trade negotiations between U.S. and Japan, USTR and MPT reached an agreement that non-Japanese type II carriers be treated equally as Japanese type II carriers by NTT in providing enhanced services. Furthermore, in spring 1991, MPT started a committee in which a framework similar to ONA (open network architecture) in U.S. would be considered to facilitate fair competition between NTT or KDD and domestic type II carriers in providing enhanced services.

indicated the possibility of dividing NTT into a small number of carriers.<sup>2</sup> MPT's plan to divide NTT, however, did not materialize in 1990, when a report was issued by MPT to review the present state of NTT and to propose future plans regarding reorganization of NTT.<sup>3</sup> In March 1990, MPT ordered NTT to improve business and technical practices which had prevented NCCs from competing with NTT on an equal ground; further, MPT ordered NTT to divest its mobile telephone operations (including automobile telephones, marine telephones, and wireless paging services) in two years.

Since 1985, MPT has maintained a principle to allow a small number of type I carriers to operate in each of Japan's telecommunications markets. In the domestic long distance market, three NCCs were allowed to enter and, in the international market, two NCCs were allowed. In the regional telephone markets, at most one operator was allowed to enter to compete with the incumbent carrier, NTT. In 1990, there are seven regional type I carriers, among which only one carrier, TNet (Tokyo Telecommunications Network Corporation), a subsidiary of the powerful Tokyo Electric Corporation, offers public services as well as leased circuit services; all other regional carriers offer leased circuit services only. Two carriers were recently allowed to enter into the satellite communications market. For mobile telephony, MPT allowed one new carrier to enter into each regional market to form a market of two operators, the other one being NTT.<sup>4</sup> Thus, MPT's policy on telecommunications carriership is to create regulated markets each with a very small number of operators. Whether this policy will foster effective competition, or whether this policy will work as a means to 'protect' incumbent and new operators, is yet to be seen.

MPT's policy to assist NCCs to compete with NTT is best characterized by its price regulation. The Law states that the price of services of type I carriers must be approved by MPT.

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<sup>2</sup> Japan's Telecommunications Committee, "Interim Report on Japan's Telecommunications Industry in the Future," submitted to MPT, October 2, 1989, 391 pp. in Japanese.

<sup>3</sup> Japan's Telecommunications Committee, "Report to the Ministry of Posts and Telecommunications on Regulations and Policies for Realizing Fair and Effective Competition and Promoting Technological Innovation--Actions to be taken according to Article 2 of the Nippon Telegraph and Telephone Corporations Law," submitted to MPT, March 2, 1990, 22 pp. in Japanese.

<sup>4</sup> As a consequence of the May 1989 U.S.-Japan agreement on allocation of radiowave frequencies, three, rather than two, mobile telephone carriers operate in the Tokyo metropolitan area. This was an outcome of the demand by the Motorola Corporation of U.S., determined to market its handy telephone terminals (Microtac) in Japan.

Since 1985, the price of long distance transmission provided by the three NCCs has been set, on average, at a level lower by 10 to 20% than the price of the same service provided by NTT. (In October 1989, when international NCCs were started, MPT determined that the price of services given by the NCCs be set 20% lower than that given by KDD.) As a consequence of this policy, the revenue share of the three NCCs in 1990 rose to approximately 3.8% in the entire domestic market, and to 40% in the long distance market of Japan's business district, the Tokaido corridor, which extends from the Tokyo metropolitan to the Osaka-Kobe metropolitan areas. Among NCCs, Daini-Denden, which is the spearhead of Japan's manufacturing and finance community seeking to enter into the telecommunications market, has the largest share. In 1990, two of the three long distance NCCs started to pay dividends to their stockholders.

In addition to regulations on entry and pricing, MPT made a number of attempts to assist NCCs for rapid growth of their business. Some of those attempts include: (a) MPT "informally ordered" NTT to let some of NTT's system engineers to leave NTT temporarily and to work for NCCs during the initial construction period of their long distance network, as NCCs had few engineers capable to start a telephone network. (b) MPT, together with other departments of the government including the Ministry of Transportation and the Ministry of Construction, administratively helped NCCs construct long distance circuits. For instance, Daini-Denden was able to obtain permissions to build facilities needed for microwave transmission much faster than in other cases. The other new long distance carriers quickly obtained hundreds of permissions from local governments needed to construct optical fiber lines across public roads, rivers, railroads, etc.

While MPT assisted NCCs to enter and operate in the telecommunications market, it did not directly constrain the activities of NTT. Rather, MPT approved most of the proposals submitted by NTT for price reductions, initialization of new services, and investment. For a short while after the liberalization, MPT considered NTT to be the main conductor of modernization of Japan's telecommunications network and encouraged NTT to promote digitization of its system as quickly as possible. In particular, (i) NTT was asked to accelerate replacement of old non-digital switching machines with new digital ones; old machines still usable and in the process of depreciation were replaced with new machines. Consequently, the proportion of digital switching machines to the total switching machines in NTT reached approximately 25% in 1989 in terms of the number of user terminals accommodated. (ii) NTT was asked to start ISDN services as quickly as possible; the basic ISDN service (two circuits of 64 Kb plus one circuit of 16 Kb) was launched in April 1988, and a higher-grade ISDN service with greater capacity was started in 1989. In 1990, there are approximately 10,000 subscribers to ISDN services, and the number is rapidly increasing. (iii) MPT allowed NTT to establish a large number of subsidiaries in different areas. The scope of businesses covered by the subsidiaries extends from utilizing information included in NTT's yellow books to manufacturing and marketing pre-paid telephone cards.

MPT's policy on the activities and the organization of NTT, however, was re-steered in 1989. MPT, shortly after the 1985 reform, realized that in all of the telecommunications markets except the paging market, NTT continued to stay as de facto monopoly acquiring the share of 90% or higher. NTT was a monopoly in local markets. Furthermore, as NCCs kept complaining, NTT continued to possess technological and marketing advantages in competing with NCCs. For example, a large part of NTT's switching machines is still of the old crossbar type; a customer whose terminal is connected to an old-type machine cannot subscribe to NCC (for, NCC could not bill the customer for calls placed through an old-type machine). Further, even though a customer subscribes to NCC, equal access is not realized; a customer using NCC for a long distance call needs to dial four additional digits relative to the case he uses NTT. An example of other complaints filed by NCCs is that NTT obtains information about customers subscribing to NCCs because the circuit connected to such customers must be relayed by NTT, and NTT could use the information for marketing and other purposes, causing unfair competition between NTT and NCCs. From these observations, MPT seems to have reached a conclusion that without changing the present structure of the telephone market, effective competition may never be realized.

The Japanese Telecommunications Business Law, having been set forth in 1985, states that a revision of the law may be called for three years after 1985. In 1988, MPT decided to postpone revision of the Law for the reason that it was only two years after the three long distance NCCs started their operation. On the other hand, the 1985 NTT Organization Law states that a revision of NTT's organization may be called for five years after the Law was implemented. In 1988, MPT asked the Committee for Telecommunications to consider possibility of restructuring NTT.

In October 1989, the Committee filed with MPT an interim report on Japan's telecommunications industry.<sup>5</sup> This report suggests possibility of dividing NTT. Three plans are stated: (i) NTT be divided into two entities, one long distance carrier and one local operator. (ii) NTT be divided into one long distance carrier and several local operators. (iii) NTT be divided into several regional operators, each responsible for long distance and local operations. In addition, other suggestions are included in the interim report, regarding fair competition between NTT and NCCs, internal reorganization of NTT for furthering efficiency, investment by NTT for accelerating digitization, and others.

The final recommendation by the Committee on restructuring NTT was filed with MPT in March 1990.<sup>6</sup> MPT compromised by agreeing that it was still too early to make decision on breaking up NTT and a longer time-period would be needed for further investigation and discussion.

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<sup>5</sup> See Endnote 2.

<sup>6</sup> See Endnote 3.

This decision was affected by political elements. Ministry of Finance (MOF) opposed to breaking up NTT for the reason that the price of NTT's stocks would fall (it actually did when the possibility of dividing NTT was reported) and the revenue to the government from selling them would be decreased. The owners of NTT's stocks opposed for the same reason. Furthermore, a majority of the Japanese business community (represented by Keidanren and other groups) expressed a view that division of NTT would be too radical a solution for promoting competition in the Japanese telecommunications market. The Socialist and the other opposition parties, holding a majority in the Upper House of the Japanese Diet, were considered to be a factor which would stop any attempt to break up NTT, because of a close relation between the Socialist Party and the influential labor union of NTT. Thus, MPT gave up an idea to divide NTT in 1990; it was stated by the government that a further assessment about reorganization of NTT would be done by 1997.

In the spring of 1990, NTT started an advisory committee to consider promotion of fair competition and other matters related to it. A plan was announced in the spring of 1991 that NTT's mobile telephone operations would be divested in summer 1992. (NTT had divested its enhanced service department in 1988; it became "NTT Data Communications, Inc.," a special type II carrier.) A number of policies for fair competition with NCCs was carried out by NTT; they include additional installation of POIs (point of interfaces), connection points between NTT's network and NCCs' network, regulation of internal use of information on customers which NTT acquired through relaying them to NCCs, improvement in NTT's accounting system so that the revenue and the cost of services be stated separately, and opening up information of NTT's network and customers to the general public.

Because of the price difference between NTT and NCCs, the share of NCCs in the domestic long distance market increased rapidly, especially for calls between the three major metropolitan areas of Japan, the Tokyo area, the Nagoya area, and the Osaka-Kobe area. In 1990, in fact, the share of the three NCCs in the inter-metropolitan calls exceeded that of NTT. NTT, observing the rapid decline of its share in the inter-metropolitan calls, started considering "rate re-balancing" in Japan. It is generally agreed upon that a large amount of subsidy goes from long-distance operations to local operations of NTT, although recent statistics shows a continuous decline of the subsidy. In spring 1991, NTT announced a plan for an increase in the local rate accompanied by reorganization of message areas. Such would give a strong adverse effect on the operation of NCCs through an increase in "the access charge." It is remarkable that NTT avoided further price reductions in the long distance market to compete with NCCs (which was what happened in the international telecommunications market), but seek to use rate re-balancing tactics. NTT started charging for directory assistance services in April 1991, to eliminate a part of its cross-subsidization from the long distance operation. Whether the rate re-balancing will be approved by MPT as being planned by NTT is yet to be seen.

### III. Price Reduction by NTT Since 1985

One of the most important outcomes of the 1985 liberalization of Japan's telecommunications industry is a series of price reductions carried out by NTT and KDD. It can be regarded as a textbook case in which monopoly prices are decreased because of the competition from new entrants.

During the period from 1985 to 1991, NTT, with an approval of MPT, reduced the price of four types of services: long distance calls, leased circuits, mobile telephones, and paging. NCCs started to offer these services in 1987. Figures 1 and 2 illustrate NTT's telephone charges from 1953 to 1991. It is seen that the long distance rates were lowered continuously and significantly after the middle of the 1970s. The 1985 liberalization accelerated this trend. Figures 3-6 illustrate the reduction of prices by NTT and NCCs for the four services.

The pattern of price reductions shows the way in which competition was introduced. One can observe a pattern of price reductions common to long distance calls, leased circuits, and paging. For each of these services, NCCs, at the time of entry, set a price lower by 10 to 20% than the price being charged by NTT. Soon after the entry, some of NTT's customers switched to NCCs because of the price difference; the share of NCCs increased gradually. Although the share of NCCs was still low, NTT was threatened by the trend in which it lost the share. NTT responded by lowering its prices so as to regain the competing power against NCCs. Once NTT was allowed to reduce its prices, NCCs felt that they might not be acquiring customers as fast as they did before, and introduced further price reductions. Such 'undercutting cycle' (i.e., price war) was repeated one after another. From Figures 1, 2 and 4, it is seen that in the market of long-distance calls, four cycles took place, and in the markets of leased circuits and paging, three took place, from 1985 to 1991.

The pattern in the market of mobile telephones is slightly different. NTT reduced the price drastically soon after the 1985 reform. NCCs started to enter into the market three and a half years after that; NTT responded with a further price reduction. This is explained by technological progress in mobile telephony (NTT's price reduction in July 1985) and the introduction of competition (its price reduction in December 1988 and March 1991).

In summary, in the market of long-distance calls, NTT's price decreased by 40% from April 1985 to March 1991. For leased circuits, NTT's price went down approximately by 16.2% from April 1985 to May 1989. For mobile telephone services, the price decreased by 57% from April 1985 to March 1991. Finally for paging services, NTT's price decreased by 31% from April 1985 to March 1991.

KDD also reduced its service prices during the period from 1979 to 1990; the cost of price reductions was high after 1985, at which time MPT made it clear that competition would be

introduced. The largest reduction was done in 1988, one year before two competitors entered the market. Competition in the international market was keener than in the domestic market, because users in the international market are mostly business firms, more sensitive to the price difference between KDD and NCCs than residential users.

It is clear that the price reductions for long distance calls were beneficial to telephone users, individual or business. They were made possible partly by technological progress in the long distance transmission and partly by the introduction of competition. In the international telecommunications market, price reductions were so rapid and significant that the price charged by KDD and that by NCC became almost equal one year after the introduction of competition. In the domestic long distance market, however, the price charged by NTT is still higher than that charged by NCC, and the share of NCCs is still increasing. As stated in the preceding section, this alarmed NTT strongly; NTT started considering to take a number of actions to prevent such a rapid change in the share of the long distance market.

It is now MPT's turn to do something; roughly speaking, MPT has three alternatives to take: (1) To maintain the 10-20% difference between the price charged by NTT and that by NCCs without approving NTT's proposal for rate re-balancing; the share of NCCs in the long distance market would be increased further. (2) To maintain the price difference between NTT and NCCs and, at the same time, to allow rate re-balancing by increasing effective local rates. The financial condition of NCCs would be worsened; the least competitive NCC, TeleWay Japan, might not be able to stay in business without assistance from outside. On the other hand, the share of NCCs in the long distance market would continue to increase, and NTT would continue to suffer from losing its share. (3) Eliminate the price difference between NTT and NCC without introducing rate re-balancing. The rapid change in the share of the long distance market between NTT and NCCs would be stopped.

It is yet to be seen which one of the three alternatives MPT will take, or whether MPT will take some other alternative such as elimination of the price difference accompanied by rate re-balancing.

#### IV. Organizational Reform of NTT

After the 1985 privatization, NTT carried out a number of major organizational reforms. They may be classified into two categories: external reforms (i.e., creation of new organization like subsidiaries; spinning out) and internal reforms. The objective of external reforms was to utilize NTT's resources, especially its labor force, more efficiently in various areas in which new business is emerging. The objective of internal reforms was to promote the internal business efficiency of NTT. Both external and internal reforms of NTT contributed to the recent increase in NTT's total factor

productivity, a numerical measure of the performance of economic organizations such as NTT.<sup>7</sup>

(i) External reforms:

The 1985 privatization of NTT gave it the possibility of creating subsidiaries. Soon after the privatization, NTT created a large number of subsidiaries in a wide range of business areas. MPT was generous, at least for a couple of years after the privatization, not to impose NTT severe restrictions on creating subsidiaries. The 1988 financial report of NTT states that the number of companies recognized formally as subsidiaries is 89, and the number of companies of which a part of the share is owned by NTT and which are under the influence of NTT is 70. The 1990 report gives the two numbers as 92 and 64, respectively.

The proportion of the share of a subsidiary owned by NTT ranges from 100% to 10%. The Business of each subsidiary is related to some aspect of NTT's activities. For example, NTT Urban Development, a subsidiary, constructs office buildings on pieces of land owned by NTT in Tokyo. NTT Softwares, another subsidiary, develops softwares for computers used by NTT. NTT PC-Communications, Japan Information and Communication (NI+C), and NTT International, each being a subsidiary, utilize technology developed by NTT to promote computer communications. Other examples of subsidiary activities are operation of NTT's videotex (CAPTAIN), production and distribution of NTT's pre-paid telephone cards, and sale of information obtained from NTT's yellow books. It is reported that, by March 1989, approximately one-third of NTT's subsidiaries started producing surpluses, whereas twenty percent of them are still in deficits.

The objectives of NTT's creation of these subsidiaries are: (a) to explore possibility of developing new business by using NTT's resources outside of MPT's regulation, and (b) to reduce the labor cost of NTT by transferring a part of NTT's work force to subsidiaries. During the one-year period preceding March 1989, approximately 3,500 of employees were transferred 'temporarily' from NTT to subsidiaries; it is 1% of the total employees of NTT in 1988. Creation of subsidiaries and transfer of employees was done without eliminating services provided by NTT, thus contributing to the increase in the total factor productivity of NTT.

In July 1988, the Department of Data Communications of NTT, its VAN (enhanced service) department, became independent to start as NTT Data Communications, Inc. The size of the new NTT Data Communications is approximately 10% of its parent. The objective for NTT to divest NTT Data Communications, Inc., was to let it move from the type I business to the type II

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<sup>7</sup> See Hajime Oniki, Tae H. Oum, and Rodney Stevenson, "The Productivity Effects of the Liberalization of Japanese Telecommunication Policy." It reports a significant increase in NTT's total factor productivity, which is attributed to the price reductions, the reduction of its labor force, and organizational reforms introduced by NTT.

business and operate outside of the regulation by MPT. NTT Data Communications was by far the largest and the most efficient VAN firm in Japan; its services cover banking transactions, commodity distribution, credit authorization, and others. Many type II carriers opposed to the separation of NTT Data Communications for the reason that the size and the efficiency of it, if not regulated, would give a blow to the business of type II carriers. MPT, on the other hand, was concerned with the direct interaction, technological and business, between NTT as a type I carrier and NTT Data Communications as an entity doing type II business, if they are allowed to remain as a single organization, and approved of the proposal of NTT for separation.

(ii) Internal reforms:

NTT started to reform itself to improve its efficiency soon after the possibility of privatizing and dividing NTT was suggested in 1982 by the Second Ad Hoc Committee on Administrative Reform. The committee stated that the need for privatizing and dividing NTT came from technological progress in the telecommunications industry and the presence of bureaucratic inefficiency with NTT, then a monopoly and a public corporation lacking incentives to improve itself.

Two major internal reforms of NTT are worth mentioning here. In 1985, NTT changed its internal organization from the departmental system to the profit-center system. Before this reform, NTT was organized according to functions of workers, such as telephone services, maintenance, procurement, construction, accounting and finance, research and development, and others. In 1985, NTT was reorganized into a profit-center system, Regional telephone centers were established; also created were the center for supporting telephone business, the center for supporting corporate communication, center for advanced communication services, and center for networking.

Later in 1989, organization of regional telephone centers was simplified; the old three level system was replaced by a two level system, and terminal offices accommodating subscriber lines were turned into fully automated centers to which no worker is allocated. It is expected that this change will cut managerial and overseeing costs significantly.

Shortly before the privatization, NTT started to reduce the size of its labor force. The total number of employees was decreased for the five years beginning 1984 by 8,174 per year, which was equal to 2.75% of the size of its labor force in 1986. This means that NTT squeezed out 13.7% of its labor force for the five years. It was done by transferring workers temporarily to subsidiaries and by setting the number of new employment far below the number of retirement; no firing was done as this was strongly against the Japanese employment practice. The speed of this change was impressive. MPT, however, recently stated that the saving of labor cost was not as high as was expected.

NTT also started, a couple of years before the privatization, what is called the ASK

campaign ("ASK" stands for safety, quick response, and efficiency in Japanese). It is NTT's term for TQC (total quality control).

In Japan, TQC has long been utilized in many corporations as the most important strategy to increase the organizational efficiency. It is TQC that improved the quality of manufactured goods in Japan since 1960s. TQC in Japan is carried out in the following fashion: employees in a corporation are organized into groups, each of which composes of 5 to 20 employees working closely. The objective of a group is to find ways to improve the efficiency of the tasks done by the group. Efficiency is sought from many aspects: workmanship, coordination, technology, maintenance, scheduling, and others. Members of a group are encouraged to submit a proposal to improve the efficiency of the tasks of the group. Whether a proposal is adopted or not is determined jointly by the group members. There is a reward to the group which improved efficiency and also to the member of the group who made a successful proposal. Furthermore, meetings and seminars are held within the organization to diffuse the information and the experience of successful proposals.

In NTT, ASK (TQC) started in 1983 under the leadership of Mr. Shinto, chairperson of NTT then, and spread to almost every section of NTT by April 1985. In 1987, the number of ASK groups in NTT was 97,000; approximately 90% of the workers of NTT participate to some ASK activities. It was the largest TQC campaign in Japan.

The ASK activities of NTT became the basis of improving NTT's efficiency from the bottom line of the organization. According to an expert, the cost saving due to its ASK campaign amounts to 1 billion yen annually, 0.2% of the annual gross profits of NTT in 1990.

## V. Conclusion

To summarize, we state that the 1985 reform of the Japanese telecommunications industry was, by and large, successful. First and foremost, because of the introduction of competition, the providers reduced the price of telephone services substantially and started offering a number of new services. There is no doubt that the reform was beneficial to users. Further, NTT was benefitted by the reform, too. Because of the privatization, many of the regulations having been imposed to NTT prior to the privatization, then a public corporation, were removed; NTT now has more freedom to extend its activities over a wide range of business opportunities. In addition, because of the introduction of competition, NTT, which had been a sleeping giant before the reform, was reshaped into an active corporation, capable to grow in the competitive business environment today. Without the 1985 reform, NTT might have become an inefficient, bureaucratic entity like the old Japan National Railroad (JNR), which was bankrupted because of its failure to adjust itself to the new environment having been brought about by the development of automobile transportation and aviation.

The Japanese telecommunications industry today is not without problems, though. MPT, in 1985, apparently started to introduce an industrial structure into the Japanese telecommunications industry in such a way that each competitive market be operated by a small number of providers. The industrial structure is still in the state of transition. In the long distance market, for example, the share of NTT is rapidly decreasing and the share of NCC rapidly increasing, because of the price difference between NTT and NCCs imposed by MPT. MPT has not expressed a view as to whether the rapid change in the share should be stopped, or should at least be slowed down. Assuming that the answer to this question is affirmative, we do not know how MPT would do it. Should the price difference be eliminated, or should other actions be taken to stop, or slow down, the change in the share? A rapid change in the share between NTT and NCC(s) can also be seen in many of the telecommunications markets other than the local and the long distance markets.

Such rapid change in the share has created uncertainty in the business environment of NTT. NTT, because of this, has started considering to take defensive actions, which would damage NCC(s) if actually taken. MPT, therefore, is in the position to clarify as to what will be "the target share" of NTT and NCCs in each of the major telecommunications markets, implying that, on reaching the target, MPT will remove price differences. Whether MPT will actually do it is not known, but it is expected that something will be done by MPT to that effect and the problem will be solved in some way or other in the future perhaps with some confusions.

There is a long-run problem in the Japanese telecommunications industry, which is more serious than the short-run problem stated above. It is the question "What is the desirable structure of the telecommunications industry in Japan?" As agreed upon widely, two conflicting requirements exist in the telecommunications industry, unlike in other industries such as manufacturing, agriculture, and many of the service industries. Let me call them the competition requirement and the public requirement, respectively. The competition requirement calls for introduction of competition into the industry so that the providers and the users can enjoy the benefits of competitive markets; it is now a classical thesis, which requires no further explanation. The public requirement means that there are certain objectives which cannot be satisfied through competition; efficiency from large-scale operations (natural monopoly), universal services, standardization, and basic research for technical progress. These are also the topics having been discussed repeatedly; they require no further explanation, too.

One of the most important issues in the telecommunications industry in Japan is where and how the two conflicting requirements should be reconciled. In 1984, U.S. chose a divestiture of the (old) AT&T to introduce competitive long distance markets and monopolized regional markets. Japan did not break up NTT, and introduced competition in the long distance market. Thus, the Japanese telecommunications industry today is composed of competitive long distance and other markets with regulated entry and a monopolized nationwide local market. NTT is allowed to

operate as a monopolist in the local market and as a heavily regulated provider in the other markets. In 1989, MPT attempted, but did not accomplish, to change this structure by dividing NTT. The question is to determine the future structure of the telecommunications industry in Japan.

One possibility is that the present structure will remain for some extended time period. This seems to be the most likely scenario in view of the Japanese political background. NTT will be allowed to stay as a single entity, but will be regulated heavily by MPT. Some of NTT's operations will be divested one after another. NTT Data Communications was divested in 1988, and mobile telephone operations will become separate in 1992. Divestiture of the maintenance department and the department of satellite operations may follow in the future. The share of NTT in most of the competitive markets will be one-half or so, whereas in the local market it will stay as the monopolist. NTT will suffer from the conflict of the private and the public requirements; it will be asked to be competitive and efficient on one hand, and to behave as a public servant on the other. Consequently, a great deal of uncertainty will remain in decisions to be made by NTT and MPT on service provisions, pricing, and interfaces between providers.

The second possibility is the line of the 1989 MPT plan. This is not a likely scenario, because the Upper House of the Japanese Diet would oppose any attempt to divide NTT. In this scenario, NTT would be divided into at least two entities: NTT Long Distance and NTT Local, say. The latter might further be divided into a small number of NTT Locals. This structure would be similar to the structure of the telecommunications industry in U.S. today, except that in the Japanese long distance market, entry is not free as in U.S. and regulated by MPT. Thus, if such division of NTT is made, the outcome will be similar to the one we see in U.S. today. The long distance market will grow rapidly, but the local markets will show differentiated development. Local providers in metropolitan areas such as Tokyo or Osaka will grow rapidly. In addition to providing basic services, metropolitan local providers will have strong incentive to extend its operations both vertically and horizontally. Extension to equipment manufacturing, enhanced services, and international operations will be sought. Because of the division of the entire NTT, however, the overall level of research and development would be lower than otherwise. It would be difficult to achieve the objective of universal services; further, the advantage of operating under a small number of standards might be lost. Whether the potentiality of the telecommunications industry as a whole would be increased, or decreased, by dividing NTT is not known. Dividing NTT would decrease the average size of a provider, losing the efficiency from large-scale operation. At the same time, however, dividing NTT would decrease the disadvantage of having bureaucracy of an excessive size, contributing to increasing the efficiency of operations of a provider. The classical controversy over the advantages and the disadvantages of centralization (or decentralization) would be appropriate to this issue.

The third possibility is to restructure the Japanese telecommunications industry according

to rule(s) different from monopoly (the first possibility) or regional division (the second possibility). For example, functional or vertical division of NTT may be conceivable, if not likely. NTT may be divided into facilities (and maintenance) department, networking department, basic-service department, enhanced-service department, and so on. This scenario is very unlikely, but such a reform would partly solve the conflict between the private and the public requirements.

One issue which needs to be considered for future development of the Japanese telecommunications industry is the status of KDD. As the economic activities in Japan become more and more international, the size of the international telecommunications market will continue to grow. NTT, observing this trend, is seeking to extend its activities into the international business arena. In particular, NTT is seeking to integrate with KDD, although this is not being talked openly. KDD strongly rejects the idea and wants to stay independent. Probably MPT would not allow such integration, since it would contradict to MPT's policy to decrease, not to increase, the size of NTT. The managerial and technological resource held by NTT, however, is so large that it will be difficult to stop NTT from extending its activities overseas. Pressures will be mounted gradually if NTT is strictly confined to domestic activities. Something needs to be done with this regard.

Finally, one element affecting the future of the Japanese telecommunications industry is technological development. In particular, construction of broadband ISDN (B-ISDN), which will be the main issue in the industry during the second half of this decade, is crucial to the future structure of the industry, since B-ISDN, unlike conventional N-ISDN, will have to be constructed from scratch. This means that MPT has the freedom to design the telecommunications network in Japan in the 21st century. MPT has so far not expressed a clear view on this aspect, although it has disclosed reports on the technological and the commercial possibility of B-ISDN.

Telecommunications network in Japan in the 21st century is yet to be considered systematically.