

II-10-1 Nationwide information flow

(1) Outline

Growth in information volume distributed nationwide outpaced that of real GDP and of the Japanese population.

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Information flow

According to the “Census of Information Flow” (Refer to Appendix 33), the annual average growth rate in information flow for the past decade (between fiscal 1987 through 1997) by category were as follows: 16.5% for information supplied; 13.1% for information transmitted; 8.3% for selectable information; 5.8% for consumable information; 7.6% for information consumed; and 4.0% for information stock.

On the other hand, the annual average increase rate for the past three years by category were as follows: 31.4% for information supplied; 25.1% for information transmitted; 11.6% for selectable information; 7.5% for consumable information; 15.4% for information consumed; and 2.2% for information stock. Recent increases in categories of the information supplied, the information transmitted and

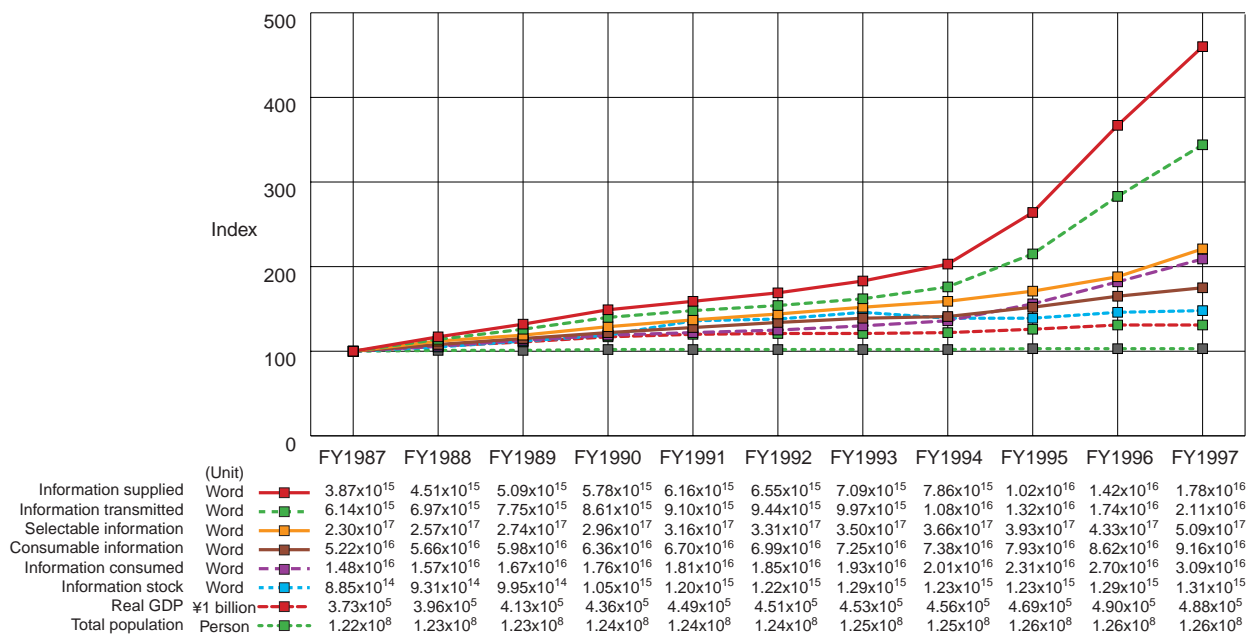
the information consumed are remarkable (Fig. 1).

It is because the amount of information flow through private telecommunications media such as “leased circuit services (data transmission),” “ISDN (data transmission),” and “digital data transmission services” have been rapidly increasing due to expansion of networking.

Furthermore, there was a new trend in fiscal 1997 in that the amount of selectable information flow increased. It was partly because telecommunications-type mass media such as cable TV and CS digital broadcasting which occupy large shares in the total amount of selectable information flow has expanded rapidly.

When the trends in the information selection multiple that is an index which indicates how much information was provided for consumption (the

Fig. 1 Trends in information flow (Index: fiscal 1987 = 100)



Source: “Census of Information Flow,” MPT

information selection multiple = the selectable information divided by the information consumed) were examined, the index had increased from fiscal 1987 through 1994 and then rapidly decreased in fiscal 1995 and 1996. However, the index rebounded in fiscal 1997 (Fig. 2).

The decrease between fiscal 1995 and 1996 were due to a rapid expansion in the amount of the information consumed through private telecommunications media such as “leased circuit services (data transmission),” “ISDN (data transmission),” and “digital data transmission services.” Such media have been rapidly digitalized and their capacity have significantly expanded for the past several years.

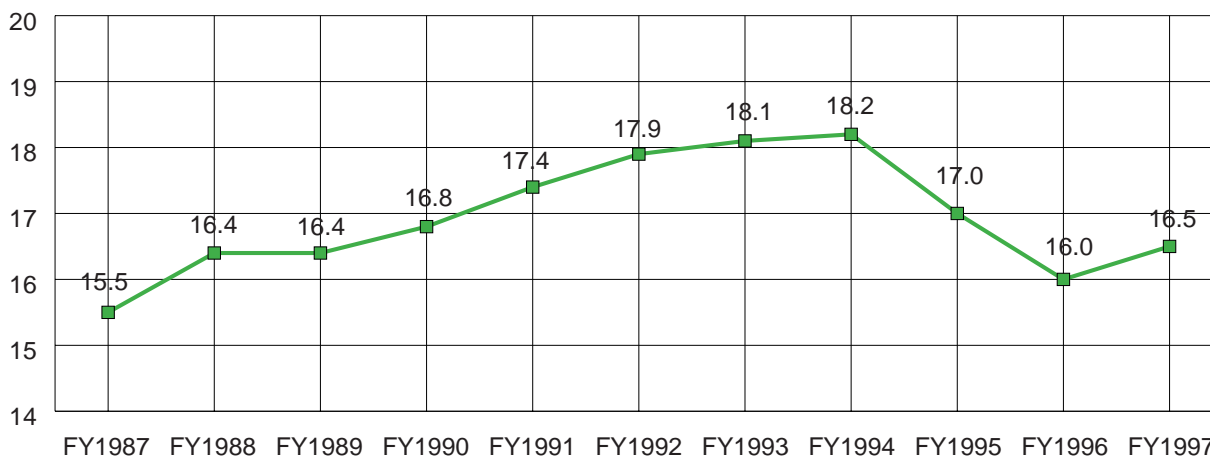
The increase in the information selection multiple in fiscal 1997 was due to an increase in the amount

of selectable information flow through telecommunications mass media such as cable TV and CS digital broadcasting.

Since cable TV and CS digital broadcasting are the media with the largest number of channels, an increase in the number of subscribers exerts much influence over the amount of selectable information flow.

In fiscal 1997, the number of subscribers for cable TV and CS digital broadcasting increased rapidly. As a result, an increase in the amount of selectable information flow exceeded that of the information consumed of private telecommunications media such as “leased circuit services (data transmission),” “ISDN (data transmission)” and “digital data transmission services.” Then the information selection multiple was up.

Fig. 2 Trends in information selection multiple



Source: “Census of Information Flow,” MPT

(2) Amount of information transmitted

Increase in private telecommunications media for data transmission contributed to increase in the amount of information transmitted.

The amount of information transmitted indicates the total amount of information that information senders of each media dispatched for a year (including the amount of flow of reproduced information and repeated transmission). The amount of information transmitted in fiscal 1997 was 2.11×10^{16} words, up 21.1% from the previous fiscal year.

The increase in the amount of information transmitted in fiscal 1997 was almost the same as the increase in the information transmitted of three major private telecommunications media for data transmission — “leased circuit services (data transmission),” “ISDN (data transmission)” and “digital data transmission services” (contribution rate in the total of three media was 97.0%). Although the share of the “digital data transmission services” is still small, it has expanded 3.6 times from the previous year. The contribution rate of the services was ranked as the third largest (6.7%).

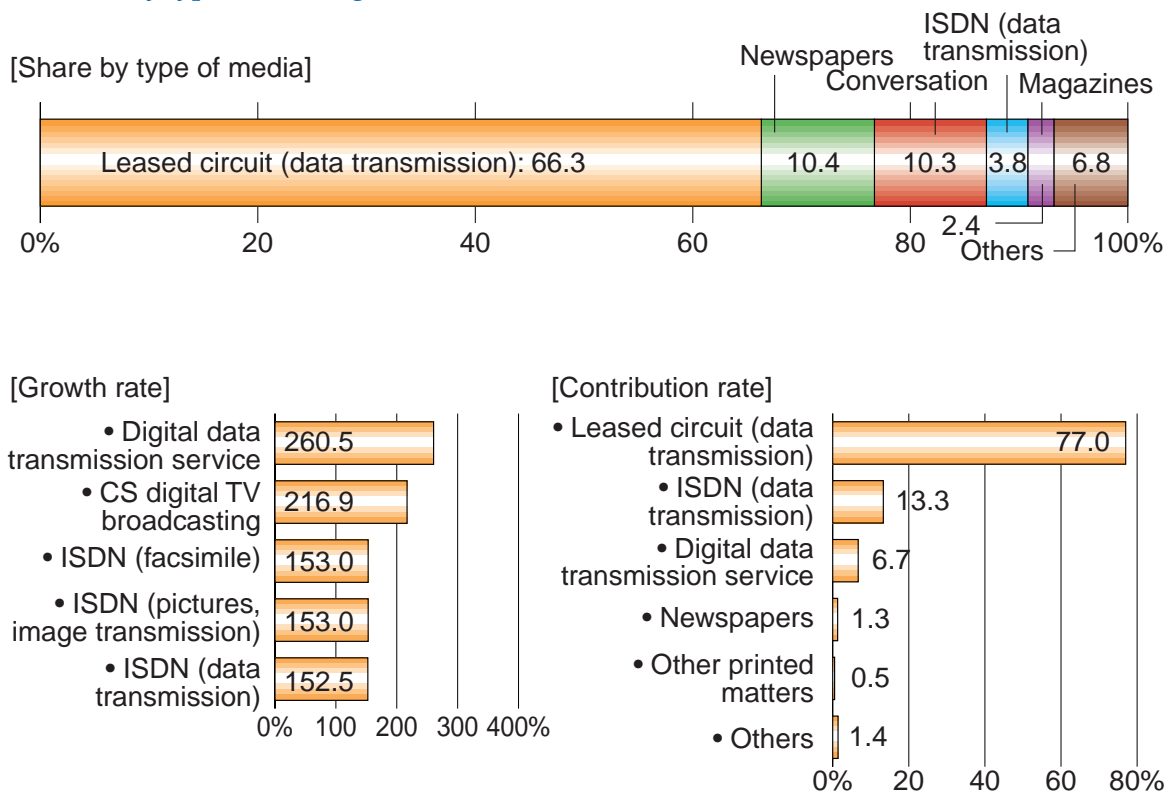
On the other hand, the amount of information

transmitted of telecommunications-type mass media has been increasing led by multi-channel media such as “cable TV” and “CS digital broadcasting.” However, the total amount of information transmitted of these mass media is smaller than that of private telecommunications media. The contribution rate for the total increase was also low.

Among the physically distributed media which had the second largest share, “newspaper” (share: 10.4%) contributed for the increase in the total information flow due to mainly an increase of the circulation (contribution rate: 1.3%).

As expansion of networking such as the Internet, the amount of information flow, especially that of digital information, has drastically expanded. The capacity of circuits which convey data has been expanding rapidly. It is considered that private telecommunications media for data transmission will continue to expand.

Fig. Amount of information transmitted (share by type of media, growth rate and contribution rate)



Source: “Census of Information Flow,” MPT

(3) Amount of selectable information flow

Expansion of cable TV services contributed for an increase in the amount of selectable information flow.

The amount of selectable information flow indicates the total amount of information each media provided for information consumers for one year in a form that consumers can select when the information is received. The total amount of selectable information flow in fiscal 1997 was 5.09×10^{17} words, up 17.4% from the previous fiscal year.

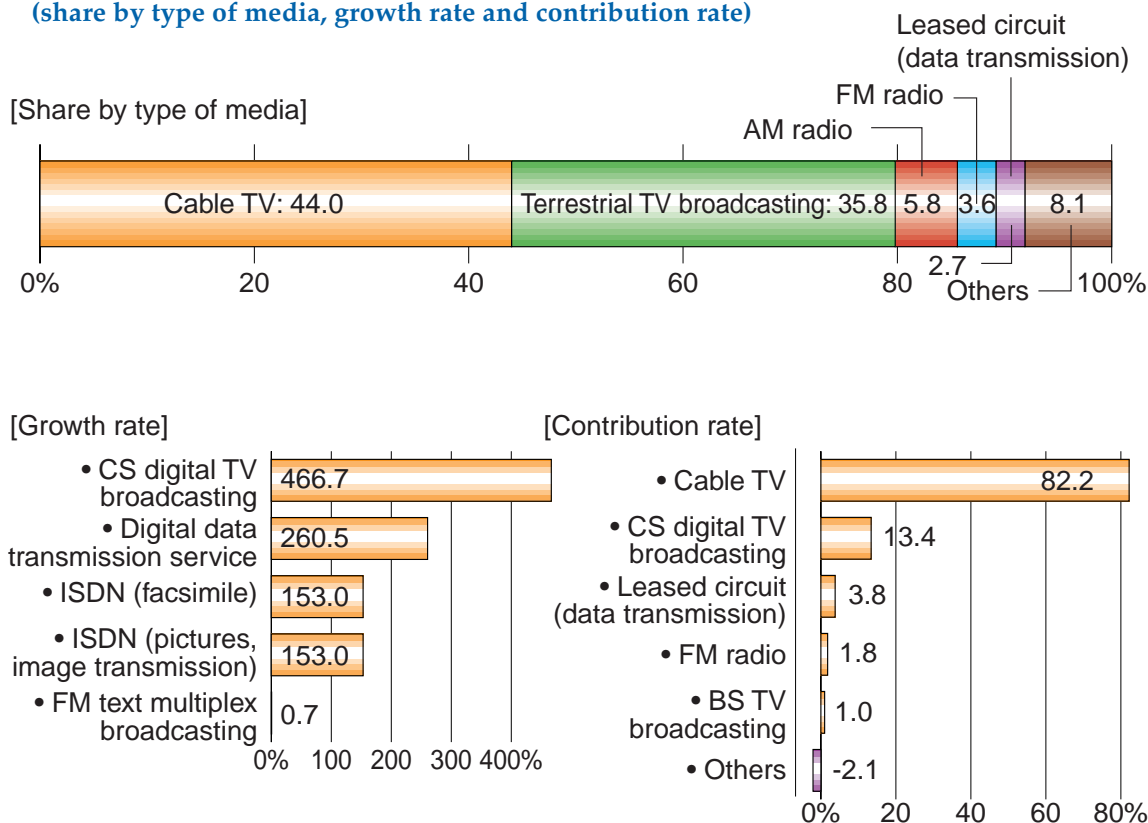
The selectable information flow increase in fiscal 1997 was almost the same as the selectable information flow increase provided through "cable TV" and "CS digital TV broadcasting" (total contribution rate: 95.6%).

In the background, there is diffusion of cable TV

and CS digital broadcasting mainly in large city areas. Especially regarding the cable TV, the share of cable TV (44.4%) for the first time exceeded that of terrestrial TV (35.8%) in fiscal 1997. The remarkable feature of both media is that there is a large number of channels contributing to an increase in selectable information flow.

The amount of selectable information flow is expected to continue expanding due to appearance of new services including scheduled digital terrestrial broadcasting, in addition to cable TV and CS digital TV broadcasting.

Fig. Amount of selectable information (share by type of media, growth rate and contribution rate)



Source: "Census of Information Flow," MPT

(4) Amount of consumed information flow

Increase in private telecommunications media for data transmission contributed to increase in consumed information flow.

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The amount of consumed information flow indicates the amount of information that consumers receive through a variety of media and consume for one year. The amount of consumed information flow in fiscal 1997 was 3.09×10^{16} words, up 14.2% from the previous fiscal year.

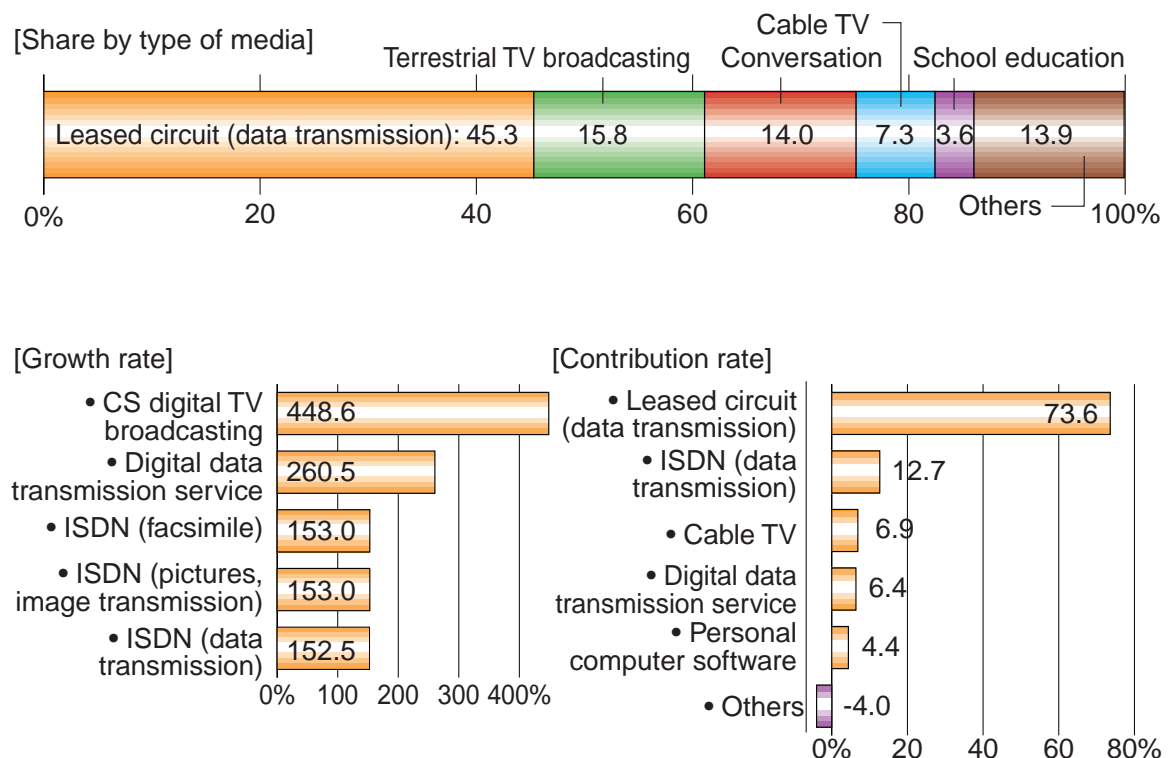
For the increase in the consumed information flow, the contribution rate of private telecommunications media was as high as 92.7%. Among these media, the contribution rate of the "leased circuit services (data transmission)" was remarkably high of 73.6%. The same rate of "ISDN (data transmission)" was also high of 12.7% and that of "cable

TV" was 6.9%. Among the physically distributed media, the contribution rate of "personal computer software" was quite high of 4.4%.

These expansions can be attributed to a steady increase in the amount of information consumed through a particular media due to advancement in networking at offices, expansion of the Internet at home and an increase in the number of TV broadcasting channels.

On the other hand, some media such as videotex and CS analog TV have been dying. The amount of information consumed is expected to continue to expand with changes in its structure.

Fig. Amount of consumed information (share by type of media, growth rate and contribution rate)



Source: "Census of Information Flow," MPT

(5) Amount of information stock

Contribution rate of physically distributed media such as CD-ROM and books were high.

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Information flow

The amount of information stock indicates that among all the information once distributed by each media through a certain distribution system, the amount of information that either senders or receivers store for their record or re-use in the future. The amount of information stock in fiscal 1997 was 1.31×10^{15} words, up 2.0% from the previous fiscal year. The physically distributed media contributed a lot for the increase in the amount of information stock.

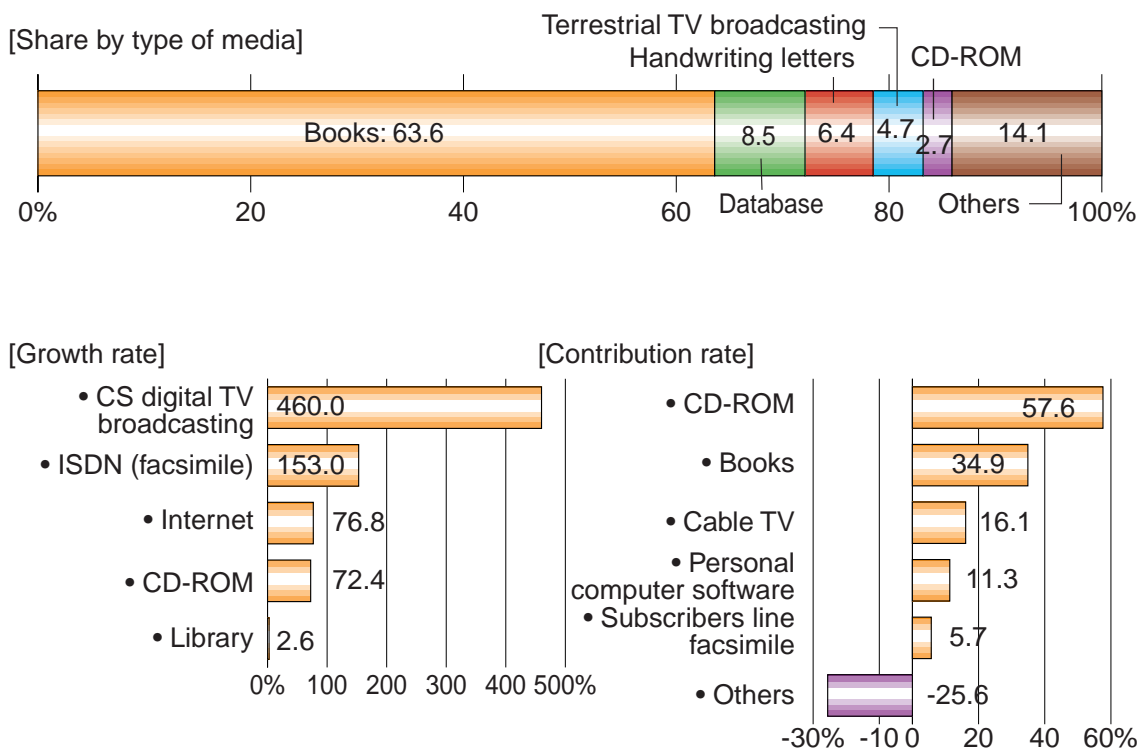
Among the physically distributed media, the contribution rate of CD-ROM was the highest of 57.6%, exceeding that of books (34.9%). Besides the physically distributed media, the contribution rate of cable TV was the highest of 16.1%. It is expected that cable TV will continue contributing to an increase in the amount of information stock in the fu-

ture because the media is expected to expand further.

Although contribution rates of telecommunication media such as CS digital TV broadcasting and the Internet were low, they are increasing rapidly. They may significantly contribute to an increase in the amount of information stock in the future.

The role of books may not change, but DVD software with a large storage capacity is expected to be marketed on a full-scale while both the Internet and personal computer software are expected to expand further when personal computers become more commonly used. Due to these factors, the structure of information stock is expected to continue to change.

Fig. Amount of information stock (share by type of media, growth rate and contribution rate)



Source: "Census of Information Flow," MPT

II-10-2 Information flow in communities

(1) Amount of information transmitted

Regional discrepancies in the amount of information transmitted are large and gaps have been widening.

When all information transmitted from every prefecture in fiscal 1997 was examined, 20.1% originated from Tokyo, far larger than any other prefectures. The Tokyo figure was 2.8 times larger than

that of Osaka, the second largest (7.3%). It was followed by Kanagawa (6.0%), Aichi (5.0%) and Saitama (4.7%).

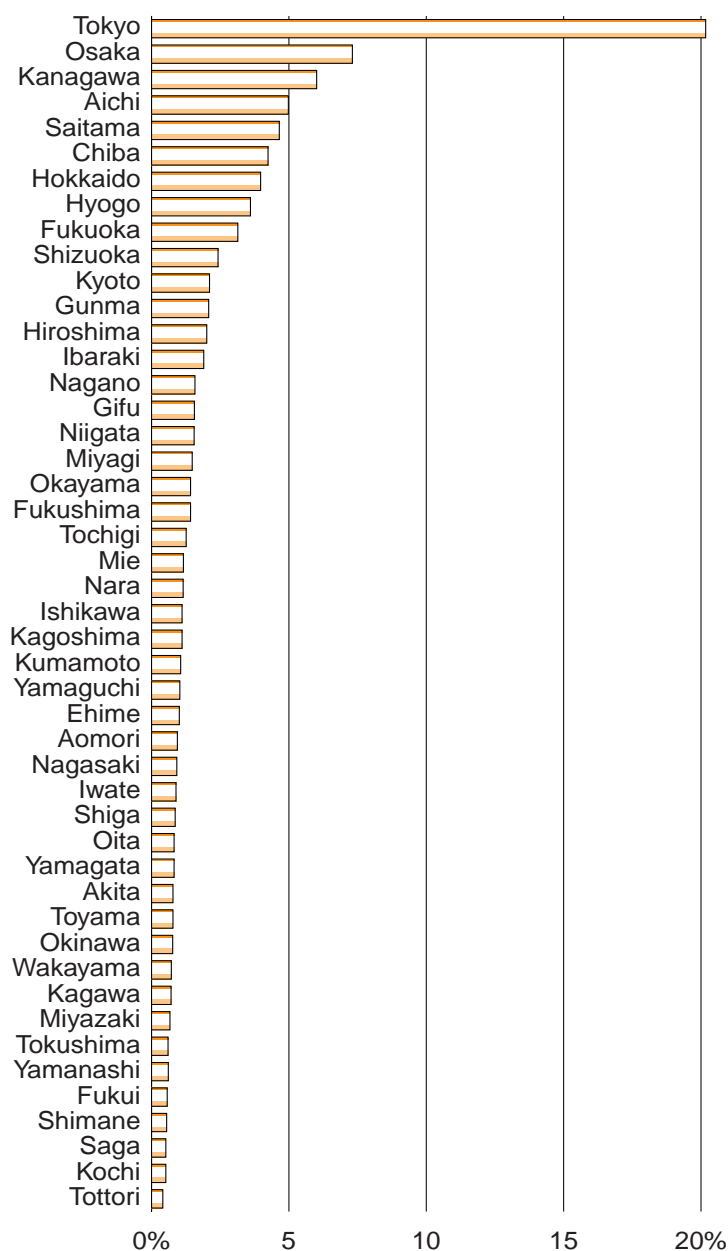
The top nine prefectures occupied more than 50% of the total flow.

Both the order and the share of each prefecture of fiscal 1997 were almost the same as those of the previous fiscal year. There was little change.

A drop in Tokyo's share was absorbed by increases in the surrounding prefectures. In that sense, it is hard to say that the drop will lead to the leveling of the shares. In addition the Gini coefficient (a coefficient which shows discrepancies among regions, where when discrepancies among regions are large, the coefficient is large. When the coefficient is zero, there is no regional discrepancies, and when the coefficient is one, regional discrepancies are the largest.) was 0.509 in fiscal 1997, the same as the previous fiscal year's level. The figure has been at the highest level in history. In other words, discrepancies in the amount of information transmitted are large and the gaps have tended to widen.

On the other hand, when the amount of information transmitted from every prefecture per capita was compared, the figure for Tokyo was 2.4 times larger than the average of all the prefectures. The figure was far larger than any other prefectures. It was followed by Gunma (1.4 times), Ishikawa (1.3 times), Osaka (1.2 times) and Kyoto (1.1 times).

Fig. Amount of information transmitted from each prefecture



Note: Figures indicate the share of each prefecture among the total information transmitted.

Source: "Census of Information Flow," MPT

(2) Amount of selectable information flow

As a whole, there has been little change.

When the amount of selectable information flow of each prefecture in fiscal 1997 was examined, To-

kyo occupied 12.8%, up 0.3 percentage points from the previous fiscal year, which was followed by Osaka (8.2%, up 0.5 percentage points), Kanagawa (8.0%, up 0.4 percentage points), Saitama (6.5%, up 0.3 percentage points) and Aichi (6.5%, up 0.2 percentage points). The top seven prefectures occupied 50% of the total share. The order in the list did not change a lot. However, top-ranked prefectures have expanded their shares.

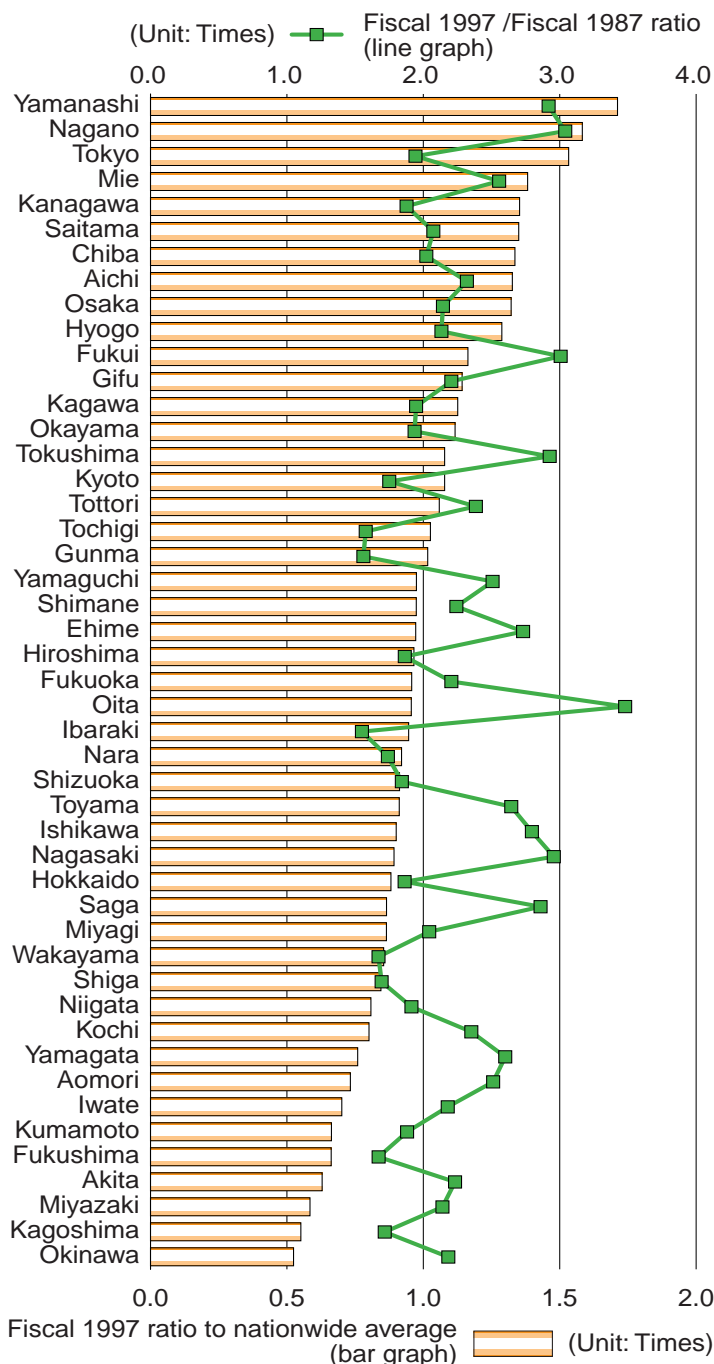
The Gini coefficient in fiscal 1997 was 0.518, up 0.013 percentage points from the previous fiscal year. In other words, regional discrepancies in selectable information flow have also expanded.

This is in part due to the amount of selectable information in cable TV for fiscal 1997 having exceeded that of terrestrial TV broadcasting and as a result increased the impact of cable TV, and also in part due to the increase in the number of households that subscribe to cable TV, having expanded especially rapidly in the Tokyo Metropolitan area and Kinki area.

On the other hand, in the list of the amount of selectable information per capita of each prefecture, Yamanashi was the highest having 1.7 times larger than the nationwide average, which was followed by Nagano (1.6 times), Tokyo (1.5 times), Mie (1.4 times) and Kanagawa (1.4 times). In particular, the per-capita figures in Yamanashi and Nagano, the two prefectures exceeding Tokyo, have remarkably increased from fiscal 1987. It is because cable TV has been widely subscribed in these two prefectures.

These figures indicate that diffusion of cable TV in local communities might shrink local discrepancies in the amount of selectable information.

Fig. Amount of selectable information per capita of each prefecture



Notes: 1. Ratio to the national average in fiscal 1997 indicates the ratio to the average of all 47 prefectures.

2. Ratio of fiscal 1997 to 1987 indicates how many times the selectable information per capita of each prefecture has been expanded between fiscal 1987 and 1997.

Source: "Census of Information Flow," MPT

(3) Amount of information stock

As a whole, there has been little change.

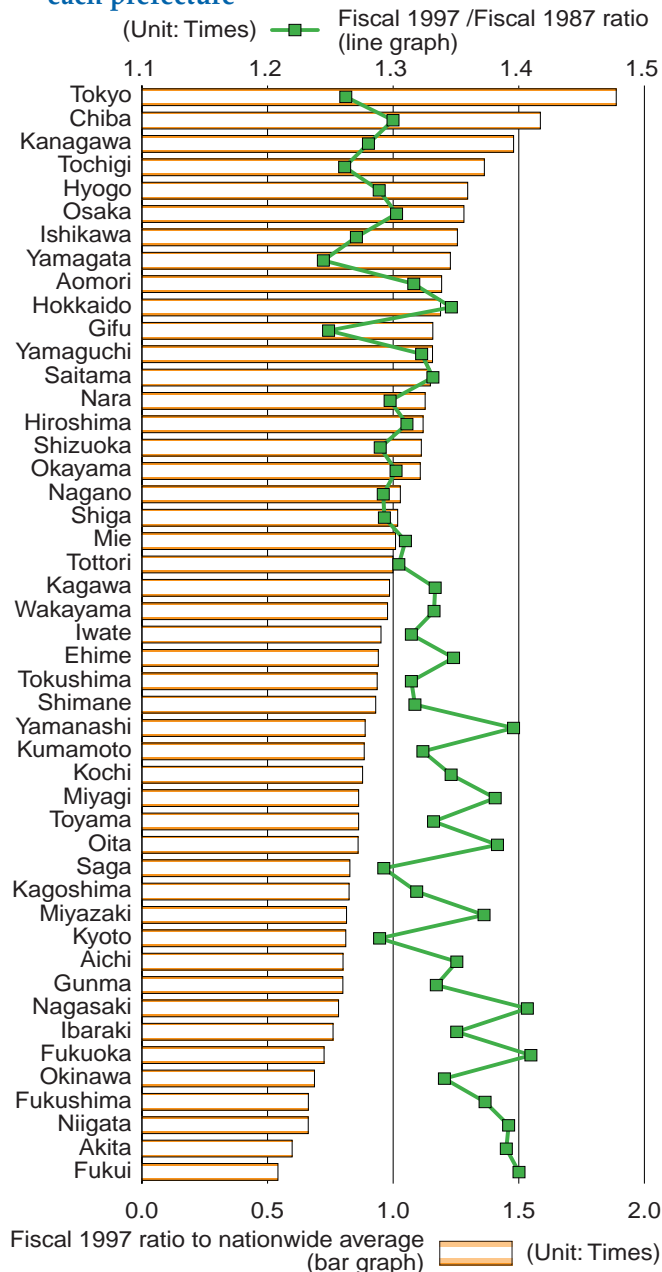
When the amount of information stock of each prefecture was examined, Tokyo occupied the largest share of 15.5%, which was followed by

Kanagawa (8.6%), Osaka (7.8%), Chiba (6.4%) and Saitama (5.5%). The top seven prefectures occupied 50% of the total share. The order and the share in fiscal 1997 have not changed much.

The Gini coefficient in fiscal 1997 was 0.524, the same as the previous fiscal year. For the past several years, the figure has been moving steadily.

When the amount of information stock per capita of each prefecture was examined, Tokyo was ranked as the top having 1.9 times larger than the nationwide average, which was followed by Chiba (1.6 times), Kanagawa (1.5 times), Tochigi (1.4 times), and Hyogo (1.3 times). There have been any big changes.

Fig. Amount of information stock per capita of each prefecture



Notes: 1. Fiscal 1997 ratio to nationwide average indicates ratio to the average of all 47 prefectures.
2. Ratio of fiscal 1997 to 1987 indicates how many times the information stock per capita of each prefecture has expanded between fiscal 1987 and 1997.

Source: "Census of Information Flow," MPT

Column 3 Info-communications in Japan and the U.S.

There is a significant gap between Japan and the U.S. as regards Internet access in schools.

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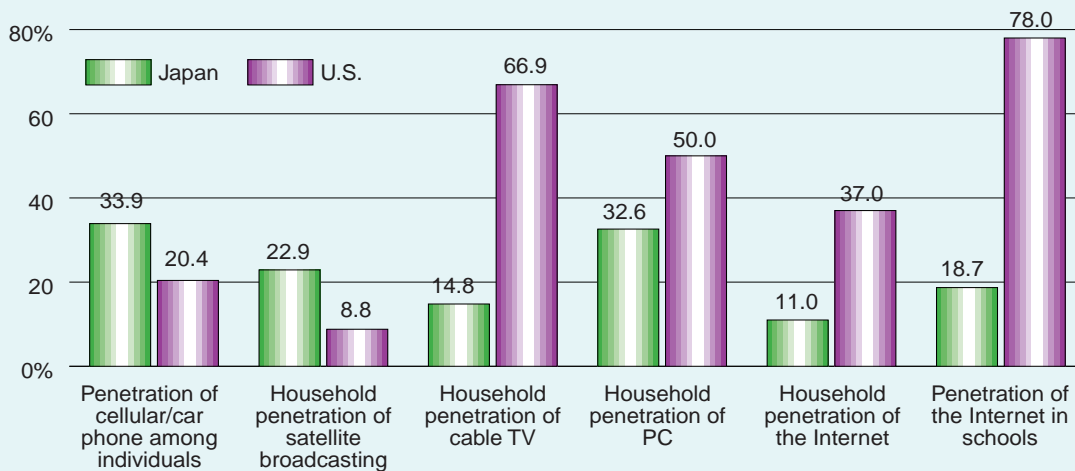
Information flow

A comparison between Japan and the U.S. as to the penetration rates of info-communications equipment and services shows that cellular and car phones, as well as satellite broadcasting services, were more common in Japan. On the other hand, the U.S. had higher rates for cable television, personal computers and the Internet, in particular for use in schools. The difference between the two countries was particularly marked in the diffusion rate of cable television and in the numbers of schools with access to the Internet (Fig.

1).

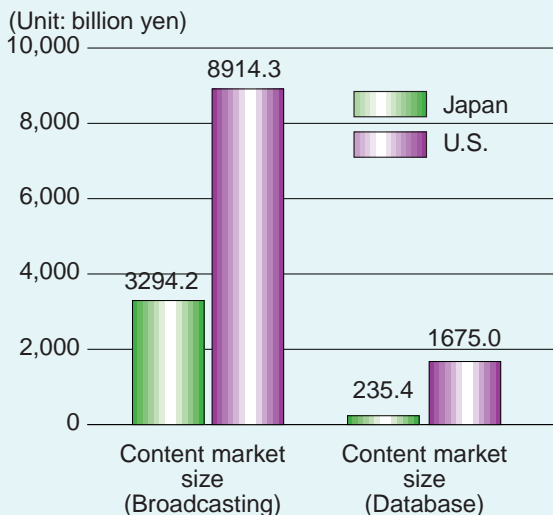
In comparing market size for content (broadcasting and databases), the U.S. had a far larger market than Japan (Fig. 2). In addition, the U.S. far exceeded Japan in the number of employees in the communications and broadcasting industry, as well as in the ratio of nominal gross added value generated by the industry to the size of the national economy (Fig. 3). This clearly shows that the info-communications sector accounts for a significant portion of U.S. economic activity.

Fig. 1 Penetration rates of info-communications equipment and services in Japan and the U.S.



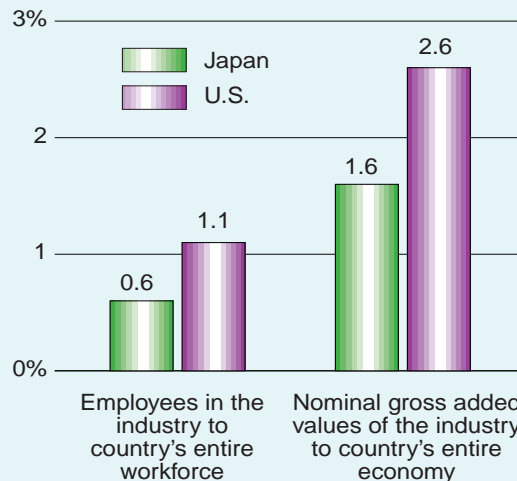
Sources: Ministry of Education; NHK; CTIA; DBS; dataquest; INTECO; MPT; and others

Fig. 2 Info-communications market size



Source: Japan Center for Economic Research

Fig. 3 Size of communications and broadcasting industry (in ratios)



Sources: Economic Planning Agency of Japan; MPT; U.S. Department of Commerce